

# Ted talks clients EDA

Let us explore the various facts of Ted talks and answer some questions!

```
In [21]: #getting the dataset
import pandas as pd
ted = pd.read_csv('C:\\Users\\sujoydutta\\Downloads\\ted_main.csv')
ted.head()
```

```
Out[21]:
```

|   | comments | description                                       | duration | event   | film_date  | languages | main_speaker  | name  | num_speaker | pu |
|---|----------|---|----------|---------|------------|-----------|---------------|---|-------------|----|
| 0 | 4553     | Sir Ken Robinson makes an entertaining and pro... | 1164     | TED2006 | 1140825600 | 60        | Ken Robinson  | Ken Robinson: Do schools kill creativity?     | 1           |    |
| 1 | 265      | With the same humor and humanity he exuded in ... | 977      | TED2006 | 1140825600 | 43        | Al Gore       | Al Gore: Averting the climate crisis          | 1           |    |
| 2 | 124      | New York Times columnist David Pogue takes aim... | 1286     | TED2006 | 1140739200 | 26        | David Pogue   | David Pogue: Simplicity sells                 | 1           |    |
| 3 | 200      | In an emotionally charged talk, MacArthur-winn... | 1116     | TED2006 | 1140912000 | 35        | Majora Carter | Majora Carter: Greening the ghetto            | 1           |    |
| 4 | 593      | You've never seen data presented like this. Wi... | 1190     | TED2006 | 1140566400 | 48        | Hans Rosling  | Hans Rosling: The best stats you've ever seen | 1           |    |

```
In [22]: #Getting visualization packages
import seaborn as sns
import matplotlib.pyplot as plt
```

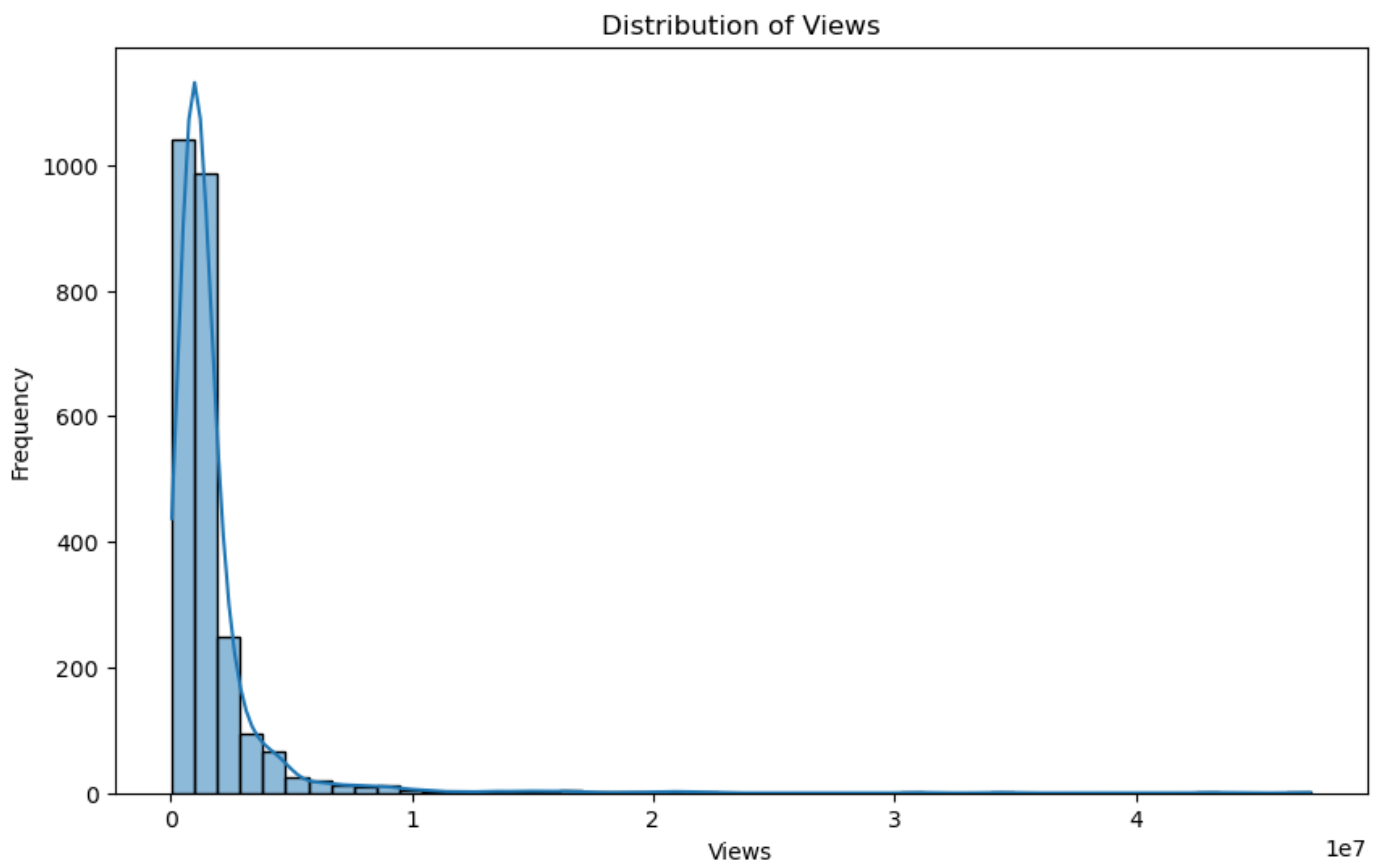
```
In [23]: # The top 10 most viewed TED Talks
top_10_talks = ted.nlargest(10, 'views')[['main_speaker', 'title', 'views']]
top_10_talks
```

```
Out[23]:
```

|      | main_speaker | title                                    | views    |
|------|--------------|--|----------|
| 0    | Ken Robinson | Do schools kill creativity?              | 47227110 |
| 1346 | Amy Cuddy    | Your body language may shape who you are | 43155405 |
| 677  | Simon Sinek  | How great leaders inspire action         | 34309432 |

|             |                   |   |          |
|-------------|-------------------|---|----------|
| <b>837</b>  | Brené Brown       | The power of vulnerability                        | 31168150 |
| <b>452</b>  | Mary Roach        | 10 things you didn't know about orgasm            | 22270883 |
| <b>1776</b> | Julian Treasure   | How to speak so that people want to listen        | 21594632 |
| <b>201</b>  | Jill Bolte Taylor | My stroke of insight                              | 21190883 |
| <b>5</b>    | Tony Robbins      | Why we do what we do                              | 20685401 |
| <b>2114</b> | James Veitch      | This is what happens when you reply to spam email | 20475972 |
| <b>1416</b> | Cameron Russell   | Looks aren't everything. Believe me, I'm a model. | 19787465 |

```
In [24]: # Plotting the distribution of views
plt.figure(figsize=(10, 6))
sns.histplot(ted['views'], bins=50, kde=True)
plt.title('Distribution of Views')
plt.xlabel('Views')
plt.ylabel('Frequency')
plt.show()
```



```
In [25]: # Checking skewness of the views distribution
skewness = ted['views'].skew()
skewness
```

```
Out[25]: 8.291668158800105
```

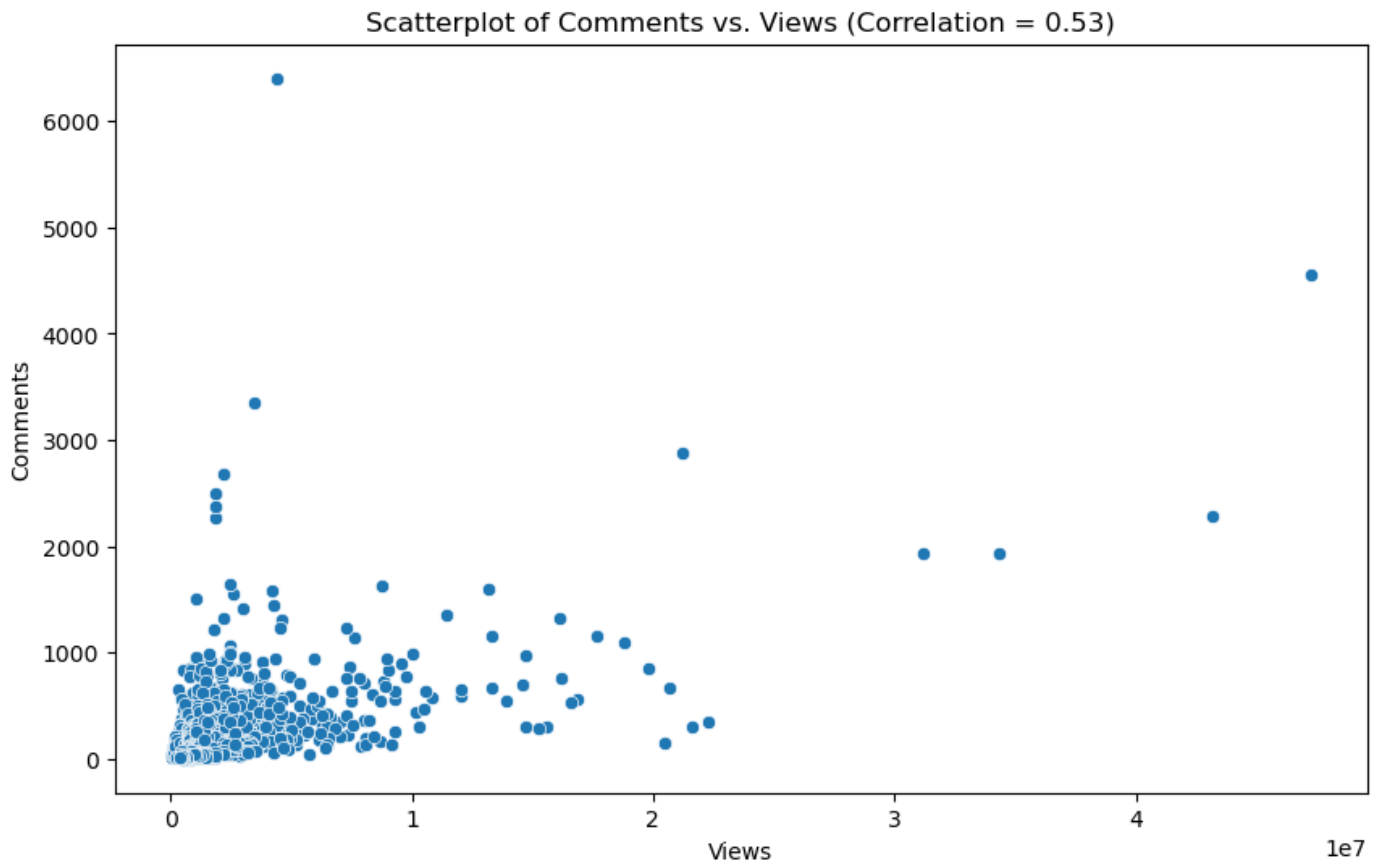
```
In [26]: # Seeing correlation between comments and views

correlation = ted[['comments', 'views']].corr().iloc[0, 1]
correlation
```

```
Out[26]: 0.5309387006213678
```

```
In [27]: # Building a scatterplot to visualize the relationship between comments and views
```

```
plt.figure(figsize=(10, 6))
sns.scatterplot(x='views', y='comments', data=ted)
plt.title(f'Scatterplot of Comments vs. Views (Correlation = {correlation:.2f})')
plt.xlabel('Views')
plt.ylabel('Comments')
plt.show()
```



```
In [28]: # Counting the number of talks per year
ted['film_date'] = pd.to_datetime(ted['film_date'], unit='s')

ted['year'] = ted['film_date'].dt.year

talks_per_year = ted['year'].value_counts().sort_index()
talks_per_year
```

```
Out[28]: year
1972      1
1983      1
1984      1
1990      1
1991      1
1994      1
1998      6
2001      5
2002     27
2003     33
2004     33
2005     66
2006     50
2007    114
2008     84
2009    232
2010    267
2011    270
2012    267
2013    270
```

```

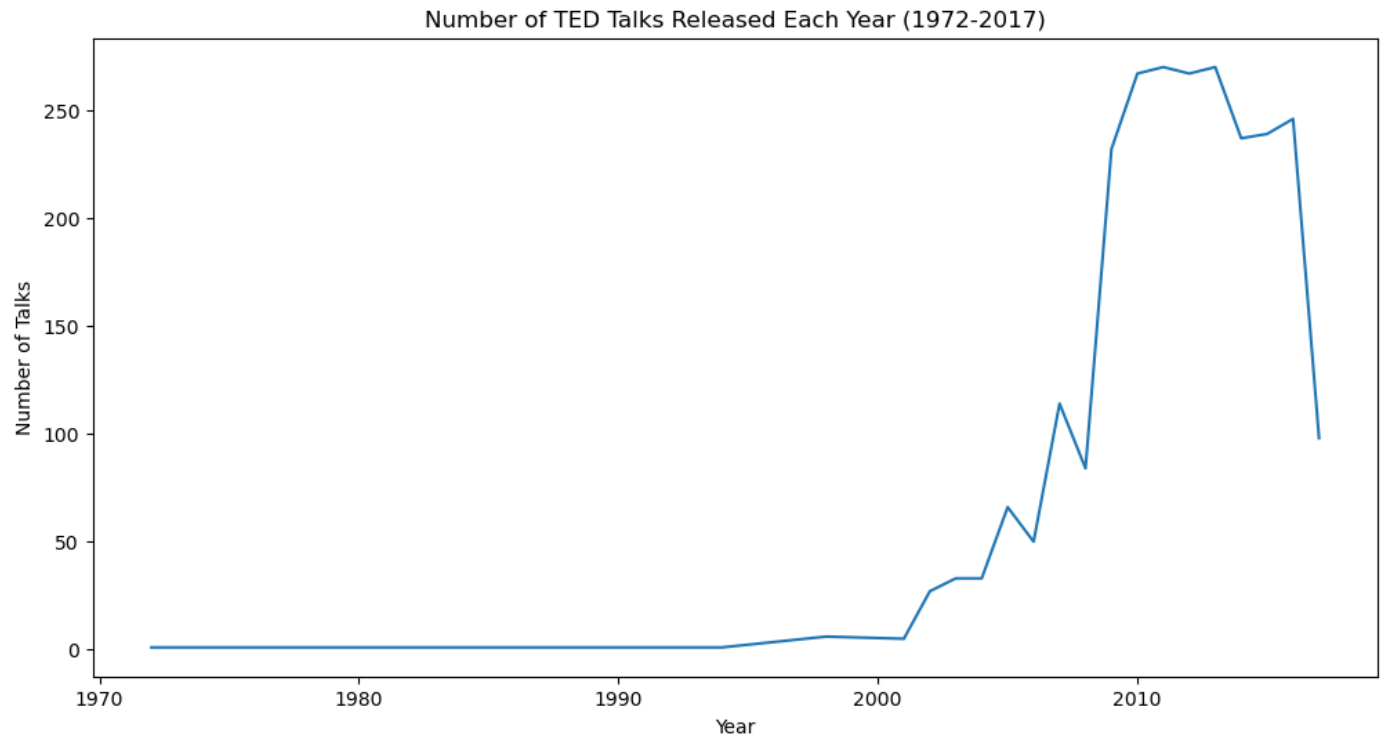
2014    237
2015    239
2016    246
2017     98
Name: count, dtype: int64

```

```

In [29]: # Plotting the number of talks released each year
plt.figure(figsize=(12, 6))
sns.lineplot(x=talks_per_year.index, y=talks_per_year.values)
plt.title('Number of TED Talks Released Each Year (1972-2017)')
plt.xlabel('Year')
plt.ylabel('Number of Talks')
plt.show()

```



```

In [30]: # Seeing number of talks per month
ted['month'] = ted['film_date'].dt.month

talks_per_month = ted.pivot_table(index='year', columns='month', aggfunc='size', fill_va
talks_per_month

```

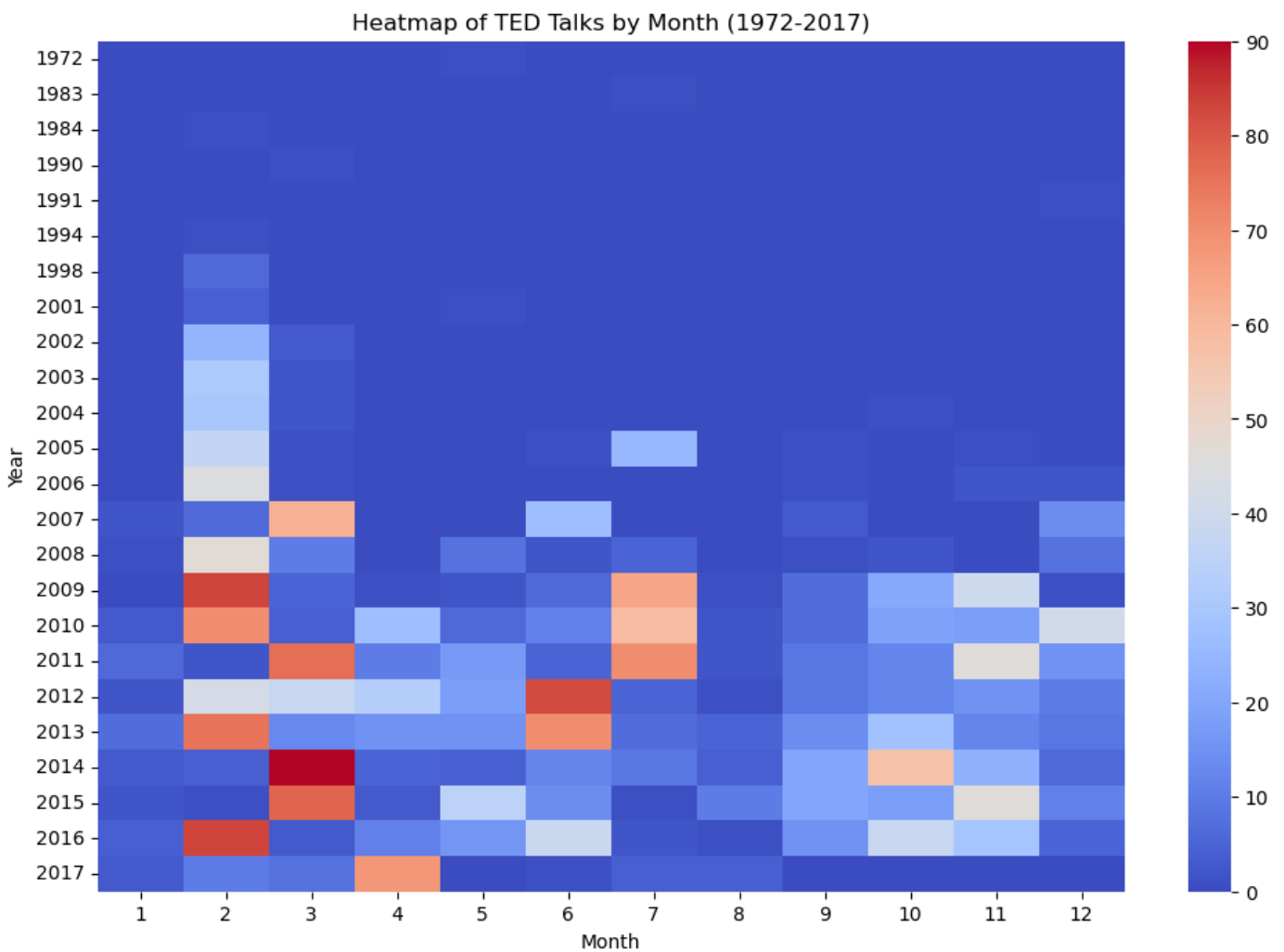
```

Out[30]: month  1   2   3   4   5   6   7   8   9  10  11  12
          year
1972      0   0   0   0   1   0   0   0   0   0   0   0
1983      0   0   0   0   0   0   1   0   0   0   0   0
1984      0   1   0   0   0   0   0   0   0   0   0   0
1990      0   0   1   0   0   0   0   0   0   0   0   0
1991      0   0   0   0   0   0   0   0   0   0   0   1
1994      0   1   0   0   0   0   0   0   0   0   0   0
1998      0   6   0   0   0   0   0   0   0   0   0   0
2001      0   4   0   0   1   0   0   0   0   0   0   0
2002      0  24   3   0   0   0   0   0   0   0   0   0
2003      0  31   2   0   0   0   0   0   0   0   0   0

```

|             |   |    |    |    |    |    |    |    |    |    |    |    |
|-------------|---|----|----|----|----|----|----|----|----|----|----|----|
| <b>2004</b> | 0 | 30 | 2  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  |
| <b>2005</b> | 0 | 37 | 1  | 0  | 0  | 1  | 25 | 0  | 1  | 0  | 1  | 0  |
| <b>2006</b> | 0 | 44 | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 2  | 2  |
| <b>2007</b> | 2 | 6  | 62 | 0  | 0  | 27 | 0  | 0  | 3  | 0  | 0  | 14 |
| <b>2008</b> | 1 | 47 | 10 | 0  | 8  | 2  | 5  | 0  | 1  | 2  | 0  | 8  |
| <b>2009</b> | 0 | 83 | 5  | 1  | 2  | 6  | 65 | 1  | 7  | 21 | 40 | 1  |
| <b>2010</b> | 3 | 70 | 4  | 27 | 6  | 11 | 59 | 2  | 7  | 19 | 18 | 41 |
| <b>2011</b> | 6 | 2  | 76 | 10 | 17 | 5  | 70 | 2  | 9  | 12 | 46 | 15 |
| <b>2012</b> | 2 | 42 | 38 | 33 | 18 | 82 | 5  | 1  | 9  | 12 | 15 | 10 |
| <b>2013</b> | 7 | 75 | 13 | 15 | 15 | 70 | 7  | 5  | 14 | 28 | 12 | 9  |
| <b>2014</b> | 3 | 4  | 90 | 5  | 4  | 12 | 9  | 4  | 20 | 57 | 23 | 6  |
| <b>2015</b> | 2 | 1  | 78 | 3  | 35 | 14 | 1  | 10 | 20 | 18 | 46 | 11 |
| <b>2016</b> | 4 | 83 | 3  | 11 | 16 | 39 | 2  | 1  | 15 | 38 | 29 | 5  |
| <b>2017</b> | 3 | 10 | 8  | 68 | 0  | 1  | 4  | 4  | 0  | 0  | 0  | 0  |

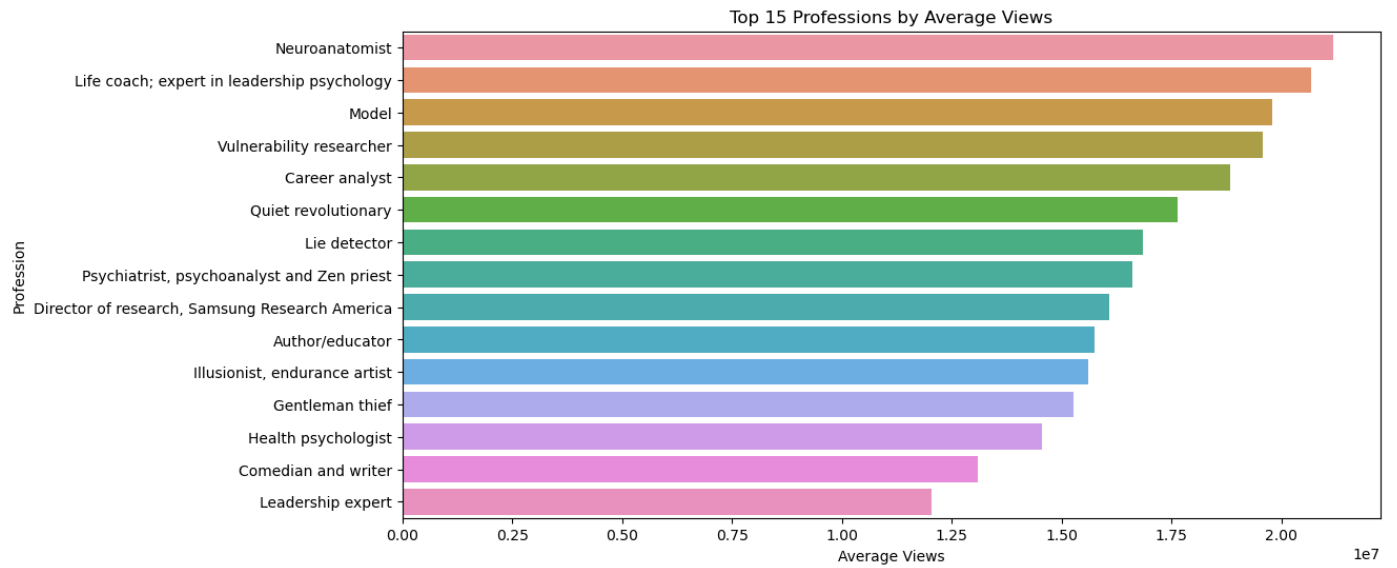
```
In [31]: # Plotting the heatmap of talks per month
plt.figure(figsize=(12, 8))
sns.heatmap(talks_per_month, cmap='coolwarm', annot=False)
plt.title('Heatmap of TED Talks by Month (1972-2017)')
plt.xlabel('Month')
plt.ylabel('Year')
plt.show()
```



```
In [32]: # Calculating which occupation attracts the most views
occupation_views = ted.groupby('speaker_occupation')['views'].mean().sort_values(ascending=False)
occupation_views
```

```
Out[32]: speaker_occupation
Neuroanatomist                21190883.00
Life coach; expert in leadership psychology  20685401.00
Model                          19787465.00
Vulnerability researcher       19578522.00
Career analyst                 18830983.00
Quiet revolutionary            17629275.00
Lie detector                   16861578.00
Psychiatrist, psychoanalyst and Zen priest  16601927.00
Director of research, Samsung Research America  16097077.00
Author/educator                15751570.25
Illusionist, endurance artist  15601385.00
Gentleman thief                15283242.00
Health psychologist            14566463.00
Comedian and writer            13093902.50
Leadership expert              12050941.75
Name: views, dtype: float64
```

```
In [33]: # Plotting the top professions by average views
plt.figure(figsize=(12, 6))
sns.barplot(x=occupation_views.values, y=occupation_views.index)
plt.title('Top 15 Professions by Average Views')
plt.xlabel('Average Views')
plt.ylabel('Profession')
plt.show()
```

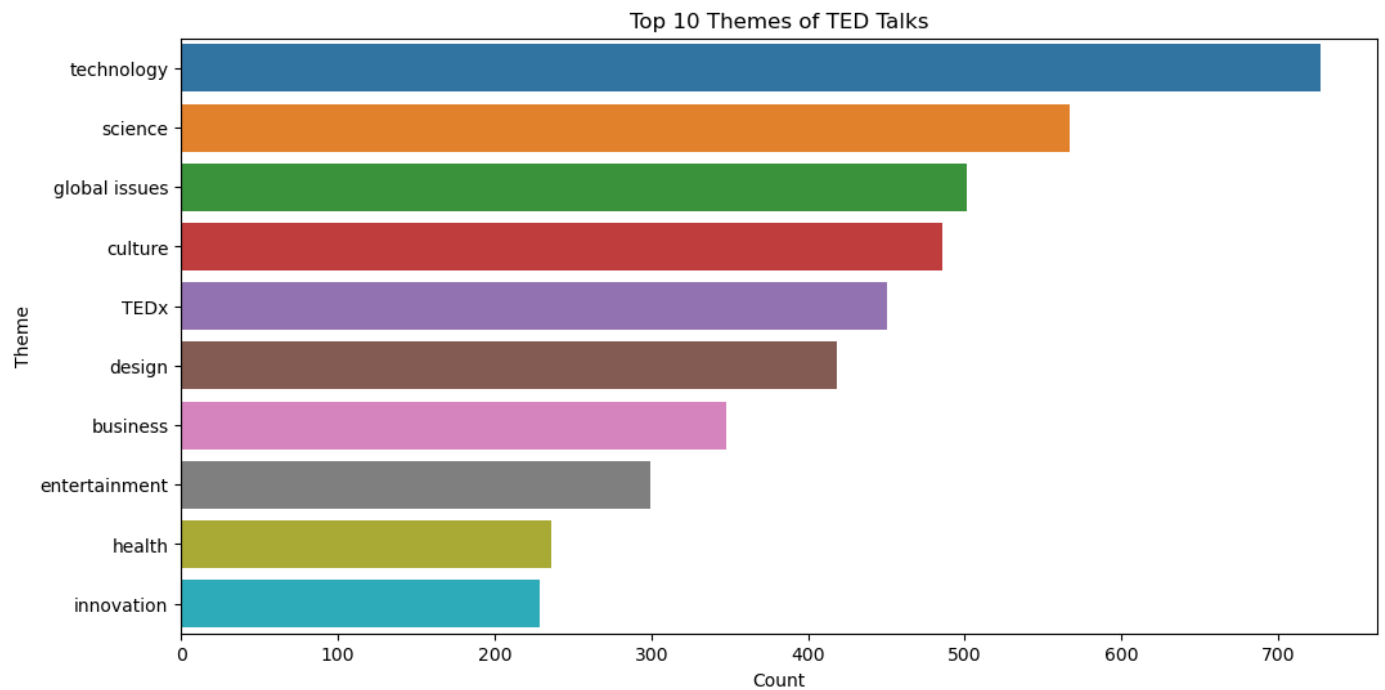


```
In [34]: from collections import Counter

# Counting the most frequent themes
all_tags = ted['tags'].dropna().apply(lambda x: eval(x)).sum()
tag_counts = pd.Series(Counter(all_tags)).sort_values(ascending=False).head(10)
tag_counts
```

```
Out[34]: technology      727
science      567
global issues  501
culture      486
TEDx         450
design        418
business     348
entertainment 299
health       236
innovation   229
dtype: int64
```

```
In [35]: # Plotting the top 10 themes
plt.figure(figsize=(12, 6))
sns.barplot(x=tag_counts.values, y=tag_counts.index)
plt.title('Top 10 Themes of TED Talks')
plt.xlabel('Count')
plt.ylabel('Theme')
plt.show()
```



```
In [36]: # Analyzing trends in the number of talks across top themes over the years

ted['tags'] = ted['tags'].apply(lambda x: eval(x) if isinstance(x, str) else [])

all_tags = ted['tags'].explode().dropna()
tag_counts = all_tags.value_counts().head(10)

theme_trends = ted.explode('tags').groupby(['year', 'tags']).size().unstack().fillna(0)

theme_trends_top = theme_trends[tag_counts.index]
theme_trends_top
```

Out[36]:

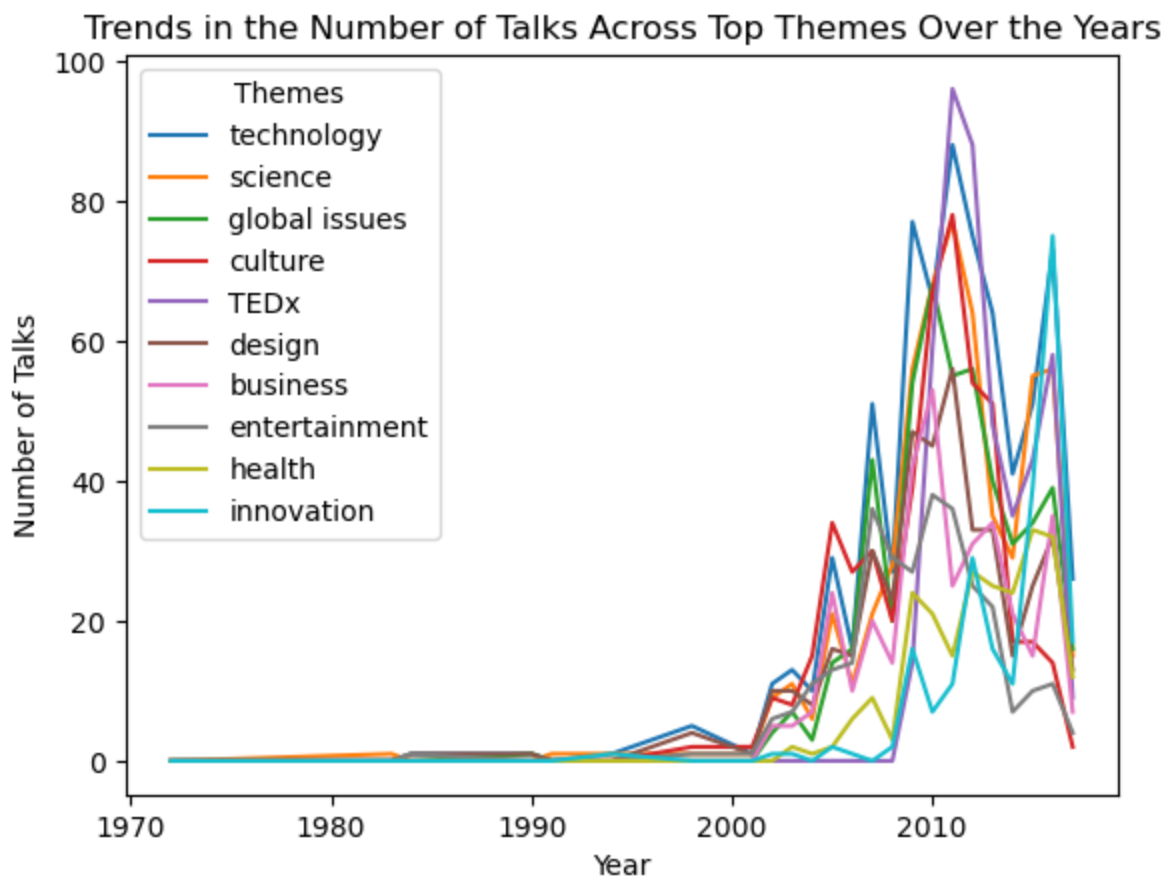
|      | tags | technology | science | global issues | culture | TEDx | design | business | entertainment | health | innovation |
|------|------|------------|---------|---------------|---------|------|--------|----------|---------------|--------|------------|
| year |      |            |         |               |         |      |        |          |               |        |            |
| 1972 |      | 0.0        | 0.0     | 0.0           | 0.0     | 0.0  | 0.0    | 0.0      | 0.0           | 0.0    | 0.0        |
| 1983 |      | 0.0        | 1.0     | 0.0           | 0.0     | 0.0  | 0.0    | 0.0      | 0.0           | 0.0    | 0.0        |
| 1984 |      | 1.0        | 0.0     | 0.0           | 0.0     | 0.0  | 1.0    | 0.0      | 1.0           | 0.0    | 0.0        |
| 1990 |      | 1.0        | 0.0     | 1.0           | 0.0     | 0.0  | 1.0    | 0.0      | 0.0           | 0.0    | 0.0        |
| 1991 |      | 0.0        | 1.0     | 0.0           | 0.0     | 0.0  | 0.0    | 0.0      | 0.0           | 0.0    | 0.0        |
| 1994 |      | 1.0        | 1.0     | 0.0           | 0.0     | 0.0  | 0.0    | 0.0      | 0.0           | 0.0    | 1.0        |
| 1998 |      | 5.0        | 1.0     | 0.0           | 2.0     | 0.0  | 4.0    | 0.0      | 1.0           | 0.0    | 0.0        |
| 2001 |      | 1.0        | 1.0     | 0.0           | 2.0     | 0.0  | 1.0    | 0.0      | 1.0           | 0.0    | 0.0        |
| 2002 |      | 11.0       | 9.0     | 4.0           | 9.0     | 0.0  | 10.0   | 5.0      | 6.0           | 0.0    | 1.0        |
| 2003 |      | 13.0       | 11.0    | 7.0           | 8.0     | 0.0  | 10.0   | 5.0      | 7.0           | 2.0    | 1.0        |
| 2004 |      | 10.0       | 6.0     | 3.0           | 15.0    | 0.0  | 8.0    | 7.0      | 11.0          | 1.0    | 0.0        |
| 2005 |      | 29.0       | 21.0    | 14.0          | 34.0    | 0.0  | 16.0   | 24.0     | 13.0          | 2.0    | 2.0        |
| 2006 |      | 16.0       | 11.0    | 16.0          | 27.0    | 0.0  | 15.0   | 10.0     | 14.0          | 6.0    | 1.0        |
| 2007 |      | 51.0       | 21.0    | 43.0          | 30.0    | 0.0  | 30.0   | 20.0     | 36.0          | 9.0    | 0.0        |



|      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|
| 2008 | 27.0 | 28.0 | 20.0 | 20.0 | 0.0  | 23.0 | 14.0 | 29.0 | 3.0  | 2.0  |
| 2009 | 77.0 | 56.0 | 54.0 | 39.0 | 14.0 | 47.0 | 42.0 | 27.0 | 24.0 | 16.0 |
| 2010 | 66.0 | 68.0 | 68.0 | 67.0 | 59.0 | 45.0 | 53.0 | 38.0 | 21.0 | 7.0  |
| 2011 | 88.0 | 77.0 | 55.0 | 78.0 | 96.0 | 56.0 | 25.0 | 36.0 | 15.0 | 11.0 |
| 2012 | 75.0 | 64.0 | 56.0 | 54.0 | 88.0 | 33.0 | 31.0 | 25.0 | 27.0 | 29.0 |
| 2013 | 64.0 | 35.0 | 40.0 | 51.0 | 48.0 | 33.0 | 34.0 | 22.0 | 25.0 | 16.0 |
| 2014 | 41.0 | 29.0 | 31.0 | 17.0 | 35.0 | 15.0 | 21.0 | 7.0  | 24.0 | 11.0 |
| 2015 | 51.0 | 55.0 | 34.0 | 17.0 | 43.0 | 25.0 | 15.0 | 10.0 | 33.0 | 39.0 |
| 2016 | 73.0 | 56.0 | 39.0 | 14.0 | 58.0 | 32.0 | 35.0 | 11.0 | 32.0 | 75.0 |
| 2017 | 26.0 | 15.0 | 16.0 | 2.0  | 9.0  | 13.0 | 7.0  | 4.0  | 12.0 | 17.0 |

```
In [37]: # Plotting trends for top themes
plt.figure(figsize=(14, 8))
theme_trends_top.plot()
plt.title('Trends in the Number of Talks Across Top Themes Over the Years')
plt.xlabel('Year')
plt.ylabel('Number of Talks')
plt.legend(title='Themes')
plt.show()
```

<Figure size 1400x800 with 0 Axes>



```
In [38]: from wordcloud import WordCloud

# Combining all descriptions into a single text
all_text = ' '.join(ted['description'].dropna().values)
all_text
```

Out[38]: 'Sir Ken Robinson makes an entertaining and profoundly moving case for creating an educa

tion system that nurtures (rather than undermines) creativity. With the same humor and humanity he exuded in "An Inconvenient Truth," Al Gore spells out 15 ways that individuals can address climate change immediately, from buying a hybrid to inventing a new, hotter brand name for global warming. New York Times columnist David Pogue takes aim at technology's worst interface-design offenders, and provides encouraging examples of products that get it right. To funny things up, he bursts into song. In an emotionally charged talk, MacArthur-winning activist Majora Carter details her fight for environmental justice in the South Bronx -- and shows how minority neighborhoods suffer most from flawed urban policy. You've never seen data presented like this. With the drama and urgency of a sportscaster, statistics guru Hans Rosling debunks myths about the so-called "developing world." Tony Robbins discusses the "invisible forces" that motivate everyone's actions -- and high-fives Al Gore in the front row. When two young Mormon missionaries knock on Julia Sweeney's door one day, it touches off a quest to completely rethink her own beliefs, in this excerpt from Sweeney's solo show "Letting Go of God." Architect Joshua Prince-Ramus takes the audience on dazzling, dizzying virtual tours of three recent projects: the Central Library in Seattle, the Museum Plaza in Louisville and the Charles Wyly Theater in Dallas. Philosopher Dan Dennett calls for religion -- all religion -- to be taught in schools, so we can understand its nature as a natural phenomenon. Then he takes on The Purpose-Driven Life, disputing its claim that, to be moral, one must deny evolution. Pastor Rick Warren, author of "The Purpose-Driven Life," reflects on his own crisis of purpose in the wake of his book's wild success. He explains his belief that God's intention is for each of us to use our talents and influence to do good. Accepting his 2006 TED Prize, Cameron Sinclair demonstrates how passionate designers and architects can respond to world housing crises. He unveils his TED Prize wish for a network to improve global living standards through collaborative design. Jehane Noujaim unveils her 2006 TED Prize wish: to bring the world together for one day a year through the power of film. Accepting the 2006 TED Prize, Dr. Larry Brilliant talks about how smallpox was eradicated from the planet, and calls for a new global system that can identify and contain pandemics before they spread. Jeff Han shows off a cheap, scalable multi-touch and pressure-sensitive computer screen interface that may spell the end of point-and-click. Nicholas Negroponte, founder of the MIT Media Laboratory, describes how the One Laptop Per Child project will build and distribute the "\$100 laptop." Violinist Sirena Huang gives a technically brilliant and emotionally nuanced performance. In a charming interlude, the 11-year-old praises the timeless design of her instrument. Pianist and composer Jennifer Lin gives a magical performance, talks about the process of creativity and improvises a moving solo piece based on a random sequence of notes. Fumes from indoor cooking fires kill more than 2 million children a year in the developing world. MIT engineer Amy Smith details an exciting but simple solution: a tool for turning farm waste into clean-burning charcoal. Designer Ross Lovegrove expounds his philosophy of "fat-free" design and offers insight into several of his extraordinary products, including the Ty Nant water bottle and the Go chair. Jimmy Wales recalls how he assembled "a ragtag band of volunteers," gave them tools for collaborating and created Wikipedia, the self-organizing, self-correcting, never-finished online encyclopedia. In 2006, open-learning visionary Richard Baraniuk explains the vision behind Connexions (now called OpenStax), an open-source, online education system. It cuts out the textbook, allowing teachers to share and modify course materials freely, anywhere in the world. Performer and web toymaker Ze Frank delivers a hilarious nerdcore standup routine, then tells us what he's seriously passionate about: helping people create and interact using simple, addictive web tools. The founding mother of the blog revolution, Movable Type's Mena Trott, talks about the early days of blogging, when she realized that giving regular people the power to share our lives online is the key to building a friendlier, more connected world. Anthropologist Helen Fisher takes on a tricky topic -- love -- and explains its evolution, its biochemical foundations and its social importance. She closes with a warning about the potential disaster inherent in antidepressant abuse. Eve Ensler, creator of "The Vagina Monologues," shares how a discussion about menopause with her friends led to talking about all sorts of sexual acts onstage, waging a global campaign to end violence toward women and finding her own happiness. Legendary scientist David Deutsch puts theoretical physics on the back burner to discuss a more urgent matter: the survival of our species. The first step toward solving global warming, he says, is to admit that we have a problem. Biologist Richard Dawkins makes a case for "thinking the improbable" by looking at how the human frame of reference limits our understanding of the universe. "Freakonomics" author Steven Levitt presents new data on the finances of drug dealing. Contrary to popular myth, he says, being a street-corner crack dealer isn't lucrative: It pays below minimum wage. And your boss can kill you. "Tipping Point" author Malcolm Gladwell gets inside the food industry's pursuit of the perfect spaghetti sauce -- and makes a larger argument about the nature of choice and happiness. Dan Gilbert, author of "Stumbling on Happiness," challenges the idea t

we'll be miserable if we don't get what we want." Our "psychological immune system" lets us feel truly happy even when things don't go as planned. Psychologist Barry Schwartz takes aim at a central tenet of western societies: freedom of choice. In Schwartz's estimation, choice has made us not freer but more paralyzed, not happier but more dissatisfied. Eva Vertes -- only 19 when she gave this talk -- discusses her journey toward studying medicine and her drive to understand the roots of cancer and Alzheimer's. Cambridge researcher Aubrey de Grey argues that aging is merely a disease -- and a curable one at that. Humans age in seven basic ways, he says, all of which can be averted. Iqbal Quadir tells how his experiences as a kid in poor Bangladesh, and later as a banker in New York, led him to start a mobile phone operator connecting 80 million rural Bangladeshi -- and to become a champion of bottom-up development. Jacqueline Novogratz applauds the world's heightened interest in Africa and poverty, but argues persuasively for a new approach. A free press -- papers, magazines, radio, TV, blogs -- is the backbone of any true democracy (and a vital watchdog on business). Sasa Vucinic, a journalist from Belgrade, talks about his new fund, which supports media by selling "free press bonds." Ashraf Ghani's passionate and powerful 10-minute talk, emphasizing the necessity of both economic investment and design ingenuity to rebuild broken states, is followed by a conversation with TED curator Chris Anderson on the future of Afghanistan. In this passionate talk, legendary spacecraft designer Burt Rutan lambasts the US government-funded space program for stagnating and asks entrepreneurs to pick up where NASA has left off. Arctic explorer Ben Saunders recounts his harrowing solo ski trek to the North Pole, complete with engaging anecdotes, gorgeous photos and never-before-seen video. Musician and activist Bono accepts the 2005 TED Prize with a riveting talk, arguing that aid to Africa isn't just another celebrity cause; it's a global emergency. Accepting his 2005 TED Prize, photographer Edward Burtynsky makes a wish: that his images -- stunning landscapes that document humanity's impact on the world -- help persuade millions to join a global conversation on sustainability. Accepting his 2005 TED Prize, inventor Robert Fischell makes three wishes: redesigning a portable device that treats migraines, finding new cures for clinical depression and reforming the medical malpractice system. Oxford mathematician Peter Donnelly reveals the common mistakes humans make in interpreting statistics -- and the devastating impact these errors can have on the outcome of criminal trials. Why do people see the Virgin Mary on a cheese sandwich or hear demonic lyrics in "Stairway to Heaven"? Using video and music, skeptic Michael Shermer shows how we convince ourselves to believe -- and overlook the facts. Inventor, entrepreneur and visionary Ray Kurzweil explains in abundant, grounded detail why, by the 2020s, we will have reverse-engineered the human brain and nanobots will be operating your consciousness. Tech enthusiast Kevin Kelly asks "What does technology want?" and discovers that its movement toward ubiquity and complexity is much like the evolution of life. Musician and activist Peter Gabriel shares his very personal motivation for standing up for human rights with the watchdog group WITNESS -- and tells stories of citizen journalists in action. Why do people succeed? Is it because they're smart? Or are they just lucky? Neither. Analyst Richard St. John condenses years of interviews into an unmissable 3-minute slideshow on the real secrets of success. How many poets could cram eBay, Friendster and Monster.com into 3-minute poem worthy of a standing ovation? Enjoy Rives' unique talent. Forget the latest disease in the news: Cardiovascular disease kills more people than everything else combined -- and it's mostly preventable. Dr. Dean Ornish explains how changing our eating habits can save lives. Robert Neuwirth, author of "Shadow Cities," finds the world's squatter sites -- where a billion people now make their homes -- to be thriving centers of ingenuity and innovation. He takes us on a tour. Given \$50 billion to spend, which would you solve first, AIDS or global warming? Danish political scientist Bjorn Lomborg comes up with surprising answers. With stunning photos and stories, National Geographic Explorer Wade Davis celebrates the extraordinary diversity of the world's indigenous cultures, which are disappearing from the planet at an alarming rate. Photographer Phil Borges shows rarely seen images of people from the mountains of Dharamsala, India, and the jungles of the Ecuadorian Amazon. In documenting these endangered cultures, he intends to help preserve them. Speaking as both an astronomer and "a concerned member of the human race," Sir Martin Rees examines our planet and its future from a cosmic perspective. He urges action to prevent dark consequences from our scientific and technological development. Author Robert Wright explains "non-zero-sumness" -- the network of linked fortunes and cooperation that has guided our evolution to this point -- and how we can use it to help save humanity today. Author Steven Johnson takes us on a 10-minute tour of *The Ghost Map*, his book about a cholera outbreak in 1854 London and the impact it had on science, cities and modern society. In this deceptively casual talk, Charles Leadbeater weaves a tight argument that innovation isn't just for professionals anymore. Passionate amateurs, using new tools, are creating products and paradigms that companies can't. Two Pilobolus dancers perform "Symbiosis." Does it trace the birth of a relationship? Or the co-evolution of

symbolic species: Music: "God Music," George Crumb; "Fratres," Arvo Part; "Al most a Tango," Thomas Oboe Lee. Writer and actor Anna Deavere Smith gives life to author Studs Terkel, convict Paulette Jenkins, a Korean shopkeeper and a bull rider, excerpts from her solo show "On the Road: A Search for American Character." Inventor and MacArthur fellow Saul Griffith shares some innovative ideas from his lab -- from "smart rope" to a house-sized kite for towing large loads. MIT professor Neil Gershenfeld talks about his Fab Lab -- a low-cost lab that lets people build things they need using digital and analog tools. It's a simple idea with powerful results. Journalist Carl Honore believes the Western world's emphasis on speed erodes health, productivity and quality of life. But there's a backlash brewing, as everyday people start putting the brakes on their all-to-modern lives. Accepting the 2007 TED Prize, Bill Clinton asks for help in bringing health care to Rwanda -- and the rest of the world. As E.O. Wilson accepts his 2007 TED Prize, he makes a plea on behalf of all creatures that we learn more about our biosphere -- and build a networked encyclopedia of all the world's knowledge about life. Accepting his 2007 TED Prize, war photographer James Nachtwey shows his life's work and asks TED to help him continue telling the story with innovative, exciting uses of news photography in the digital era. Jane Goodall hasn't found the missing link, but she's come closer than nearly anyone else. The primatologist says the only real difference between humans and chimps is our sophisticated language. She urges us to start using it to change the world. In a world of too many options and too little time, our obvious choice is to just ignore the ordinary stuff. Marketing guru Seth Godin spells out why, when it comes to getting our attention, bad or bizarre ideas are more successful than boring ones. Nobel laureate James Watson opens TED2005 with the frank and funny story of how he and his research partner, Francis Crick, discovered the structure of DNA. Al Seckel, a cognitive neuroscientist, explores the perceptual illusions that fool our brains. Loads of eye tricks help him prove that not only are we easily fooled, we kind of like it. Inventor Dean Kamen lays out his argument for the Segway and offers a peek into his next big ideas (portable energy and water purification for developing countries). Scientific discoveries, futurist Juan Enriquez notes, demand a shift in code, and our ability to thrive depends on our mastery of that code. Here, he applies this notion to the field of genomics. Graphic designer Stefan Sagmeister takes the audience on a whimsical journey through moments of his life that made him happy -- and notes how many of these moments have to do with good design. Worldchanging.com founder Alex Steffen argues that reducing humanity's ecological footprint is incredibly vital now, as the western consumer lifestyle spreads to developing countries. Architect Thom Mayne has never been one to take the easy option, and this whistle-stop tour of the buildings he's created makes you glad for it. These are big ideas cast in material form. American designer Chris Bangle explains his philosophy that car design is an art form in its own right, with an entertaining -- and ultimately moving -- account of the BMW Group's Deep Blue project, intended to create the SUV of the future. Nora York gives a stunning performance of her song "What I Want," with Jamie Lawrence (keyboards), Steve Tarshis (guitar) and Arthur Kell (bass). Showing a series of inspiring, unusual and playful products, British branding and design guru Paul Bennett explains that design doesn't have to be about grand gestures, but can solve small, universal and overlooked problems. Vik Muniz makes art from pretty much anything, be it shredded paper, wire, clouds or diamonds. Here he describes the thinking behind his work and takes us on a tour of his incredible images. Oxford philosopher and transhumanist Nick Bostrom examines the future of humankind and asks whether we might alter the fundamental nature of humanity to solve our most intrinsic problems. In this inspiring talk about recent developments in biomimicry, Janine Benyus provides heartening examples of ways in which nature is already influencing the products and systems we build. Genomics pioneer Craig Venter takes a break from his epic round-the-world expedition to talk about the millions of genes his team has discovered so far in its quest to map the ocean's biodiversity. Engineer and artist Golan Levin pushes the boundaries of what's possible with audiovisuals and technology. In an amazing TED display, he shows two programs he wrote to perform his original compositions. Savage-Rumbaugh's work with bonobo apes, which can understand spoken language and learn tasks by watching, forces the audience to rethink how much of what a species can do is determined by biology -- and how much by cultural exposure. In this stunning slideshow, celebrated nature photographer Frans Lanting presents The LIFE Project, a poetic collection of photographs that tell the story of our planet, from its eruptive beginnings to its present diversity. Soundtrack by Philip Glass. Biologist Sheila Patek talks about her work measuring the feeding strike of the mantis shrimp, one of the fastest movements in the animal world, using video cameras recording at 20,000 frames per second. A happy song about global warming, from Jill Sobule. Caroline Lavelle plays the cello like a sorceress casting a spell, occasionally hiding behind her wild mane of blond hair as she sings of pastoral themes. She performs "Farther than the Sun," backed by Thomas Dolby on keyboards. Philosopher Dan Dennett makes a compelling argument that

not only don't understand our own consciousness, but that half the time our brains are actively fooling us. In this soaring demonstration, deaf percussionist Evelyn Glennie illustrates how listening to music involves much more than simply letting sound waves hit your eardrums. Green-minded architect and designer William McDonough asks what our buildings and products would look like if designers took into account "all children, all species, for all time." The dot-com boom and bust is often compared to the Gold Rush. But Amazon.com founder Jeff Bezos says it's more like the early days of the electric industry. Rives recaps the most memorable moments of TED2006 in the free-spirited rhyming verse of a fantastical mockingbird lullaby. Singer/songwriter Eddi Reader performs "Kiteflyer 's Hill," a tender look back at a lost love. With Thomas Dolby on piano. Singer/songwriter Eddi Reader performs "What You Do With What You've Got," a meditation on a very TED theme: how to use your gifts and talents to make a difference. With Thomas Dolby on piano. In the days following the tragic South Asian tsunami of 2004, the Rev. Tom Honey pondered the question, "How could a loving God have done this?" Here is his answer. Richard Dawkins urges all atheists to openly state their position -- and to fight the incursion of the church into politics and science. A fiery, funny, powerful talk. Satirist Tom Rilly delivers a wicked parody of the 2006 TED conference, taking down the \$100 laptop, the plight of the polar bear, and people who mention, one too many times, that they work at Harvard. Watch for a special moment between Tom and Al Gore. Featuring the vocals and mischievous bell-playing of accordionist and singer Rachelle Garniez, the TED House Band -- led by Thomas Dolby on keyboard -- delivers this delightful rendition of the Edith Piaf standard "La Vie en Rose." Chris Anderson, then the editor of Wired, explores the four key stages of any viable technology: setting the right price, gaining market share, displacing an established technology and, finally, becoming ubiquitous. Violinist Natalie MacMaster and TED Musical Director Thomas Dolby play Dolby's original song "Blue Is a River" in this ethereal duet -- with a little dancing. Google co-founders Larry Page and Sergey Brin offer a peek inside the Google machine, sharing tidbits about international search patterns, the philanthropic Google Foundation, and the company's dedication to innovation and employee happiness. What happens when a black man visits Aspen? Singer/songwriter Stew and his band are about to let you know. In James Howard Kunstler's view, public spaces should be inspired centers of civic life and the physical manifestation of the common good. Instead, he argues, what we have in America is a nation of places not worth caring about. IDEO's David Kelley says that product design has become much less about the hardware and more about the user experience. He shows video of this new, broader approach, including footage from the Prada store in New York. Rural villages worldwide are being deserted, as billions of people flock to cities to live in teeming squatter camps and slums. Stewart Brand says this is a good thing. Why? It'll take you 3 minutes to find out. Treo creator Jeff Hawkins urges us to take a new look at the brain -- to see it not as a fast processor, but as a memory system that stores and plays back experiences to help us predict, intelligently, what will happen next. Marine biologist Tierney Thys asks us to step into the water to visit the world of the Mola mola, or giant ocean sunfish. Basking, eating jellyfish and getting massages, this behemoth offers clues to life in the open sea. Blaise Aguera y Arcas leads a dazzling demo of Photosynth, software that could transform the way we look at digital images. Using still photos culled from the Web, Photosynth builds breathtaking dreamscapes and lets us navigate them. "I don't think we're going to make it," John Doerr says in an emotional talk about climate change and investment. To create a world fit for his daughter to live in, he says, we need to invest now in clean, green energy. We know the negative images of Africa -- famine and disease, conflict and corruption. But, says Ngozi Okonjo-Iweala, there's another, less-told story happening in many African nations: one of reform, economic growth and business opportunity. Anand Agarawala presents BumpTop, a user interface that takes the usual desktop metaphor to a glorious, 3-D extreme, transforming file navigation into a free-wheeling playground of crumpled documents and clipping-covered "walls." In our hyperlinked world, we can know anything, anytime. And this mass enlightenment, says Buddhist scholar Bob Thurman, is our first step toward Buddha nature. In this emotionally charged conversation with journalist Kurt Andersen, designer David Rockwell discusses the process of building a viewing platform at Ground Zero shortly after 9/11. In this bracingly honest talk, international security strategist Thomas Barnett outlines a post-Cold War solution for the foundering U.S. military that is both sensible and breathtaking in its simplicity: Break it in two. The avant-garde string quartet Ethel performs the third movement from Phil Kline's four-part suite "The Blue Room and Other Stories." Searching melodic lines show off the deep, emotional musicality of these passionate players. Microsoft's Stephen Lawler gives a whirlwind tour of Virtual Earth, moving up, down and through its hyper-real cityscapes with dazzlingly fluidity, a remarkable feat that requires staggering amounts of data to bring into focus. Researcher Hans Rosling uses his cool data tools to show how countries are pulling themselves out of poverty. He demos Dollar Stre

real ly amazing. Bill Stone, a maverick cave explorer who has plumbed Earth's deepest abysses, discusses his efforts to mine lunar ice for space fuel and to build an autonomous robot for studying Jupiter's moon Europa. Starting with the simple tale of an ant, philosopher Dan Dennett unleashes a devastating salvo of ideas, making a powerful case for the existence of memes -- concepts that are literally alive. Alan Russell studies regenerative medicine -- a breakthrough way of thinking about disease and injury, using a process that can signal the body to rebuild itself. Jonathan Harris wants to make sense of the emotional world of the Web. With deep compassion for the human condition, his projects troll the Internet to find out what we're all feeling and looking for. Emily Oster re-examines the stats on AIDS in Africa from an economic perspective and reaches a stunning conclusion: Everything we know about the spread of HIV on the continent is wrong. In a friendly, high-speed presentation, Will Wright demos his newest game, Spore, which promises to dazzle users even more than his previous masterpieces. Poet Rives does 8 minutes of lyrical origami, folding history into a series of coincidences surrounding that most surreal of hours, 4 o'clock in the morning. Medical animator David Bolinsky presents 3 minutes of stunning animation that show the bustling life inside a cell. When Allison Hunt found out that she needed a new hip -- and that Canada's national health care system would require her to spend nearly 2 years on a waiting list (and in pain) -- she took matters into her own hands. Ghanaian economist George Ayittey unleashes a torrent of controlled anger toward corrupt leaders in Africa -- and calls on the "Cheetah generation" to take back the continent. Ngozi Okonjo-Iweala, the former finance minister of Nigeria, sums up four days of intense discussion on aid versus trade on the closing day of TEDGlobal 2007, and shares a personal story explaining her own commitment to this cause. When he was just 14 years old, Malawian inventor William Kamkwamba built his family an electricity-generating windmill from spare parts, working from rough plans he found in a library book. South African investment banker Euvin Naidoo explains why investing in Africa can make great business sense. A liberal arts education is critical to forming true leaders, says university head Patrick Awuah -- because it builds decision-making skills, an ethical framework and a broad vision. Awuah himself left a career at Microsoft in the US to found a liberal arts school in Africa: Ashesi University, in his home nation of Ghana. A passionate talk about dreaming, doing and leading. In this deeply personal talk, Nigerian writer Chris Abani says that "what we know about how to be who we are" comes from stories. He searches for the heart of Africa through its poems and narrative, including his own. Jacqueline Novogratz shares stories of how "patient capital" can bring sustainable jobs, goods, services -- and dignity -- to the world's poorest. South African singer-songwriter Vusi Mahlasela dedicates his song, "Thula Mama," to all women -- and especially his grandmother. After Vusi Mahlasela's 3-song set at TEDGlobal, the audience wouldn't let him go. His encore, "Woza," showcases his brilliant guitar playing and multilingual lyrics. Film producer Jeff Skoll (An Inconvenient Truth) talks about his film company, Participant Productions, and the people who've inspired him to do good. Inventor Dean Kamen previews the prosthetic arm he's developing at the request of the US Department of Defense. His quiet commitment to using technology to solve problems -- while honoring the human spirit -- has never been more clear. Is the beloved paper dictionary doomed to extinction? In this infectiously exuberant talk, leading lexicographer Erin McKean looks at the many ways today's print dictionary is poised for transformation. In this provocative talk, journalist Andrew Mwenda asks us to reframe the "African question" -- to look beyond the media's stories of poverty, civil war and helplessness and see the opportunities for creating wealth and happiness throughout the continent. Artist Theo Janse n demonstrates the amazingly lifelike kinetic sculptures he builds from plastic tubes and lemonade bottles. His creatures are designed to move -- and even survive -- on their own. In an exclusive preview of his book *The Stuff of Thought*, Steven Pinker looks at language and how it expresses what goes on in our minds -- and how the words we choose communicate much more than we realize. Steven Pinker charts the decline of violence from Biblical times to the present, and argues that, though it may seem illogical and even obscene, given Iraq and Darfur, we are living in the most peaceful time in our species' existence. Filmmaker Deborah Scranton talks about and shows clips from her documentary *The War Tapes*, which puts cameras in the hands of soldiers fighting in Iraq. Paleoanthropologist Zeresenay Alemseged looks for the roots of humanity in Ethiopia's badlands. Here he talks about finding the oldest skeleton of a humanoid child -- and how Africa holds the clues to our humanity. The MIT Media Lab's John Maeda lives at the intersection of technology and art, a place that can get very complicated. Here he talks about paring down to basics. How might the human race end? Stephen Petranek lays out 10 terrible options and the science behind them. Will we be wiped out by an asteroid? Eco-collapse? How about a particle collider gone wild? Paul MacCready -- aircraft designer, environmentalist, and lifelong lover of flight -- talks about his long career. Planetary scientist

Carolyn Porco shows images of Cassini's voyage to Saturn, focusing on its largest moons, Titan, and on frozen Enceladus, which seems to shoot jets of ice. Kenichi Ebina moves his body in a manner that appears to defy the limits imposed by the human skeleton. He combines breakdancing and hip-hop with mime using movements that are simultaneously precise and fluid. Richard Branson talks to TED's Chris Anderson about the ups and the downs of his career, from his multibillionaire success to his multiple near-death experiences -- and reveals some of his (very surprising) motivations. Hod Lipson demonstrates a few of his cool little robots, which have the ability to learn, understand themselves and even self-replicate. Author and illustrator Maira Kalman talks about her life and work, from her covers for The New Yorker to her books for children and grown-ups. She is as wonderful, as wise and as deliciously off-kilter in person as she is on paper. Nokia researcher Jan Chipchase's investigation into the ways we interact with technology has led him from the villages of Uganda to the insides of our pockets. He's made some unexpected discoveries along the way. Vilayanur Ramachandran tells us what brain damage can reveal about the connection between cerebral tissue and the mind, using three startling delusions as examples. Economist Eleni Gabre-Madhin outlines her ambitious vision to found the first commodities market in Ethiopia. Her plan would create wealth, minimize risk for farmers and turn the world's largest recipient of food aid into a regional food basket. Surgeon and author Sherwin Nuland discusses the development of electroshock therapy as a cure for severe, life-threatening depression -- including his own. It's a moving and heartfelt talk about relief, redemption and second chances. What is happiness, and how can we all get some? Biochemist turned Buddhist monk Matthieu Ricard says we can train our minds in habits of well-being, to generate a true sense of serenity and fulfillment. Lawrence Lessig, the Net's most celebrated lawyer, cites John Philip Sousa, celestial copyrights and the "ASCAP cartel" in his argument for reviving our creative culture. Paul Rothmund writes code that causes DNA to arrange itself into a star, a smiley face and more. Sure, it's a stunt, but it's also a demonstration of self-assembly at the smallest of scales -- with vast implications for the future of making things. Environmental scientist David Keith proposes a cheap, effective, shocking means to address climate change: What if we injected a huge cloud of ash into the atmosphere to deflect sunlight and heat? Juan Enriquez challenges our definition of bioenergy. Oil, coal, gas and other hydrocarbons are not chemical but biological products, based on plant matter -- and thus, growable. Our whole approach to fuel, he argues, needs to change. We've known about global warming for 50 years and done little about it, says Google.org director Larry Brilliant. In spite of this and other depressing trends, he's optimistic and tells us why. From Skoll World Forum, Oxford, UK, [www.skollfoundation.org](http://www.skollfoundation.org) Biologist Robert Full shares slo-mo video of some captivating critters. Take a closer look at the spiny legs that allow cockroaches to scuttle across mesh and the nanobristle-packed feet that let geckos to run straight up walls. 'I am a mathematician, and I would like to stand on your roof.' That is how Ron Eglash greeted many African families he met while researching the fractal patterns he'd noticed in villages across the continent. Designer Philippe Starck -- with no pretty slides to show -- spends 18 minutes reaching for the very roots of the question "Why design?" Listen carefully for one perfect mantra for all of us, genius or not. Armed with a sense of humor and laypeople's terms, Nobel winner Murray Gell-Mann drops some knowledge on TEDsters about particle physics, asking questions like, Are elegant equations more likely to be right than inelegant ones? In this energizing talk, Amory Lovins lays out his simple plan for weaning the US off oil and revitalizing the economy. In a lively show, mathematician Arthur Benjamin races a team of calculators to figure out 3-digit squares, solves another massive mental equation and guesses a few birthdays. How does he do it? He'll tell you. Daniel Goleman, author of "Emotional Intelligence," asks why we aren't more compassionate more of the time. Lakshmi Pratury remembers the lost art of letter-writing and shares a series of notes her father wrote to her before he died. Her short but heartfelt talk may inspire you to set pen to paper, too. At TED U, Gever Tulley, founder of the Tinkering School, spells out 5 dangerous things you should let your kids do -- and why a little danger is good for both kids and grownups. Author and activist Isabel Allende discusses women, creativity, the definition of feminism -- and, of course, passion -- in this talk. Investor and prankster Yossi Vardi delivers a ballsy lecture on the dangers of blogging. Specifically, for men. Deborah Gordon studies ant colonies in the Arizona desert to understand their complex social system. She asks: How do these chitinous creatures get down to business -- and even multitask when they need to -- with no language, memory or visible leadership? Her answers could lead to a better understanding of all complex systems, from the brain to the Web. Thanks, ants. J.J. Abrams traces his love for the unseen mystery -- a passion that's evident in his films and TV shows, including Lost, Star Trek and the upcoming Star Wars VII -- back to its magical beginnings. David Gallo shows jaw-dropping footage of amazing sea creatures, including a color-shifting cuttlefish, a perfectly camouflaged octopus, and a Times S

square\'s worth of neon light from fish in the blackest depths of the ocean. This short talk celebrates the pioneering work of ocean explorers like Edith Widder and Roger Hanlon. Paola Antonelli, design curator at New York\'s Museum of Modern Art, wants to spread her appreciation of design -- in all shapes and forms -- around the world. In a wildly entertaining discussion with Richard Saul Wurman, architect Frank Gehry gives TEDsters his take on the power of failure, his recent buildings, and the all-important "Then what?" factor. Singer/guitarist Raúl Midón performs "All the Answers" in a world premiere at TED2007, followed by the sprightly "Tembererana." Bill Strickland tells a quiet and astonishing tale of redemption through arts, music, and unlikely partnerships. Wofford College president Bernie Dunlap tells the story of Sandor Teszler, a Hungarian Holocaust survivor who taught him about passionate living and lifelong learning. New York Times tech columnist David Pogue performs a satirical mini-medley about iTunes and the downloading wars, borrowing a few notes from Sonny and Cher and the Village People. By making photographs that seem to show our favorite celebs (Diana, Elton John) doing what we really, secretly, want to see them doing, Alison Jackson explores our desire to get personal with celebs. Contains graphic images. Chris Anderson gave this talk in 2002, prior to taking over leadership of TED. Co-founder Richard Saul Wurman was leaving, and TED\'s future was in the balance. He seeks to persuade TEDsters that what was then a for-profit conference had a secure future as an idea-based nonprofit endeavor. Robin Chase founded Zipcar, the world\'s biggest car-sharing business. That was one of her smaller ideas. Here she travels much farther, contemplating road-pricing schemes that will shake up our driving habits and a mesh network vast as the Interstate. Jaime Lerner reinvented urban space in his native Curitiba, Brazil. Along the way, he changed the way city planners worldwide see what\'s possible in the metropolitan landscape. David Macaulay relives the winding and sometimes surreal journey toward the completion of Rome Antics, his illustrated homage to the historic city. What if human consciousness isn\'t the end-all and be-all of Darwinism? What if we are all just pawns in corn\'s clever strategy game to rule the Earth? Author Michael Pollan asks us to see the world from a plant\'s-eye view. Howard Rheingold talks about the coming world of collaboration, participatory media and collective action -- and how Wikipedia is really an outgrowth of our natural human instinct to work as a group. Virtuoso Pamela Kurstin performs and discusses her theremin, the not-just-for-sci-fi electronic instrument that is played without being touched. Songs include "Autumn Leaves," "Lush Life" and David Mash\'s "Listen, Words Are Gone." Author George Dyson spins the story of Project Orion, a massive, nuclear-powered spacecraft that could have taken us to Saturn in five years. His insider\'s perspective and a secret cache of documents bring an Atomic Age dream to life. Looking back over his long career, architect Moshe Safdie delves into four of his design projects and explains how he labored to make each one truly unique for its site and its users. Two TED favorites, Jill Sobule and Julia Sweeney, team up for a delightful set that mixes witty songwriting with a little bit of social commentary. Illustrious jugglers the Raspyini Brothers show off their uncanny balance, agility, coordination and willingness to sacrifice (others). Now, if you\'ll just stand completely still... Joseph Lekuton, a member of parliament in Kenya, starts with the story of his remarkable education, then offers a parable of how Africa can grow. His message of hope has never been more relevant. Moneyman Steve Jurvetson takes TEDsters inside his awesome hobby -- launching model rockets -- by sharing some gorgeous photos, his infectious glee and just a whiff of danger. Educator Roy Gould and researcher Curtis Wong show a sneak preview of Microsoft\'s WorldWide Telescope, which compiles images from telescopes and satellites to build a comprehensive, interactive view of our universe. With all the intensity and brilliance for which he is known, Alan Kay envisions better techniques for teaching kids by using computers to illustrate experience in ways -- mathematically and scientifically -- that only computers can. "Can we create new life out of our digital universe?" Craig Venter asks. His answer is "yes" -- and pretty soon. He walks through his latest research and promises that we\'ll soon be able to build and boot up a synthetic chromosome. NOTE: This talk was given in 2008, and this field of science has developed quickly since then. Read "Criticisms & updates" below for more details. With surprising accuracy, Nicholas Negroponte predicts what will happen with CD-ROMs, web interfaces, service kiosks, the touchscreen interface of the iPhone and his own One Laptop per Child project. Jill Bolte Taylor got a research opportunity few brain scientists would wish for: She had a massive stroke, and watched as her brain functions -- motion, speech, self-awareness -- shut down one by one. An astonishing story. Before he was a legend, architect Frank Gehry takes a whistlestop tour of his early work, from his house in Venice Beach to the American Center in Paris, which was under construction (and much on his mind) when he gave this talk. Accepting his 2008 TED Prize, author Dave Eggers asks the TED community to personally, creatively engage with local public schools. With spellbinding eagerness, he talks about how his 826 Valencia tutoring center inspired others around the world to open People want to be religious, says scholar



Karen Armstrong; we should argue for a force like the TED community to help build a Charter for Compassion -- to restore the Golden Rule as the central global religious doctrine. Accepting his 2008 TED Prize, physicist Neil Turok speaks out for talented young Africans starved of opportunity: by unlocking and nurturing the continent's creative potential, we can create a change in Africa's future. Architect Norman Foster discusses his own work to show how computers can help architects design buildings that are green, beautiful and "basically pollution-free." From the 2007 DLD Conference, Munich; [www.dld-conference.com](http://www.dld-conference.com) Neuroscientist and inventor Christopher deCharms demonstrates a new way to use fMRI to show brain activity -- thoughts, emotions, pain -- while it is happening. In other words, you can actually see how you feel. Clifford Stoll captivates his audience with a wildly energetic sprinkling of anecdotes, observations, asides -- and even a science experiment. After all, by his own definition, he's a scientist: "Once I do something, I want to do something else." Rokia Traore sings the moving "M'Bifo," accompanied on the n'goni, a lute-like Malian stringed instrument with a soulful timbre. A quietly mesmerizing performance. *Mona Lisa* is one of the best-known faces on the planet. But would you recognize an image of Leonardo da Vinci? Illustrator Siegfried Woldhek uses some thoughtful image-analysis techniques to find what he believes is the true face of Leonardo. Filmmaker David Hoffman shares footage from his feature-length documentary *Sputnik Mania*, which shows how the Soviet Union's launch of Sputnik in 1957 led to both the space race and the arms race -- and jump-started science and math education around the world. What would a music video look like if it were directed by the music, purely as an expression of a great song, rather than driven by a filmmaker's concept? Designer Jakob Trollback shares the results of his experiment in the form. In keeping with the theme of TED2008, professor Stephen Hawking asks some Big Questions about our universe -- How did the universe begin? How did life begin? Are we alone? -- and discusses how we might go about answering them. In this brand-new slideshow (premiering on TED.com), Al Gore presents evidence that the pace of climate change may be even worse than scientists recently predicted. He challenges us to act. Building sophisticated educational tools out of cheap parts, Johnny Lee demos his cool Wii Remote hacks, which turn the \$40 video game controller into a digital whiteboard, a touchscreen and a head-mounted 3-D viewer. Tod Machover of MIT's Media Lab is devoted to extending musical expression to everyone, from virtuosos to amateurs, and in the most diverse forms, from opera to video games. He and composer Dan Ellsey shed light on what's next. Yochai Benkler explains how collaborative projects like Wikipedia and Linux represent the next stage of human organization. Dr. Ernest Madu runs the Heart Institute of the Caribbean in Kingston, Jamaica, where he proves that -- with careful design, smart technical choices, and a true desire to serve -- it's possible to offer world-class healthcare in the developing world. Novelist Amy Tan digs deep into the creative process, looking for hints of how hers evolved. Physicist Brian Greene explains superstring theory, the idea that minuscule strands of energy vibrating in 11 dimensions create every particle and force in the universe. "Rock-star physicist" Brian Cox talks about his work on the Large Hadron Collider at CERN. Discussing the biggest of big science in an engaging, accessible way, Cox brings us along on a tour of the massive project. In a very, very early-morning set, They Might Be Giants rock TED2007, playing "Older," "Bee of the Bird of the Moth," "Asbury Park," "Fingertips," and "The Alphabet of Nations." Plus they take phone calls from the dead. Hector Ruiz, the executive chair of AMD, wants to give Internet access to everyone. In this talk, he shares his extraordinary life story and describes AMD's 50x15 initiative that calls for connecting 50 percent of the world by 2015. Mycologist Paul Stamets lists 6 ways the mycelium fungus can help save the universe: cleaning polluted soil, making insecticides, treating smallpox and even flu viruses. Evolutionary biologist Paul Ewald drags us into the sewer to discuss germs. Why are some more harmful than others? How could we make the harmful ones benign? Searching for answers, he examines a disgusting, fascinating case: diarrhea. Michael Moschen puts on a quietly mesmerizing show of juggling. Don't think juggling is an art? You might just change your mind after watching Moschen in motion. Hacker and writer Joshua Klein is fascinated by crows. (Notice the gleam of intelligence in their little black eyes?) After a long amateur study of corvid behavior, he's come up with an elegant thought experiment: a machine that could form a new bond between animal and human. Alisa Miller, head of Public Radio International, talks about why -- though we want to know more about the world than ever -- the media is actually showing us less. Eye-opening stats and graphs. In this fiery and funny talk, New York Times food writer Mark Bittman weighs in on what's wrong with the way we eat now (too much meat, too few plants; too much fast food, too little home cooking), and why it's putting the entire planet at risk. Ocean explorer Robert Ballard takes us on a mindbending trip to hidden worlds underwater, where he and other researchers are finding unexpected life, resources, even new mountains. He makes a case for serious exploration and mapping. Google Ocean, anyone? Designer Yves Behar digs up his creative roots to discuss so

the iconic objects he's created (the Leaf lamp, the Jawbrot headset). Then he turns to the witty, surprising, elegant objects he's working on now -- including the "\$100 laptop." Sculptor and engineer Arthur Ganson talks about his work -- kinetic art that explores deep philosophical ideas and is gee-whiz fun to look at. Dr. Seyi Oyesola takes a searing look at health care in underdeveloped countries. His photo tour of a Nigerian teaching hospital -- all low-tech hacks and donated supplies -- drives home the challenge of doing basic health care there. Around the world right now, one billion people are trapped in poor or failing countries. How can we help them? Economist Paul Collier lays out a bold, compassionate plan for closing the gap between rich and poor. Susan Blackmore studies memes: ideas that replicate themselves from brain to brain like a virus. She makes a bold new argument: Humanity has spawned a new kind of meme, the teme, which spreads itself via technology -- and invents ways to keep itself alive. Nathan Myhrvold talks about a few of his latest fascinations -- animal photography, archeology, BBQ and generally being an eccentric genius multimillionaire. Listen for wild stories from the (some what raunchy) edge of the animal world. Singer-songwriter Rokia Traore performs "Kounandi," a breathtaking song that blends Malian instruments with a modern, heartfelt vocal. Note: This song is not available for download. Anthropologist Wade Davis muses on the worldwide web of belief and ritual that makes us human. He shares breathtaking photos and stories of the Elder Brothers, a group of Sierra Nevada Indians whose spiritual practice holds the world in balance. After speaking at TED2007 on elegance in physics, the amazing Murray Gell-Mann gives a quick overview of another passionate interest: finding the common ancestry of our modern languages. Historian George Dyson tells stories from the birth of the modern computer -- from its 17th-century origins to the hilarious notebooks of some early computer engineers. Artist Chris Jordan shows us an arresting view of what Western culture looks like. His supersized images picture some almost unimaginable statistics -- like the astonishing number of paper cups we use every single day. Dean Ornish shares new research that shows how adopting healthy lifestyle habits can affect a person at a genetic level. For instance, he says, when you live healthier, eat better, exercise, and love more, your brain cells actually increase. Insects and animals have evolved some amazing skills -- but, as Robert Full notes, many animals are actually over-engineered. The trick is to copy only what's necessary. He shows how human engineers can learn from animals' tricks. Adam Grosser talks about a project to build a refrigerator that works without electricity -- to bring the vital tool to villages and clinics worldwide. Tweaking some old technology, he's come up with a system that works. Steven Levitt shares data that shows car seats are no more effective than seatbelts in protecting kids from dying in cars. However, during the question and answer session, he makes one crucial caveat. Benjamin Zander has two infectious passions: classical music, and helping us all realize our untapped love for it -- and by extension, our untapped love for all new possibilities, new experiences, new connections. Nicholas Negroponte talks about how One Laptop per Child is doing, two years in. Speaking at the EG conference while the first XO laptops roll off the production line, he recaps the controversies and recommits to the goals of this far-reaching project. Singer-songwriter Nellie McKay performs the semi-serious song "Clonie" -- about creating the ultimate companion. Composer Sxip Shirey makes music from the simple, dramatic act of breathing -- alone and together. Open your ears to a passionate 3 minutes. X Prize founder Peter Diamandis talks about how he helped Stephen Hawking fulfill his dream of going to space -- by flying together into the upper atmosphere and experiencing weightlessness at zero g. Photographer Rick Smolan tells the unforgettable story of a young Amerasian girl, a fateful photograph, and an adoption saga with a twist. Guitarist and singer Raul Midon plays "Everybody" and "Peace on Earth" during his 2007 set at TED. Botanist Corneille Ewango talks about his work at the Okapi Faunal Reserve in the Congo Basin -- and his heroic work protecting it from poachers, miners and raging civil wars. Torsten Reil talks about how the study of biology can help make natural-looking animated people -- by building a human from the inside out, with bones, muscles and a nervous system. He spoke at TED in 2003; see his work now in GTA4. Nine days before TED2008, filmmaker David Hoffman lost almost everything he owned in a fire that destroyed his home, office and 30 years of passionate collecting. He looks back at a life that's been wiped clean in an instant -- and looks forward. In this prescient 2005 talk, Clay Shirky shows how closed groups and companies will give way to looser networks where small contributors have big roles and fluid cooperation replaces rigid planning. The wonderful Nellie McKay sings "Mother of Pearl" (with the immortal first line "Feminists don't have a sense of humor") and "If I Had You" from her sparkling set at TED2008. Physicist Freeman Dyson suggests that we start looking for life on the moons of Jupiter and out past Neptune, in the Kuiper belt and the Oort cloud. He talks about what such life would be like -- and how we might find it. Why do we crave love so much, even to the point that we would die for it? To learn more about our very real, very physical need for romantic love, Helen Fisher and her research team took MRIs of people in lov

e -- and people who had just been dumped at TED in 1998. Rev. Billy Graham marvels at technology's power to improve lives and change the world -- but says the end of evil, suffering and death will come only after the world accepts Christ. A legendary talk from TED's archives. Author, philosopher, prankster and journalist AJ Jacobs talks about the year he spent living biblically -- following the rules in the Bible as literally as possible. First, Keith Barry shows us how our brains can fool our bodies -- in a trick that works via podcast too. Then he involves the audience in some jaw-dropping (and even a bit dangerous) feats of brain magic. Martin Seligman talks about psychology -- as a field of study and as it works one-on-one with each patient and each practitioner. As it moves beyond a focus on disease, what can modern psychology help us to become? In this short, image-packed talk, Marisa Fick-Jordan talks about how a village of traditional Zulu wire weavers built a worldwide market for their dazzling work. Chris Abani tells stories of people: People standing up to soldiers. People being compassionate. People being human and reclaiming their humanity. It's "ubuntu," he says: the only way for me to be human is for you to reflect my humanity back at me. Louise Leakey asks, "Who are we?" The question takes her to the Rift Valley in Eastern Africa, where she digs for the evolutionary origins of humankind -- and suggests a stunning new vision of our competing ancestors. At the EG conference in December 2007, artist Jonathan Harris discusses his latest projects, which involve collecting stories: his own, strangers', and stories collected from the Internet, including his amazing "We Feel Fine." Reed Kroloff gives us a new lens for judging new architecture: is it modern, or is it romantic? Look for glorious images from two leading practices -- and a blistering critique of the 9/11 planning process. At the 2007 EG conference, Kevin Kelly shares a fun stat: The World Wide Web, as we know it, is only 5,000 days old. Now, Kelly asks, how can we predict what's coming in the next 5,000 days? Researcher Kwabena Boahen is looking for ways to mimic the brain's supercomputing powers in silicon -- because the messy, redundant processes inside our heads actually make for a small, light, superfast computer. Robert Lang is a pioneer of the newest kind of origami -- using math and engineering principles to fold mind-blowingly intricate designs that are beautiful and, sometimes, very useful. After Robert Lang's talk on origami at TED2008, Bruno Bowden stepped onstage with a challenge -- he would fold one of Lang's astonishingly complicated origami figures, blindfolded, in under 2 minutes. He's accompanied by the cellist Rufus Cappadocia. Physicist Patricia Burchat sheds light on two basic ingredients of our universe: dark matter and dark energy. Comprising 96% of the universe between them, they can't be directly measured, but their influence is immense. All humans share some common bits of DNA, passed down to us from our African ancestors. Geneticist Spencer Wells talks about how his Genographic Project will use this shared DNA to figure out how we are -- in all our diversity -- truly connected. The photo director for National Geographic, David Griffin knows the power of photography to connect us to our world. In a talk filled with glorious images, he talks about how we all use photos to tell our stories. Like your uncle at a family party, the ruffled Swedish doctor Lennart Green says, "Pick a card, any card." But what he does with those cards is pure magic -- flabbergasting, lightning-fast, how-does-he-do-it? magic. Speaking at the 2007 EG conference, trainer Ian Dunbar asks us to see the world through the eyes of our beloved dogs. By knowing our pets' perspective, we can build their love and trust. It's a message that resonates well beyond the animal world. Animal fan Nellie McKay sings a sparkling tribute to her dear dog. She suggests we all do the same: "Just go right to the pound/ And find yourself a hound/ And make that doggie proud/ 'cause that's what it's all about." Imagine hearing great, departed pianists play again today, just as they would in person. John Q. Walker demonstrates how recordings can be analyzed for precise keystrokes and pedal motions, then played back on computer-controlled grand pianos. Speaking at LIFT 2007, Sugata Mitra talks about his Hole in the Wall project. Young kids in this project figured out how to use a PC on their own -- and then taught other kids. He asks, what else can children teach themselves? Ory Okolloh tells the story of her life and her family -- and how she came to do her heroic work reporting on the doings of Kenya's parliament. This whimsical wrap-up of TED2006 -- presented by Einstein, the African grey parrot, and her trainer, Stephanie White -- simply tickles. Watch for the moment when Einstein has a moment with Al Gore. In 2007, Paul Rothemund gave TED a short summary of his specialty, DNA folding. Now he lays out in clear, abundant detail the immense promise of this field -- to create tiny machines that assemble themselves. Peter Diamandis says it's our moral imperative to keep exploring space -- and he talks about how, with the X Prize and other incentives, we're going to do just that. In this absorbing look at emerging media and tech history, Peter Hirshberg shares some crucial lessons from Silicon Valley and explains why the web is so much more than "better TV." Starting with four basic questions (that you may be surprised to find you can't answer), Jonathan Drori looks at the gaps in our knowledge -- and specifically, what we don't about science that we might think we do. The legendary chimpanzee researcher Jane Goodall tal

about TACARE and her other community projects, which help people in booming African towns live side-by-side with threatened animals. The face of nuclear terror has changed since the Cold War, but disaster-medicine expert Irwin Redlener reminds us the threat is still real. He looks at some of history's farcical countermeasures and offers practical advice on how to survive an attack. Brewster Kahle is building a truly huge digital library -- every book ever published, every movie ever released, all the strata of web history ... It's all free to the public -- unless someone else gets to it first. With vibrant video clips captured by submarines, David Gallo takes us to some of Earth's darkest, most violent, toxic and beautiful habitats, the valleys and volcanic ridges of the oceans' depths, where life is bizarre, resilient and shockingly abundant. Storyteller Carmen Agra Deedy spins a funny, wise and luminous tale of parents and kids, starring her Cuban mother. Settle in and enjoy the ride -- Mama's driving! Keith Bellows gleefully outlines the engineering marvels of the camel, a vital creature he calls "the SUV of the desert." Though he couldn't bring a live camel to TED, he gets his camera crew as close as humanly possible to a one-ton beast in full rut. Speaking at the 2007 EG conference, "renegade lunch lady" Ann Cooper talks about the coming revolution in the way kids eat at school -- local, sustainable, seasonal and even educational food. Psychologist Jonathan Haidt studies the five moral values that form the basis of our political choices, whether we're left, right or center. In this eye-opening talk, he pinpoints the moral values that liberals and conservatives tend to honor most. Playwright Eve Ensler explores our modern craving for security -- and why it makes us less secure. Listen for inspiring, heartbreaking stories of women making change. Thinking startup? David S. Rose's rapid-fire TED U talk on pitching to a venture capitalist tells you the 10 things you need to know about yourself -- and prove to a VC -- before you fire up your slideshow. Listen closely -- Marvin Minsky's arch, eclectic, charmingly offhand talk on health, overpopulation and the human mind is packed with subtlety: wit, wisdom and just an ounce of wily, is-he-joking? advice. Philip Zimbardo knows how easy it is for nice people to turn bad. In this talk, he shares insights and graphic unseen photos from the Abu Ghraib trials. Then he talks about the flip side: how easy it is to be a hero, and how we can rise to the challenge. In this deceptively simple 3-minute talk, Dr. Laura Trice muses on the power of the magic words "thank you" -- to deepen a friendship, to repair a bond, to make sure another person knows what they mean to you. Try it. Pleo the robot dinosaur acts like a living pet -- exploring, cuddling, playing, reacting and learning. Inventor Caleb Chung talks about Pleo and his wild toy career at EG07, on the week that Pleo shipped to stores for the first time. Steven Pinker's book *The Blank Slate* argues that all humans are born with some innate traits. Here, Pinker talks about his thesis, and why some people found it incredibly upsetting. In this prophetic talk from 2003, roboticist Rodney Brooks talks about how robots are going to work their way into our lives -- starting with toys and moving into household chores ... and beyond. Rockstar designer Stefan Sagmeister delivers a short, witty talk on life lessons, expressed through surprising modes of design (including ... inflatable monkeys?). Noah Feldman makes a searing case that both politics and religion -- whatever their differences -- are similar technologies, designed to efficiently connect and manage any group of people. In this engrossing EG talk, architect Liz Diller shares her firm DS+R's more unusual work, including the Blur Building, whose walls are made of fog, and the revamped Alice Tully Hall, which is wrapped in glowing wooden skin. An ancient disease is taking on a deadly new form. James Nachtwey shares his powerful photographs of XDR-TB, a newly drug-resistant strain of tuberculosis that has developed due to misused and inadequate medical treatments -- and that might be touching off a global medical crisis. Game designer David Perry says tomorrow's videogames will be more than mere fun to the next generation of gamers. They'll be lush, complex, emotional experiences -- more involving and meaningful to some than real life. With an excerpt from Michael Highland's film "As Real as Your Life." Historian Doris Kearns Goodwin talks about what we can learn from American presidents, including Abraham Lincoln and Lyndon Johnson. Then she shares a moving memory of her own father, and of their shared love of baseball. Outside.in's Steven Johnson says the Web is like a city: built by many people, completely controlled by no one, intricately interconnected and yet functioning as many independent parts. While disaster strikes in one place, elsewhere, life goes on. Human beatbox James "AudioPoet" Burchfield performs an intricate three-minute breakdown -- sexy, propulsive hip-hop rhythms and turntable textures -- all using only his voice. Physicist and surfer Garrett Lisi presents a controversial new model of the universe that -- just maybe -- answers all the big questions. If nothing else, it's the most beautiful 8-dimensional model of elementary particles and forces you've ever seen. MOMA design curator Paola Antonelli previews the groundbreaking show *Design and the Elastic Mind* -- full of products and designs that reflect the way we think now. In a timely talk, cultural critic Virginia Postrel muses on the true meaning, and the powerful uses, of glamour -- which she defines as any calculated, carefully polished image designed

to impress and persuade. Dean Ornish talks about simple, low-cost ways to take advantage of the body's natural desire to heal itself. Humorist John Hodgman rambles through a new story about aliens, physics, time, space and the way all of these somehow contribute to a sweet, perfect memory of falling in love. In 1998, aircraft designer Paul MacCready looks at a planet on which humans have utterly dominated nature, and talks about what we all can do to preserve nature's balance. His contribution: solar planes, superefficient gliders and the electric car. Mihaly Csikszentmihalyi asks, "What makes a life worth living?" Noting that money cannot make us happy, he looks to those who find pleasure and lasting satisfaction in activities that bring about a state of "flow." In this moving talk, documentary photographer Kristen Ashburn shares unforgettable images of the human impact of AIDS in Africa. Why do societies fail? With lessons from the Norse of Iron Age Greenland, deforested Easter Island and present-day Montana, Jared Diamond talks about the signs that collapse is near, and how -- if we see it in time -- we can prevent it. Rives tells a typographical fairy tale that's short and bittersweet ;) The Inventables guys, Zach Kaplan and Keith Schacht, demo some amazing new materials and how we might use them. Look for squishy magnets, odor-detecting ink, "dry" liquid and a very surprising 10-foot pole. Filmmaker Newton Aduaka shows clips from his powerful, lyrical feature film "Ezra," about a child soldier in Sierra Leone. While we all agree that compassion is a great idea, Rabbi Tabick acknowledges there are challenges to its execution. She explains how a careful balance of compassion and justice allows us to do good deeds, and keep our sanity. Swami Dayananda Saraswati unravels the parallel paths of personal development and attaining true compassion. He walks us through each step of self-realization, from helpless infancy to the fearless act of caring for others. Join Rev. James Forbes at the dinner table of his Southern childhood, where his mother and father taught him what compassion really means day to day -- sharing with those who need love. Imam Faisal Abdul Rauf combines the teachings of the Qur'an, the stories of Rumi, and the examples of Muhammad and Jesus, to demonstrate that only one obstacle stands between each of us and absolute compassion -- ourselves. It's hard to always show compassion -- even to the people we love, but Robert Thurman asks that we develop compassion for our enemies. He prescribes a seven-step meditation exercise to extend compassion beyond our inner circle. Robert Wright uses evolutionary biology and game theory to explain why we appreciate the Golden Rule ("Do unto others..."), why we sometimes ignore it and why there's hope that, in the near future, we might all have the compassion to follow it. Graham Hawkes takes us aboard his graceful, winged submarines to the depths of planet Ocean (a.k.a. "Earth"). It's a deep blue world we landlubbers rarely see in 3D. James Surowiecki pinpoints the moment when social media became an equal player in the world of news-gathering: the 2005 tsunami, when YouTube video, blogs, IMs and txts carried the news -- and preserved moving personal stories from the tragedy. For almost three decades, John Francis has been a planetwalker, traveling the globe by foot and sail with a message of environmental respect and responsibility (for 17 of those years without speaking). A funny, thoughtful talk with occasional banjo. At the 2008 Serious Play conference, designer Tim Brown talks about the powerful relationship between creative thinking and play -- with many examples you can try at home (and one that maybe you shouldn't). What's the science behind a sublime perfume? With charm and precision, biophysicist Luca Turin explains the molecular makeup -- and the art -- of a scent. Physicist Lee Smolin talks about how the scientific community works: as he puts it, "we fight and argue as hard as we can," but everyone accepts that the next generation of scientists will decide who's right. And, he says, that's how democracy works, too. Would you negotiate with someone you knew to be evil, to save lives? Samantha Power tells a story of a complicated hero, Sergio Vieira de Mello. This UN diplomat walked a thin moral line, negotiating with the world's worst dictators to help their people survive crisis. It's a compelling story told with a fiery passion. At Serious Play 2008, Charles Elachi shares stories from NASA's legendary Jet Propulsion Lab -- including tales and video from the Mars Rover project. Ursus Werhli shares his vision for a cleaner, more organized, tidier form of art -- by deconstructing the paintings of modern masters into their component pieces, sorted by color and size. Stewart Brand works on the Clock of the Long Now, a timepiece that counts down the next 10,000 years. It's a beautiful project that asks us to think about the far, far future. Here, he discusses a tricky side problem with the Clock: Where can we put it? Fashion designer Isaac Mizrahi spins through a dizzying array of inspirations -- from '50s pinups to a fleeting glimpse of a woman on the street who makes him shout "Stop the cab!" Inside this rambling talk are real clues to living a happy, creative life. Zambia-born filmmaker Franco Sacchi tours us through Nollywood, Nigeria's booming film industry (the world's 3rd largest). Guerrilla filmmaking and brilliance under pressure from crews that can shoot a full-length feature in a week. At Serious Play 2008, astrophysicist George Smoot shows stunning new images from deep-space surveys, and prods us to ponder how the cosmos -- with its giant webs of dark matter and mysterious gaping voids -- got

built this way. Technology Bill Joy talks about several big worries for humanity -- and several big hopes in the fields of health, education and future tech. At the Taste3 conference, chef Dan Barber tells the story of a small farm in Spain that has found a humane way to produce foie gras. Raising his geese in a natural environment, farmer Eduardo Sousa embodies the kind of food production Barber believes in. Andy Hobbawm shares a fresh ad campaign about going green -- and some of the fringe benefits. Biochemist Gregory Petsko makes a convincing argument that, in the next 50 years, we'll see an epidemic of neurological diseases, such as Alzheimer's, as the world population ages. His solution: more research into the brain and its functions. Science writer Richard Preston talks about some of the most enormous living beings on the planet, the giant trees of the US Pacific Northwest. Growing from a tiny seed, they support vast ecosystems -- and are still, largely, a mystery. Why build a virtual world? Philip Rosedale talks about the virtual society he founded, Second Life, and its underpinnings in human creativity. It's a place so different that anything could happen. General Motors veep Larry Burns previews cool next-gen car design: sleek, customizable (and computer-enhanced) vehicles that run clean on hydrogen -- and pump energy back into the electrical grid when they're idle. Inventor Nick Sears demos the first generation of the Orb, a rotating persistence-of-vision display that creates glowing 3D images. A short, cool tale of invention. Folk musician and storyteller David Holt plays the banjo and shares photographs and old wisdom from the Appalachian Mountains. He also demonstrates some unusual instruments like the mouth bow -- and a surprising electric drum kit he calls "thunderwear." The ceramics designer Eva Zeisel looks back on a 75-year career. What keeps her work as fresh today (her latest line debuted in 2008) as in 1926? Her sense of play and beauty, and her drive for adventure. Listen for stories from a rich, colorful life. Bees are dying in droves. Why? Leading apiarist Dennis vanEngelsdorp looks at the gentle, misunderstood creature's important place in nature and the mystery behind its alarming disappearance.

Jay Walker, curator of the Library of Human Imagination, conducts a surprising show-and-tell session highlighting a few of the intriguing artifacts that backdropped the 2008 TED stage. Dan Gilbert presents research and data from his exploration of happiness -- sharing some surprising tests and experiments that you can also try on yourself. Watch through to the end for a sparkling Q&A with some familiar TED faces. Can happiness be bought? To find out, author Benjamin Wallace sampled the world's most expensive products, including a bottle of 1947 Chateau Cheval Blanc, 8 ounces of Kobe beef and the fabled (notorious) Kopi Luwak coffee. His critique may surprise you. So the Mars Rovers didn't scoop up any alien lifeforms. Scientist Penelope Boston thinks there's a good chance -- a 25 to 50 percent chance, in fact -- that life might exist on Mars, deep inside the planet's caves. She details how we should look and why. Mathematician Steven Strogatz shows how flocks of creatures (like birds, fireflies and fish) manage to synchronize and act as a unit -- when no one's giving orders. The powerful tendency extends into the realm of objects, too. TED follows Nicholas Negroponte to Colombia as he delivers laptops inside territory once controlled by guerrillas. His partner? Colombia's Defense Department, who see One Laptop per Child as an investment in the region. (And you too can get involved.) Reporter Jennifer 8. Lee talks about her hunt for the origins of familiar Chinese-American dishes -- exploring the hidden spots where these two cultures have (so tastily) combined to form a new cuisine. Biochemist Kary Mullis talks about the basis of modern science: the experiment. Sharing tales from the 17th century and from his own backyard-rocketry days, Mullis celebrates the curiosity, inspiration and rigor of good science in all its forms. Designer John Maeda talks about his path from a Seattle tofu factory to the Rhode Island School of Design, where he became president in 2008. Maeda, a tireless experimenter and a witty observer, explores the crucial moment when design met computers. Strange landscapes, scorching heat and (sometimes) mad crocodiles await scientists seeking clues to evolution's genius. Paleontologist Paul Sereno talks about his surprising encounters with prehistory -- and a new way to help students join the adventure. Paul Moller talks about the future of personal air travel -- the marriage of autos and flight that will give us true freedom to travel off-road. He shows two things he's working on: the Moller Skycar (a jet + car) and a passenger-friendly hovering disc. Greg Lynn talks about the mathematical roots of architecture -- and how calculus and digital tools allow modern designers to move beyond the traditional building forms. A glorious church in Queens (and a titanium tea set) illustrate his theory. Rob Forbes, the founder of Design Within Reach, shows a gallery of snapshots that inform his way of seeing the world. Charming juxtapositions, found art, urban patterns -- this slideshow will open your eyes to the world around you. In this unmissable look at the magic of comics, Scott McCloud bends the presentation format into a cartoon-like experience, where colorful diversions whiz through childhood fascinations and imagined futures that our eyes can hear and touch. Batch to batch, crust to crust ... In tribute to the beloved staple food, baking master Peter Reinhart reflects on the cordial couplings (wheat and yeast, starch and heat) that

we give up our daily bread. Try not to eat a slice. Customers want to feel what they buy is authentic, but "Mass Customization" author Joseph Pine says selling authenticity is tough because, well, there's no such thing. He talks about a few experiences that may be artificial but make millions anyway. Paula Scher looks back at a life in design (she's done album covers, books, the Citibank logo ...) and pinpoints the moment when she started really having fun. Look for gorgeous designs and images from her legendary career. Great design is a never-ending journey of discovery -- for which it helps to pack a healthy sense of humor. Sociologist and surfer-turned-designer David Carson walks through a gorgeous (and often quite funny) slide deck of his work and found images. We all want to make the world better -- but how? Jamais Cascio looks at some specific tools and techniques that can make a difference. It's a fascinating talk that might just inspire you to act. What is genomics? How will it affect our lives? In this intriguing primer on the genomics revolution, entrepreneur Barry Schuler says we can at least expect healthier, tastier food. He suggests we start with the pinot noir grape, to build better wines. Sherwin Nuland, a surgeon and a writer, meditates on the idea of hope -- the desire to become our better selves and make a better world. It's a thoughtful 12 minutes that will help you focus on the road ahead. Woody Norris shows off two of his inventions that use sound in new ways, including the Long Range Acoustic Device, or LRAD. He talks about his untraditional approach to inventing and education, because, as he puts it: "Almost nothing has been invented yet." So -- what's next? Asteroid strikes get all the coverage, but "Medea Hypothesis" author Peter Ward argues that most of Earth's mass extinctions were caused by lowly bacteria. The culprit, a poison called hydrogen sulfide, may have an interesting application in medicine. In this TED archive video from 1998, paralympic sprinter Aimee Mullins talks about her record-setting career as a runner, and about the amazing carbon-fiber prosthetic legs (then a prototype) that helped her cross the finish line. Biochemist Joe DeRisi talks about amazing new ways to diagnose viruses (and treat the illnesses they cause) using DNA. His work may help us understand malaria, SARS, avian flu -- and the 60 percent of everyday viral infections that go undiagnosed. Natalie MacMaster and her musical partner Donnell Leahy play several tunes from the Cape Breton tradition -- a sprightly, soulful style of folk fiddling. It's an inspired collaboration that will have you clapping (and maybe dancing) along. Bill Gross, the founder of Ideala b, talks about his life as an inventor, starting with his high-school company selling solar energy plans and kits. Learn here about a groundbreaking system for solar cells -- and some questions we haven't yet solved. Bill Gates hopes to solve some of the world's biggest problems using a new kind of philanthropy. In a passionate and, yes, funny 18 minutes, he asks us to consider two big questions and how we might answer them. (And see the Q&A on the TED Blog.) Elizabeth Gilbert muses on the impossible things we expect from artists and geniuses -- and shares the radical idea that, instead of the rare person "being" a genius, all of us "have" a genius. It's a funny, personal and surprisingly moving talk. From the TED archives: The legendary graphic designer Milton Glaser dives deep into a new painting inspired by Piero della Francesca. From here, he muses on what makes a convincing poster, by breaking down an idea and making it new. MIT grad student David Merrill demos Siftables -- cookie-sized, computerized tiles you can stack and shuffle in your hands. These future-toys can do math, play music, and talk to their friends, too. Is this the next thing in hands-on learning? Barry Schwartz makes a passionate call for "practical wisdom" as an antidote to a society gone mad with bureaucracy. He argues powerfully that rules often fail us, incentives often backfire, and practical, everyday wisdom will help rebuild our world. While the mega-banks were toppling in early 2009, Juan Enriquez took the stage to say: The really big reboot is yet to come. But don't look for it on the stock exchange or the political ballot. It'll come from science labs, and it promises keener bodies and minds. Our kids are going to be ... different. José Antonio Abreu is the charismatic founder of a youth orchestra system that has transformed thousands of kids' lives in Venezuela. He shares his amazing story and unveils a TED Prize wish that could have a big impact in the US and beyond. The Teresa Carreño Youth Orchestra contains the best high school musicians from Venezuela's life-changing music program, El Sistema. Led here by Gustavo Dudamel, they play Shostakovich's Symphony No. 10, 2nd movement, and Arturo Márquez's Danzón No. 2. Legendary ocean researcher Sylvia Earle shares astonishing images of the ocean -- and shocking stats about its rapid decline -- as she makes her TED Prize wish: that we will join her in protecting the vital blue heart of the planet. The SETI Institute's Jill Tarter makes her TED Prize wish: to accelerate our search for cosmic company. Using a growing array of radio telescopes, she and her team listen for patterns that may be a sign of intelligence elsewhere in the universe. Ed Ulbrich, the digital-effects guru from Digital Domain, explains the Oscar-winning technology that allowed his team to digitally create the older versions of Brad Pitt's face for "The Curious Case of Benjamin Button." Capt. Charles Moore of the Algalita Marine Research Foundation first discovered the Great Pacific Garbage Patch -- an endless f

loating waste, plastic trash, drawing attention to the growing, choking problem of plastic debris in our seas. In this illuminating talk, Richard Pyle shows us thriving life on the cliffs of coral reefs and groundbreaking diving technologies he has pioneered to explore it. He and his team risk everything to reveal the secrets of undiscovered species. At the 2008 EG Conference, artist Miru Kim talks about her work. Kim explores industrial ruins underneath New York and then photographs herself in them, nude -- to bring these massive, dangerous, hidden spaces into sharp focus. In the year leading up to this talk, the web tool Twitter exploded in size (up 10x during 2008 alone). Co-founder Evan Williams reveals that many of the ideas driving that growth came from unexpected uses invented by the users themselves. At TED in 1998, Brenda Laurel asks: Why are all the top-selling videogames aimed at little boys? She spent two years researching the world of girls (and shares amazing interviews and photos) to create a game that girls would love. By piecing together a complex ecological puzzle, biologist Willie Smits believes he has found a way to re-grow clearcut rainforest in Borneo, saving local orangutans -- and creating a thrilling blueprint for restoring fragile ecosystems. NOTE: The core content of this talk has been challenged on a number of grounds. For details, and Willie Smits' response, please see "A challenge to Willie Smits' talk" below. A unique ecosystem of plants, birds and monkeys thrives in the treetops of the rainforest. Nalini Nadkarni explores these canopy worlds -- and shares her findings with the world below, through dance, art and bold partnerships. Mike Rowe, the host of "Dirty Jobs," tells some compelling (and horrifying) real-life job stories. Listen for his insights and observations about the nature of hard work, and how it's been unjustifiably degraded in society today. Eric Lewis, an astonishingly talented crossover jazz pianist -- seen by many for the first time at TED2009 -- sets fire to the keys with his shattering rendition of Evanescence's chart-topper, "Going Under." In this talk from 2003, design critic Don Norman turns his incisive eye toward beauty, fun, pleasure and emotion, as he looks at design that makes people happy. He names the three emotional cues that a well-designed product must hit to succeed. This demo -- from Pattie Maes' lab at MIT, spearheaded by Pranav Mistry -- was the buzz of TED. It's a wearable device with a projector that paves the way for profound interaction with our environment. Imagine "Minority Report" and then some. Athlete, actor and activist Aimee Mullins talks about her prosthetic legs -- she's got a dozen amazing pairs -- and the superpowers they grant her: speed, beauty, an extra 6 inches of height ... Quite simply, she redefines what the body can be. A pioneer in research on play, Dr. Stuart Brown says humor, games, roughhousing, flirtation and fantasy are more than just fun. Plenty of play in childhood makes for happy, smart adults -- and keeping it up can make us smarter at any age. 20 years ago, Tim Berners-Lee invented the World Wide Web. For his next project, he's building a web for open, linked data that could do for numbers what the Web did for words, pictures, video: unlock our data and reframe the way we use it together. Why are babies cute? Why is cake sweet? Philosopher Dan Dennett has answers you wouldn't expect, as he shares evolution's counterintuitive reasoning on cute, sweet and sexy things (plus a new theory from Matthew Hurley on why jokes are funny). Behavioral economist Dan Ariely studies the bugs in our moral code: the hidden reasons we think it's OK to cheat or steal (sometimes). Clever studies help make his point that we're predictably irrational -- and can be influenced in ways we can't grasp. Adam Savage talks about his fascination with the dodo bird, and how it led him on a strange and surprising double quest. It's an entertaining adventure through the mind of a creative obsessive. Bruce McCall paints a retro-future that never happened -- full of flying cars, polo-playing tanks and the RMS Tyrannic, "The Biggest Thing in All the World." At Serious Play '08, he narrates a brisk and funny slideshow of his faux-nostalgic art. Researcher Kamal Meattle shows how an arrangement of three common houseplants, used in specific spots in a home or office building, can result in measurably cleaner indoor air. In this brief talk, Saul Griffith unveils the invention his new company Makani Power has been working on: giant kite turbines that create surprising amounts of clean, renewable energy. Jacqueline Novogratz tells a moving story of an encounter in a Nairobi slum with Jane, a former prostitute, whose dreams of escaping poverty, of becoming a doctor and of getting married were fulfilled in an unexpected way. In this engaging talk from the EG'08 conference, New York Times tech columnist David Pogue rounds up some handy cell phone tools and services that can boost your productivity and lower your bills (and your blood pressure). With profound simplicity, Coach John Wooden redefines success and urges us all to pursue the best in ourselves. In this inspiring talk he shares the advice he gave his players at UCLA, quotes poetry and remembers his father's wisdom. Virus hunter Nathan Wolfe is outwitting the next pandemic by staying two steps ahead: discovering deadly new viruses where they first emerge -- passing from animals to humans among poor subsistence hunters in Africa -- before they claim millions of lives. Poet C.K. Williams reads his work at TED2001. As he colors scenes of childhood resentments, college loves, odd neighbors and the literal death of youth, he reminds us of the unique challenge



ages of living. Jacek Utko is an extraordinary Polish newspaper design-  
for papers in Eastern Europe not only win awards, but increase circulation by up to 10  
0%. Can good design save the newspaper? It just might. Wingsuit jumping is the leading e  
dge of extreme sports -- an exhilarating feat of almost unbelievable daring, where skydi  
vers soar through canyons at over 100MPH. Ueli Gegenschatz talks about how (and why) he  
does it, and shows jawdropping film. In this low-key, image-packed talk from 2002, desi  
gner Christopher C. Deam talks about his makeover of an American classic: the Airstream  
travel trailer. In this powerful talk, P.W. Singer shows how the widespread use of robo  
ts in war is changing the realities of combat. He shows us scenarios straight out of sci  
ence fiction -- that now may not be so fictitious. Nathaniel Kahn shares clips from his  
documentary "My Architect," about his quest to understand his father, the legendary arc  
hitect Louis Kahn. It\'s a film with meaning to anyone who seeks to understand the relat  
ionship between art and love. Bruce Bueno de Mesquita uses mathematical analysis to pred  
ict (very often correctly) such messy human events as war, political power shifts, Intif  
ada ... After a crisp explanation of how he does it, he offers three predictions on the  
future of Iran. Bonnie Bassler discovered that bacteria "talk" to each other, using a c  
hemical language that lets them coordinate defense and mount attacks. The find has stunn  
ing implications for medicine, industry -- and our understanding of ourselves. Philosoph  
er-comedian Emily Levine talks (hilariously) about science, math, society and the way ev  
erything connects. She\'s a brilliant trickster, poking holes in our fixed ideas and bri  
nging hidden truths to light. Settle in and let her ping your brain. In this funny (and  
actually poignant) 3-minute talk, social strategist Renny Gleeson breaks down our alway  
s-on social world -- where the experience we\'re having right now is less interesting th  
an what we\'ll tweet about it later. Forget about the hybrid auto -- Shai Agassi says it  
\'s electric cars or bust if we want to impact emissions. His company, Better Place, has  
a radical plan to take entire countries oil-free by 2020. In this prophetic 2003 talk -  
- just days before Dolly the sheep was stuffed -- biotech ethicist Gregory Stock looked  
forward to new, more meaningful (and controversial) technologies, like customizable bab  
ies, whose adoption might drive human evolution. JoAnn Kuchera-Morin demos the AlloSpher  
e, a new way to see, hear and interpret scientific data. Dive into the brain, feel elect  
ron spin, hear the music of the elements ... and detect previously unseen patterns that  
could lead to new discoveries. From the EG conference: Productivity guru Tim Ferriss\'  
fun, encouraging anecdotes show how one simple question -- "What\'s the worst that coul  
d happen?" -- is all you need to learn to do anything. In this talk from TED University  
2009, veteran rock climber Matthew Childs shares nine pointers for rock climbing. These  
handy tips bear on an effective life at sea level, too. Margaret Wertheim leads a proje  
ct to re-create the creatures of the coral reefs using a crochet technique invented by a  
mathematician -- celebrating the amazements of the reef, and deep-diving into the hyper  
bolic geometry underlying coral creation. Design legend Niels Diffrient talks about his  
life in industrial design (and the reason he became a designer instead of a jet pilot).  
He details his quest to completely rethink the office chair starting from one fundament  
al data set: the human body. At TEDU 2009, Erik Hersman presents the remarkable story of  
Ushahidi, a GoogleMap mashup that allowed Kenyans to report and track violence via cell  
phone texts following the 2008 elections, and has evolved to continue saving lives in o  
ther countries. Nate Silver has data that answers big questions about race in politics.  
For instance, in the 2008 presidential race, did Obama\'s skin color actually keep him  
from getting votes in some parts of the country? Stats and myths collide in this fascin  
ating talk that ends with a remarkable insight. In this captivating talk from the TED ar  
chive, cartoonist Ben Katchor reads from his comic strips. These perceptive, surreal sto  
ries find the profound hopes and foibles of history (and modern New York) preserved in o  
bjects like light switches and signs. The "dismal science" truly shines in this optimist  
ic talk, as economist Alex Tabarrok argues free trade and globalization are shaping our  
once-divided world into a community of idea-sharing more healthy, happy and prosperous  
than anyone\'s predictions. Neuroscientist Michael Merzenich looks at one of the secret  
s of the brain\'s incredible power: its ability to actively re-wire itself. He\'s resear  
ching ways to harness the brain\'s plasticity to enhance our skills and recover lost fun  
ction. In this hilariously lively performance, actress Sarah Jones channels an opinionat  
ed elderly Jewish woman, a fast-talking Dominican college student and more, giving TED20  
09 just a sample of her spectacular character range. In 2007, as the world worried about  
a possible avian flu epidemic, Laurie Garrett, author of "The Coming Plague," gave this  
powerful talk to a small TED University audience. Her insights from past pandemics are  
suddenly more relevant than ever. In this short talk from TED U 2009, Brian Cox shares  
what\'s new with the CERN supercollider. He covers the repairs now underway and what th  
e future holds for the largest science experiment ever attempted. By analyzing raw data  
on violent incidents in the Iraq war and others, Sean Gourley and his team claim to hav  
e found a surprisingly strong mathematical relationship linking the fatality and frequen

cy of attacks. Mae Jemison is an astronaut, a doctor, an art collector, a dancer... Telling stories from her own education and from her time in space, she calls on educators to teach both the arts and sciences, both intuition and logic, as one -- to create bold thinkers. Tom Shannon shows off his gravity-defying, otherworldly sculpture -- made of simple, earthly materials -- that floats and spins like planets on magnets and suspension wire. It's science-inspired art at its most heavenly. At TED2009, Al Gore presents updated slides from around the globe to make the case that worrying climate trends are even worse than scientists predicted, and to make clear his stance on "clean coal." Louise Fresco shows us why we should celebrate mass-produced, supermarket-style white bread. She says environmentally sound mass production will feed the world, yet leave a role for small bakeries and traditional methods. Seth Godin argues the Internet has ended mass marketing and revived a human social unit from the distant past: tribes. Founded on shared ideas and values, tribes give ordinary people the power to lead and make big change. He urges us to do so. Eric Lewis explores the piano's expressive power as he pounds and caresses the keys (and the strings) in a performance during the 2009 TED Prize session. He plays an original song, a tribute to ocean and sky and the vision of the TED Prize winners. Hans Rosling unveils data visuals that untangle the complex risk factors of one of the world's deadliest (and most misunderstood) diseases: HIV. By following the data, he suggests a surprising key to ending the epidemic. Nandan Nilekani, the visionary co-founder of outsourcing pioneer Infosys, explains four brands of ideas that will determine whether India can continue its recent breakneck progress. One-of-a-kind R&B group Naturally 7 beatboxes an orchestra's worth of instruments to groove through their smooth single, "Fly Baby." At his carpet company, Ray Anderson has increased sales and doubled profits while turning the traditional "take / make / waste" industrial system on its head. In a gentle, understated way, he shares a powerful vision for sustainable commerce. Behavioral economist Dan Ariely, the author of Predictably Irrational, uses classic visual illusions and his own counterintuitive (and sometimes shocking) research findings to show how we're not as rational as we think when we make decisions. "Bonk" author Mary Roach delves into obscure scientific research, some of it centuries old, to make 10 surprising claims about sexual climax, ranging from the bizarre to the hilarious. (This talk is aimed at adults. Viewer discretion advised.) Carolyn Porco shares exciting new findings from the Cassini spacecraft's recent sweep of one of Saturn's moons, Enceladus. Samples gathered from the moon's icy geysers hint that an ocean under its surface could harbor life. Yves Behar and Forrest North unveil Mission One, a sleek, powerful electric motorcycle. They share slides from distant (yet similar) childhoods that show how collaboration kick-started their friendship -- and shared dreams. In this short talk from TED U, Joachim de Posada shares a landmark experiment on delayed gratification -- and how it can predict future success. With priceless video of kids trying their hardest not to eat the marshmallow. Jay Walker explains why two billion people around the world are trying to learn English. He shares photos and spine-tingling audio of Chinese students rehearsing English -- "the world's second language" -- by the thousands. Speaking to an audience of students, US First Lady Michelle Obama reminds each one to take their education seriously -- and never take it for granted. This new, brilliant generation, she tells us, is the one that could close the gap between the world as it is and the world as it should be. In this brief talk from TED U 2009, Jonathan Drori encourages us to save biodiversity -- one seed at a time. Reminding us that plants support human life, he shares the vision of the Millennium Seed Bank, which has stored over 3 billion seeds to date from dwindling yet essential plant species. Kaki King, the first female on Rolling Stone's "guitar god" list, rocks out to a full live set at TED2008, including her breakout single, "Playing with Pink Noise." Jaw-dropping virtuosity meets a guitar technique that truly stands out. Bennington president Liz Coleman delivers a call-to-arms for radical reform in higher education. Bucking the trend to push students toward increasingly narrow areas of study, she proposes a truly cross-disciplinary education -- one that dynamically combines all areas of study to address the great problems of our day. Ray Kurzweil's latest graphs show that technology's breakneck advances will only accelerate -- recession or not. He unveils his new project, Singularity University, to study oncoming tech and guide it to benefit humanity. In this image-filled talk, Yann Arthus-Bertrand displays his three most recent projects on humanity and our habitat -- stunning aerial photographs in his series "The Earth From Above," personal interviews from around the globe featured in his web project "6 billion Others," and his soon-to-be-released movie, "Home," which documents human impact on the environment through breathtaking video. Media big shot Felix Dennis roars his fiery, funny, sometimes racy original poetry, revisiting haunting memories and hard-won battle scars from a madcap -- yet not too repentant -- life. Best enjoyed with a glass of wine. In this short, optimistic talk from TED2009, Pete Alcorn shares a vision of the world of two centuries from now -- when declining populations and growing opportunity prove Malthus was wrong. John La Grou unveils an ingenious new techno

logy that will smarten up the electrical outlets in our homes and microprocessors and RFID tags. The invention, Safeplug, promises to prevent deadly accidents like house fires -- and to conserve energy. Kevin Surace suggests we rethink basic construction materials -- such as the familiar wallboard -- to reduce the huge carbon footprint generated by the manufacturing and construction of our buildings. He introduces EcoRock, a clean, recyclable and energy-efficient drywall created by his team at Serious Materials. Cognitive researcher Nancy Etcoff looks at happiness -- the ways we try to achieve and increase it, the way it's untethered to our real circumstances, and its surprising effect on our bodies. Biologist Robert Full studies the amazing gecko, with its supersticky feet and tenacious climbing skill. But high-speed footage reveals that the gecko's tail harbors perhaps the most surprising talents of all. In his typically candid style, Richard St. John reminds us that success is not a one-way street, but a constant journey. He uses the story of his business' rise and fall to illustrate a valuable lesson -- when we stop trying, we fail. Jane Poynter tells her story of living two years and 20 minutes in Biosphere 2 -- an experience that provoked her to explore how we might sustain life in the harshest of environments. While news from Iran streams to the world, Clay Shirky shows how Facebook, Twitter and TXTs help citizens in repressive regimes to report on real news, bypassing censors (however briefly). The end of top-down control of news is changing the nature of politics. Diane Benscoter spent five years as a "Moonie." She shares an insider's perspective on the mind of a cult member, and proposes a new way to think about today's most troubling conflicts and extremist movements. Surgeon and inventor Catherine Mohr tours the history of surgery (and its pre-painkiller, pre-antiseptic past), then demos some of the newest tools for surgery through tiny incisions, performed using nimble robot hands. Fascinating -- but not for the squeamish. Organ virtuoso Qi Zhang plays her electric rendering of "Ridiculous Fellows" from Prokofiev's "The Love for Three Oranges" orchestral suite. This exhilarating performance features the Yamaha Electone Stagea, a rare instrument specially programmed by Qi herself. Psychologist Philip Zimbardo says happiness and success are rooted in a trait most of us disregard: the way we orient toward the past, present and future. He suggests we calibrate our outlook on time as a first step to improving our lives. Long conflict can wreck a country, leaving behind poverty and chaos. But what's the right way to help war-torn countries rebuild? At TED@State, Paul Collier explains the problems with current post-conflict aid plans, and suggests 3 ideas for a better approach. In this uplifting talk, Katherine Fulton sketches the new future of philanthropy -- one where collaboration and innovation allow regular people to do big things, even when money is scarce. Giving five practical examples of crowd-driven philanthropy, she calls for a new generation of citizen leaders. Extreme runner Ray Zahab shares an enthusiastic account of his record-breaking trek on foot to the South Pole -- a 33-day sprint through the snow. Someone always asks the math teacher, "Am I going to use calculus in real life?" And for most of us, says Arthur Benjamin, the answer is no. He offers a bold proposal on how to make math education relevant in the digital age. Gever Tulley uses engaging photos and footage to demonstrate the valuable lessons kids learn at his Tinkering School. When given tools, materials and guidance, these young imaginations run wild and creative problem-solving takes over to build unique boats, bridges and even a roller coaster! Daniel Libeskind builds on very big ideas. Here, he shares 17 words that underlie his vision for architecture -- raw, risky, emotional, radical -- and that offer inspiration for any bold creative pursuit. The legendary design team Charles and Ray Eames made films, houses and classic midcentury modern furniture. Eames Demetrios, their grandson, shows rarely seen films and archival footage in a lively, loving tribute to their creative process. Information designer Tom Wujec talks through three areas of the brain that help us understand words, images, feelings, connections. In this short talk from TEDU, he asks: How can we best engage our brains to help us better understand big ideas? TED Fellow Sophal Ear shares the compelling story of his family's escape from Cambodia under the rule of the Khmer Rouge. He recounts his mother's cunning and determination to save her children. Drug-resistant bacteria kills, even in top hospitals. But now tough infections like staph and anthrax may be in for a surprise. Nobel-winning chemist Kary Mullis, who watched a friend die when powerful antibiotics failed, unveils a radical new cure that shows extraordinary promise. NOTE: This talk was given in 2009, and this field of science has developed quickly since then. Read "Criticism & updates" below for more details. The man who helped usher in the environmental movement in the 1960s and '70s has been rethinking his positions on cities, nuclear power, genetic modification and geo-engineering. This talk at the US State Department is a foretaste of his major new book, sure to provoke widespread debate. In the spectacular large-scale projects he's famous for (such as "Waterfalls" in New York harbor), Olafur Eliasson creates art from a palette of space, distance, color and light. This idea-packed talk begins with an experiment in the nature of perception. Daniel Kraft demos his Marrow Miner -- a new device that quickly harvests life-saving bone marrow with minimal pain to the

he donor. He emphasizes that the adult stem cells found in bone marrow can be used to treat many terminal conditions, from Parkinson's to heart disease. Psychopathic killers are the basis for some must-watch TV, but what really makes them tick? Neuroscientist Jim Fallon talks about brain scans and genetic analysis that may uncover the rotten wiring in the nature (and nurture) of murderers. In a too-strange-for-fiction twist, he shares a fascinating family history that makes his work chillingly personal. Nina Jablonski says that differing skin colors are simply our bodies' adaptation to varied climates and levels of UV exposure. Charles Darwin disagreed with this theory, but she explains, that's because he did not have access to NASA. We're at a unique moment in history, says UK Prime Minister Gordon Brown: we can use today's interconnectedness to develop our shared global ethic -- and work together to confront the challenges of poverty, security, climate change and the economy. Alain de Botton examines our ideas of success and failure -- and questions the assumptions underlying these two judgments. Is success always earned? Is failure? He makes an eloquent, witty case to move beyond snobbery to find true pleasure in our work. Golan Levin, an artist and engineer, uses modern tools -- robotics, new software, cognitive research -- to make artworks that surprise and delight. Watch as sounds become shapes, bodies create paintings, and a curious eye looks back at the curious viewer. Elaine Morgan was a tenacious proponent of a theory that is not widely accepted. The aquatic ape hypothesis lays out the idea that humans evolved from primate ancestors who dwelt in watery habitats. Hear her spirited defense of the idea -- and her theory on why science doesn't take it seriously. NOTE: Statements in this talk have been challenged by scientists working in this field. Read "Criticisms & updates" below for more details. Willard Wigan tells the story of how a difficult and lonely childhood drove him to discover his unique ability -- to create art so tiny that it can't be seen with the naked eye. His slideshow of figures, as seen through a microscope, can only be described as mind-boggling. Too much of the world lacks access to clean drinking water. Engineer Michael Pritchard did something about it -- inventing the portable Lifesaver filter, which can make the most revolting water drinkable in seconds. An amazing demo from TEDGlobal 2009. How can a struggling country break out of poverty if it's trapped in a system of bad rules? Economist Paul Romer unveils a bold idea: "charter cities," city-scale administrative zones governed by a coalition of nations. (Could Guantánamo Bay become the next Hong Kong?) Janine Benyus has a message for inventors: When solving a design problem, look to nature first. There you'll find inspired designs for making things waterproof, aerodynamic, solar-powered and more. Here she reveals dozens of new products that take their cue from nature with spectacular results. For five years, young Emmanuel Jal fought as a child soldier in the Sudan. Rescued by an aid worker, he's become an international hip-hop star and an activist for kids in war zones. In words and lyrics, he tells the story of his amazing life. Career analyst Dan Pink examines the puzzle of motivation, starting with a fact that social scientists know but most managers don't: Traditional rewards aren't always as effective as we think. Listen for illuminating stories -- and maybe, a way forward. Eric Giler wants to untangle our wired lives with cable-free electric power. Here, he covers what this sci-fi tech offers, and demos MIT's breakthrough version, WiTricity -- a near-to-market invention that may soon recharge your cell phone, car, pacemaker. Talking at the US State Department this summer, Hans Rosling uses his fascinating data-bubble software to burst myths about the developing world. Look for new analysis on China and the post-bailout world, mixed with classic data shows. Natasha Tsakos presents part of her one-woman, multimedia show, "Upwake." As the character Zero, she blends dream and reality with an inventive virtual world projected around her in 3D animation and electric sound. The wheat, corn and rice we grow today may not thrive in a future threatened by climate change. Cary Fowler takes us inside the Svalbard Global Seed Vault, a vast treasury buried within a frozen mountain in Norway, that stores a diverse group of food-crop seeds ... for whatever tomorrow may bring. Josh Silver delivers his brilliantly simple solution for correcting vision at the lowest cost possible -- adjustable, liquid-filled lenses. At TEDGlobal 2009, he demos his affordable eyeglasses and reveals his global plan to distribute them to a billion people in need by 2020. As we reboot the world's economy, Geoff Mulgan poses a question: Instead of sending bailout money to doomed old industries, why not use stimulus funds to bootstrap some new, socially responsible companies -- and make the world a little bit better? Evan Grant demonstrates the science and art of cymatics, a process for making soundwaves visible. Useful for analyzing complex sounds (like dolphin calls), it also makes complex and beautiful designs. At his day job, Steve Truglia flips cars, walks through fire and falls out of buildings -- pushing technology to make stunts bigger, safer, more awesome. He talks us through his next stunt: the highest jump ever attempted, from the very edge of space. Photographer James Balog shares new image sequences from the Extreme Ice Survey, a network of time-lapse cameras recording glaciers receding at an alarming rate, some of the most vivid evidence yet of climate change. Lewis Pugh talks about his record-breaking swim

across the North Pole. He braved the icy waters (in a Speedo) to highlight the melting icecap. Watch for astonishing footage -- and some blunt commentary on the realities of supercold-water swims. Sensing the motives and feelings of others is a natural talent for humans. But how do we do it? Here, Rebecca Saxe shares fascinating lab work that uncovers how the brain thinks about other peoples' thoughts -- and judges their actions. Vishal Vaid and his band explore a traditional South Asian musical form in this mesmerizing improv performance. Sit back and let his music transport you. Journalist Misha Glenny spent several years in a courageous investigation of organized crime networks worldwide, which have grown to an estimated 15% of the global economy. From the Russian mafia, to giant drug cartels, his sources include not just intelligence and law enforcement officials but criminal insiders. Danish architect Bjarke Ingels rockets through photo/video-mingled stories of his eco-flashy designs. His buildings not only look like nature -- they act like nature: blocking the wind, collecting solar energy -- and creating stunning views. Nature's mysteries meet tack-sharp wit in this hilarious, 10-minute mix of quips and fun lessons, as comedian, writer and TV man John Lloyd plucks at the substance of several things not seen. Neurologist and author Oliver Sacks brings our attention to Charles Bonnet syndrome -- when visually impaired people experience lucid hallucinations.

He describes the experiences of his patients in heartwarming detail and walks us through the biology of this under-reported phenomenon. Imogen Heap plays a powerful stripped-down version of "Wait It Out," from her new record, *Ellipse*. Feeling like the world is becoming less friendly? Social theorist Jonathan Zittrain begs to differ. The Internet, he suggests, is made up of millions of disinterested acts of kindness, curiosity and trust. TED Fellow and journalist Evgeny Morozov punctures what he calls "iPod liberalism" -- the assumption that tech innovation always promotes freedom, democracy -- with chilling examples of ways the Internet helps oppressive regimes stifle dissent. At age 14, in poverty and famine, a Malawian boy built a windmill to power his family's home. Now at 22, William Kamkwamba, who speaks at TED, here, for the second time, shares in his own words the moving tale of invention that changed his life. Taryn Simon exhibits her startling take on photography -- to reveal worlds and people we would never see otherwise. She shares two projects: one documents otherworldly locations typically kept secret from the public, the other involves haunting portraits of men convicted for crimes they did not commit. The debate over foreign aid often pits those who mistrust "charity" against those who mistrust reliance on the markets. Jacqueline Novogratz proposes a middle way she calls patient capital, with promising examples of entrepreneurial innovation driving social change. Many people think the lines on the map no longer matter, but Parag Mehta says they do. Using maps of the past and present, he explains the root causes of border conflicts worldwide and proposes simple yet cunning solutions for each. Tim Brown says the design profession has a bigger role to play than just creating nifty, fashionable little objects. He calls for a shift to local, collaborative, participatory "design thinking" -- starting with the example of 19th-century design thinker Isambard Kingdom Brunel.

Weeks from the Charter for Compassion launch, Karen Armstrong looks at religion's role in the 21st century: Will its dogmas divide us? Or will it unite us for common good? She reviews the catalysts that can drive the world's faiths to rediscover the Golden Rule. Garik Israelian is a spectroscopist, studying the spectrum emitted by a star to figure out what it's made of and how it might behave. It's a rare and accessible look at this discipline, which may be coming close to finding a planet friendly to life. Every seven years, designer Stefan Sagmeister closes his New York studio for a yearlong sabbatical to rejuvenate and refresh their creative outlook. He explains the often overlooked value of time off and shows the innovative projects inspired by his time in Bali. Every day, in a city the size of London, 30 million meals are served. But where does all the food come from? Architect Carolyn Steel discusses the daily miracle of feeding a city, and shows how ancient food routes shaped the modern world. David Logan talks about the five kinds of tribes that humans naturally form -- in schools, workplaces, even the driver's license bureau. By understanding our shared tribal tendencies, we can help lead each other to become better individuals. Our lives, our cultures, are composed of many overlapping stories. Novelist Chimamanda Adichie tells the story of how she found her authentic cultural voice -- and warns that if we hear only a single story about another person or country, we risk a critical misunderstanding. Beau Lotto's color games puzzle your vision, but they also spotlight what you can't normally see: how your brain works. This fun, first-hand look at your own versatile sense of sight reveals how evolution tints your perception of what's really out there. Author Sam Martin shares photos of a quirky world hobby that's trending with the XY set: "manspaces." (They're custom-built hangouts where a man can claim a bit of his own territory to work, relax, be himself.) Grab a cold one and enjoy. 400 years after Hudson found New York harbor, Eric Sanderson shares how he made a 3D map of Mannahatta's fascinating pre-city ecology of hills, rivers, wildlife -- accurate down to the block -- when Times Square was a wetland and you could

n't get delivery. David Hanson's robot faces look and act like yours. They recognize and respond to emotion, and make expressions of their own. Here, an "emotional" live demo of the Einstein robot offers a peek at a future where robots truly mimic humans. Advertising adds value to a product by changing our perception, rather than the product itself. Rory Sutherland makes the daring assertion that a change in perceived value can be just as satisfying as what we consider "real" value -- and his conclusion has interesting consequences for how we look at life. Henry Markram says the mysteries of the mind can be solved -- soon. Mental illness, memory, perception: they're made of neurons and electric signals, and he plans to find them with a supercomputer that models all the brain's 100,000,000,000,000 synapses. Playing sound effects both pleasant and awful, Julian Treasure shows how sound affects us in four significant ways. Listen carefully for a shocking fact about noisy open-plan offices. John Gerzema says there's an upside to the recent financial crisis -- the opportunity for positive change. In this talk, he identifies four major cultural shifts driving new consumer behavior and shows how businesses are evolving to connect with thoughtful spending. Computer graphics trailblazer Paul Debevec explains the scene-stealing technology behind Digital Emily, a digitally constructed human face so realistic it stands up to multiple takes. An orchestra conductor faces the ultimate leadership challenge: creating perfect harmony without saying a word. In this charming talk, Itay Talgam demonstrates the unique styles of six great 20th-century conductors, illustrating crucial lessons for all leaders. Reuse of syringes, all too common in under-funded clinics, kills 1.3 million each year. Marc Koska clues us in to this devastating global problem with facts, photos and hidden-camera footage. He shares his solution: a low-cost syringe that can't be used twice. As globalization and technological advances bring us hurtling towards a new integrated future, Ian Goldin warns that not all people may benefit equally. But, he says, if we can recognize this danger, we might yet realize the possibility of improved life for everyone. For tens of thousands of years our ancestors understood the world through myths, and the pace of change was glacial. The rise of scientific understanding transformed the world within a few centuries. Why? Physicist David Deutsch proposes a subtle answer. Venice is sinking. To save it, Rachel Armstrong says we need to outgrow architecture made of inert materials and, well, make architecture that grows itself. She proposes a not-quite-alive material that does its own repairs and sequesters carbon, too. Becky Blanton planned to live in her van for a year and see the country, but when depression set in and her freelance job ended, her camping trip turned into homelessness. In this intimate talk, she describes her experience of becoming one of America's working homeless. The world turns on symmetry -- from the spin of subatomic particles to the dizzying beauty of an arabesque. But there's more to it than meets the eye. Here, Oxford mathematician Marcus du Sautoy offers a glimpse of the invisible numbers that marry all symmetrical objects. The euphonium, with its sweet brass sound, is rarely heard outside of traditional brass bands. Cutting loose on the euph, prodigy Matthew White performs Nat McIntosh's hip-hop-inflected "The Warrior Comes Out to Play." We worry that IM, texting, Facebook are spoiling human intimacy, but Stefan a Broadbent's research shows how communication tech is capable of cultivating deeper relationships, bringing love across barriers like distance and workplace rules. At TEDGlobal U, Cameron Sinclair shows the unreported cost of real estate megaprojects gone bust: thousands of migrant construction laborers left stranded and penniless. To his fellow architects, he says there is only one ethical response. In 4 minutes, atmospheric chemist Rachel Pike provides a glimpse of the massive scientific effort behind the bold headlines on climate change, with her team -- one of thousands who contributed -- taking a risky flight over the rainforest in pursuit of data on a key molecule. In stunning large-format photographs, Edward Burtynsky follows the path of oil through modern society, from wellhead to pipeline to car engine -- and then beyond to the projected peak-oil endgame. Cynthia Schneider looks at two international "American Idol"-style shows -- one in Afghanistan, and one in the United Arab Emirates -- and shows the surprising effect that these reality-TV competitions are creating in their societies. At TEDIndia, Pranav Mistry demos several tools that help the physical world interact with the world of data -- including a deep look at his SixthSense device and a new, paradigm-shifting paper "laptop." In an onstage Q&A, Mistry says he'll open-source the software behind SixthSense, to open its possibilities to all. Naming science as his chief inspiration, Mathieu Lehanneur shows a selection of his ingenious designs -- an interactive noise-neutralizing ball, an antibiotic course in one layered pill, asthma treatment that reminds kids to take it, a living air filter, a living-room fish farm and more. Leadership doesn't have a user's manual, but Fields Wicker-Miurin says stories of remarkable, local leaders are the next best thing. At a TED salon in London, she shares three. Devdutt Pattanaik takes an eye-opening look at the myths of India and of the West -- and shows how these two fundamentally different sets of beliefs about God, death and heaven help us consistently misunderstand one another. Rather than demo another new technology, Tom Wujec reaches back to one o

of our earliest but most ingenious devices -- the astrolabe. With thousands of uses, from telling time to mapping the night sky, this old tech reminds us that the ancient can be as brilliant as the brand-new. Hans Rosling was a young guest student in India when he first realized that Asia had all the capacities to reclaim its place as the world's dominant economic force. At TEDIndia, he graphs global economic growth since 1858 and predicts the exact date that India and China will outstrip the US. Rob Hopkins reminds us that the oil our world depends on is steadily running out. He proposes a unique solution to this problem -- the Transition response, where we prepare ourselves for life without oil and sacrifice our luxuries to build systems and communities that are completely independent of fossil fuels. Architecture student Magnus Larsson details his bold plan to transform the harsh Sahara desert using bacteria and a surprising construction material: the sand itself. At TEDIndia, Mallika Sarabhai, a dancer/actor/politician, tells a transformative story in dance -- and argues that the arts may be the most powerful way to effect change, whether political, social or personal. India is fast becoming a superpower, says Shashi Tharoor -- not just through trade and politics, but through "soft" power, its ability to share its culture with the world through food, music, technology, Bollywood. He argues that in the long run it's not the size of the army that matters as much as a country's ability to influence the world's hearts and minds. Can the interests of an individual nation be reconciled with humanity's greater good? Can a patriotic, nationally elected politician really give people in other countries equal consideration? Following his TEDTalk calling for a global ethic, UK Prime Minister Gordon Brown fields questions from TED Curator Chris Anderson. With new data from the Keck telescope, Andrea Ghez shows how state-of-the-art adaptive optics are helping astronomers understand our universe's most mysterious objects: black holes. She shares evidence that a supermassive black hole may be lurking at the center of the Milky Way. With wisdom and wit, Anupam Mishra talks about the amazing feats of engineering built centuries ago by the people of India's Golden Desert to harvest water. These ancient aqueducts and stepwells are still used today -- and are often superior to modern water megaprojects. At the 2008 EG conference, famed puzzle designer Scott Kim takes us inside the puzzle-maker's frame of mind. Sampling his career's work, he introduces a few of the most popular types, and shares the fascinations that inspired some of his best. Sunitha Krishnan has dedicated her life to rescuing women and children from sex slavery, a multimillion-dollar global market. In this courageous talk, she tells three powerful stories, as well as her own, and calls for a more humane approach to helping these young victims rebuild their lives. Scottish funnyman Rory Bremner convenes a historic council on the TEDGlobal stage -- as he lampoons Gordon Brown, Barack Obama, George W. Bush and a cast of other world leaders with his hilarious impressions and biting commentary. See if you can catch a few sharp TED in-jokes. Marc Pachter has conducted live interviews with some of the most intriguing characters in recent American history as part of a remarkable series created for the Smithsonian's National Portrait Gallery. He reveals the secret to a great interview and shares extraordinary stories of talking with Steve Martin, Clare Booth Luce and more. India's revolutionary Aravind Eye Care System has given sight to millions. Thulasiraj Ravilla looks at the ingenious approach that drives its treatment costs down and quality up, and why its methods should trigger a re-think of all human services. Shereen El Feki shows how some Arab cultures are borrowing trademarks of Western pop culture -- music videos, comics, even Barbie -- and adding a culturally appropriate twist. The hybridized media shows how two civilizations, rather than dividing, can dovetail. Loretta Napoleoni details her rare opportunity to talk to the secretive Italian Red Brigades -- an experience that sparked a lifelong interest in terrorism. She gives a behind-the-scenes look at its complex economics, revealing a surprising connection between money laundering and the US Patriot Act. Ryan Lobo has traveled the world, taking photographs that tell stories of unusual human lives. In this haunting talk, he reframes controversial subjects with empathy, so that we see the pain of a Liberian war criminal, the quiet strength of UN women peacekeepers and the perseverance of Delhi's underappreciated firefighters. In a funny, rapid-fire 4 minutes, Alexis Ohanian of Reddit tells the real-life fable of one humpback whale's rise to web stardom. The lesson of Mister Splashy Pants is a shoo-in classic for meme-makers and marketers in the Facebook age. While living and working as a marine biologist in Maldives, Charles Anderson noticed sudden explosions of dragonflies at certain times of year. He explains how he carefully tracked the path of a plain, little dragonfly called the globe skimmer, only to discover that it had the longest migratory journey of any insect in the world. Aphorism enthusiast and author James Geary waxes on a fascinating fixture of human language: the metaphor. Friend of scribes from Aristotle to Elvis, metaphor can subtly influence the decisions we make, Geary says. Shaffi Mather explains why he left his first career to become a social entrepreneur, providing life-saving transportation with his company 1298 for Ambulance. Now, he has a new idea and plans to begin a company to fight the booming business of corruption in public service.

e, eliminating it one bribe at a time. Physicist Steven Cowley is certain that nuclear fusion is the only truly sustainable solution to the fuel crisis. He explains why fusion will work -- and details the projects that he and many others have devoted their lives to, working against the clock to create a new source of energy. One of a dozen Pakistanis who came to TEDIndia despite security hassles entering the country, TED Fellow Asher Hasan shows photos of ordinary Pakistanis that drive home a profound message for citizens of all nations: look beyond disputes, and see the humanity we share. Is torture ever justified? Would you steal a drug that your child needs to survive? Is it sometimes wrong to tell the truth? How much is one human life worth? In the "Justice" program that bears his name, Harvard professor Michael Sandel probes these questions -- and asks what you think, and why. At the BIF innovation summit, Cat Laine draws on the Greek myth of Talos to explain the frustration developing countries face. She shows how we might help communities rich in human capital, but poor in resources and infrastructure, with cleverly engineered solutions. For the dawn of a new decade, adventurer Bertrand Piccard offers us a challenge: Find motivation in what seems impossible. He shares his own plans to do what many say can't be done -- to fly around the world, day and night, in a solar-powered aircraft. Neuroscientist Vilayanur Ramachandran outlines the fascinating functions of mirror neurons. Only recently discovered, these neurons allow us to learn complex social behaviors, some of which formed the foundations of human civilization as we know it. Nick Veasey shows outsized X-ray images that reveal the otherworldly inner workings of familiar objects -- from the geometry of a wildflower to the anatomy of a Boeing 747.

Producing these photos is dangerous and painstaking, but the reward is a superpower: looking at what the human eye can't see. To find the path to long life and health, Dan Buettner and team study the world's "Blue Zones," communities whose elders live with vim and vigor to record-setting age. In his talk, he shares the 9 common diet and lifestyle habits that keep them spry past age 100. The gharial and king cobra are two of India's most iconic reptiles, and they're endangered because of polluted waterways. Conservationist Romulus Whitaker shows rare footage of these magnificent animals and urges us to save the rivers that sustain their lives and our own. Legendary jazz musician Herbie Hancock delivers a stunning performance alongside two old friends -- past drummer for the Herbie Hancock Quartet, Harvey Mason, and bassist Marcus Miller. Listen to the end to hear them sweeten the classic "Watermelon Man." In 2007, Carnegie Mellon professor Randy Pausch, who was dying of pancreatic cancer, delivered a one-of-a-kind last lecture that made the world stop and pay attention. This moving talk will teach you how to really achieve your childhood dreams. Unmissable. At Stanford University, primatologist Robert Sapolsky offers a fascinating and funny look at human behaviors which the rest of the animal kingdom would consider bizarre. Matt Weinstein lost his life savings to Bernie Madoff's notorious scam. But his response to the disaster is unexpectedly hopeful. Traditionally, the Kalandar community of India has survived by capturing sloth bear cubs and training them to "dance" through extreme cruelty. Kartick Satyanarayan has been able to put an end to this centuries-old practice, and in so doing discovered a lesson of wider significance: make the practitioners part of the solution. Kiran Bir Sethi shows how her groundbreaking Riverside School in India teaches kids life's most valuable lesson: "I can." Watch her students take local issues into their own hands, lead other young people, even educate their parents. As of 2005, only 15 percent of the world was mapped. This slows the delivery of aid after a disaster -- and hides the economic potential of unused lands and unknown roads. In this short talk, Google's Lalitesh Katragadda demos Map Maker, a group map-making tool that people around the globe are using to map their world. In the midst of an earlier crisis, Haitian author Edwidge Danticat reminds us of the contributions of Haiti's vibrant culture and people. This reading offers a timely message for today -- as the nation struggles in the aftermath of a devastating earthquake. In a presentation that can only be described as epic, comedian Charles Fleischer delivers a hysterical send-up of a time-honored TED theme: the map. Geometry, numbers, charts and stamp art also factor in (somehow), as he weaves together a unique theory of everything called "Moleeds." In this highly personal talk from TEDMED, magician and stuntman David Blaine describes what it took to hold his breath underwater for 17 minutes -- a world record (only two minutes shorter than this entire talk!) -- and what his often death-defying work means to him. Warning: do NOT try this at home. Collector Ravin Agrawal delivers a glowing introduction to 10 of India's most exciting young contemporary artists. Working in a variety of media, each draws on their local culture for inspiration. Anthony Atala's state-of-the-art lab grows human organs -- from muscles to blood vessels to bladders, and more. At TEDMED, he shows footage of his bio-engineers working with some of its sci-fi gizmos, including an oven-like bioreactor (preheat to 98.6 F) and a machine that "prints" human tissue. Percussionist Sivamani delivers one of TED's liveliest and most inventive performances yet. He uses traditional Western and Eastern instruments to create a rhythmic tour de force, along with a tub of water, corrugated metal, spoons, luggage, our stage props



and even a little audience participation. At the Royal Institution in 1991, Richard Dawkins asks us to look at our universe with new eyes. Packed with big questions and illuminating visuals, this memorable journey through the history of life magnifies the splendor of evolution and our place in it. Ever heard the phrase "Those who can't do, teach"? At the Bowery Poetry Club, slam poet Taylor Mali begs to differ, and delivers a powerful, 3-minute response on behalf of educators everywhere. Where you live: It impacts your health as much as diet and genes do, but it's not part of your medical records. At TED MED, Bill Davenhall shows how overlooked government geo-data (from local heart-attack rates to toxic dumpsite info) can mesh with mobile GPS apps to keep doctors in the loop. Call it "geo-medicine." Can architects re-engineer their design process? Joshua Prince-Ramus shows how the results can be spectacular. He walks us through his fantastic re-creation of the Wyly Theater as a giant "theatrical machine" that reconfigures itself at the touch of a button. In this passionate talk, Eve Ensler declares that there is a girl cell in us all -- a cell that we have all been taught to suppress. She tells heartfelt stories of girls around the world who have overcome shocking adversity and violence to reveal the astonishing strength of being a girl. In the developing world, access to incubators is limited by cost and distance, and millions of premature babies die each year. TED Fellow Jane Chen shows an invention that could keep millions of these infants warm -- a design that's safe, portable, low-cost and life-saving. "There's a flip side to everything," the saying goes, and in 2 minutes, Derek Sivers shows this is true in a few ways you might not expect. At her Harvard commencement speech, "Harry Potter" author JK Rowling offers some powerful, heartening advice to dreamers and overachievers, including one hard-won lesson that she deems "worth more than any qualification I ever earned." MacArthur winner Sendhil Mullainathan uses the lens of behavioral economics to study a tricky set of social problems -- those we know how to solve, but don't. We know how to reduce child deaths due to diarrhea, how to prevent diabetes-related blindness and how to implement solar-cell technology ... yet somehow, we don't or can't. Why? When Jamie Heywood's brother was diagnosed with ALS, he devoted his life to fighting the disease as well. The Heywood brothers built an ingenious website where people share and track data on their illnesses -- and they discovered that the collective data had enormous power to comfort, explain and predict. Traditional lab tests for disease diagnosis can be too expensive and cumbersome for the regions most in need. George Whitesides' ingenious answer is a foolproof tool that can be manufactured at virtually zero cost. Too often, says David Agus cancer treatments have a short-sighted focus on individual cells. He suggests a new, cross-disciplinary approach, using atypical drugs, computer modeling and protein analysis to diagnose and treat the whole body. TED visits Tom Shannon in his Manhattan studio for an intimate look at his science-inspired art. An eye-opening, personal conversation with John Hockenberry reveals how nature's forces -- and the onset of Parkinson's tremors -- interact in his life and craft. Some of the world's most baffling social problems, says Peter Eigen, can be traced to systematic, pervasive government corruption, hand-in-glove with global companies. In his talk, Eigen describes the thrilling counter-attack led by his organization, Transparency International. Sharing powerful stories from his anti-obesity project in Huntington, West Virginia -- and a shocking image of the sugar we eat -- TED Prize winner Jamie Oliver makes the case for an all-out assault on our ignorance of food. In a demo that drew gasps at TED2010, Blaise Aguera y Arcas demonstrates new augmented-reality mapping technology from Microsoft. The leader of Britain's Conservative Party says we're entering a new era -- where governments themselves have less power (and less money) and people empowered by technology have more. Tapping into new ideas on behavioral economics, he explores how these trends could be turned into smarter policy. The thesaurus might equate "disabled" with synonyms like "useless" and "mutilated," but ground-breaking runner Aimee Mullins is out to redefine the word. Defying these associations, she shows how adversity -- in her case, being born without shinbones -- actually opens the door for human potential. At TED2010, Bill Gates unveils his vision for the world's energy future, describing the need for "miracles" to avoid planetary catastrophe and explaining why he's backing a dramatically different type of nuclear reactor. The necessary goal? Zero carbon emissions globally by 2050. In this wide-ranging, thought-provoking talk, Kevin Kelly muses on what technology means in our lives -- from its impact at the personal level to its place in the cosmos. The land of the free has become a legal minefield, says Philip K. Howard -- especially for teachers and doctors, whose work has been paralyzed by fear of suits. What's the answer? A lawyer himself, Howard has four propositions for simplifying US law. Eric Topol says we'll soon use our smart phones to monitor our vital signs and chronic conditions. At TEDMED, he highlights several of the most important wireless devices in medicine's future -- all helping to keep more of us out of hospital beds. Temple Grandin, diagnosed with autism as a child, talks about how her mind works -- sharing her ability to "think in pictures," which helps her solve problems that neurotypical brains might miss. She makes the case that the world n

eds people the autism spectrum: visual thinkers, verbal thinkers, and all kinds of smart geeky kids. Pawan Sinha details his groundbreaking research into how the brain's visual system develops. Sinha and his team provide free vision-restoring treatment to children born blind, and then study how their brains learn to interpret visual data. The work offers insights into neuroscience, engineering and even autism. With endearing honesty and vulnerability, Raghava KK tells the colorful tale of how art has taken his life to new places, and how life experiences in turn have driven his multiple reincarnations as an artist -- from cartoonist to painter, media darling to social outcast, and son to father. In this fun, 3-min performance from the World Science Festival, musician Bobby McFerrin uses the pentatonic scale to reveal one surprising result of the way our brains are wired. Using examples from vacations to colonoscopies, Nobel laureate and founder of behavioral economics Daniel Kahneman reveals how our "experiencing selves" and our "remembering selves" perceive happiness differently. This new insight has profound implications for economics, public policy -- and our own self-awareness. The tale of a major global cultural phenomenon: Cricket commentator Harsha Bhogle describes the spectacular arrival of fast-paced 20-20 cricket as it parallels the rise of modern India. He traces the game from its sleepy English roots to the current world of celebrity owners and million-dollar player contracts. Gary Flake demos Pivot, a new way to browse and arrange massive amounts of images and data online. Built on breakthrough Seadragon technology, it enables spectacular zooms in and out of web databases, and the discovery of patterns and links invisible in standard web browsing. In this archival footage from BBC TV, celebrated physicist Richard Feynman explains what fire, magnets, rubber bands (and more) are like at the scale of the jiggling atoms they're made of. This accessible, enchanting conversation in physics reveals a teeming nano-world that's just plain fun to imagine. James Cameron's big-budget (and even bigger-grossing) films create unreal worlds all their own. In this personal talk, he reveals his childhood fascination with the fantastic -- from reading science fiction to deep-sea diving -- and how it ultimately drove the success of his blockbuster hits "Aliens," "The Terminator," "Titanic" and "Avatar." The LXD (the Legion of Extraordinary Dancers) electrify the TED2010 stage with an emerging global street-dance culture, revved up by the Internet. In a preview of Jon Chu's upcoming Web series, this astonishing troupe show off their superpowers. We all strive for happiness -- but we spend most of our lives learning to be unhappy, says Srikanth Rao. In this practical talk, he teaches how to break free of the "I'd be happy if ..." mental model, and embrace our hard-wired happiness. At TED2009, Tim Berners-Lee called for "raw data now" -- for governments, scientists and institutions to make their data openly available on the web. At TED University in 2010, he shows a few of the interesting results when the data gets linked up. Fifty percent of traffic accidents happen at intersections. Gary Lauder shares a brilliant and cheap idea for helping drivers move along smoothly: a new traffic sign that combines the properties of "Stop" and "Yield." Chef Dan Barber squares off with a dilemma facing many chefs today: how to keep fish on the menu. With impeccable research and deadpan humor, he chronicles his pursuit of a sustainable fish he could love, and the foodie's honeymoon he's enjoyed since discovering an outrageously delicious fish raised using a revolutionary farming method in Spain. Sugar pills, injections of nothing -- studies show that, more often than you'd expect, placebos really work. At TEDMED, magician Eric Mead does a trick to prove that, even when you know something's not real, you can still react as powerfully as if it is. (Warning: This talk is not suitable for viewers who are disturbed by needles or blood.) At the Web 2.0 Expo, entrepreneur Gary Vaynerchuk gives a shot in the arm to dreamers and up-and-comers who face self-doubt. The Internet has made the formula for success simpler than ever, he argues. So there's now no excuse not to do what makes you happy. Mark Roth studies suspended animation: the art of shutting down life processes and then starting them up again. It's wild stuff, but it's not science fiction. Induced by careful use of an otherwise toxic gas, suspended animation can potentially help trauma and heart attack victims survive long enough to be treated. At TEDMED, Eric Dishman makes a bold argument: The US health care system is like computing circa 1959, tethered to big, unwieldy central systems: hospitals, doctors, nursing homes. As our aging population booms, it's imperative, he says, to create personal, networked, home-based health care for all. Blind river dolphins, reclusive lemurs, a parrot as fearless as it is lovelorn ... Douglas Adams' close encounters with these rare and unusual animals reveal that evolution, ever ingenious, can be fickle too -- in a University of California talk that sparkles with his trademark satiric wit. Games like World of Warcraft give players the means to save worlds, and incentive to learn the habits of heroes. What if we could harness this gamer power to solve real-world problems? Jane McGonigal says we can, and explains how. The second deadliest day in the history of Mount Everest climbs happened in 1996 -- and Ken Kamler was the only doctor on the mountain that day. He shares the incredible story of the climber's battle to save lives in extreme conditions, and uses brain imaging technology to map

the medical miracle of one man who survived roughly 36 hours buried in the snow. Where does creative inspiration spring from? At TEDIndia, Hollywood/Bollywood director Shekhar Kapur ("Elizabeth," "Mr. India") pinpoints his source of creativity: sheer, utter panic. He shares a powerful way to unleash your inner storyteller. Questions of good and evil, right and wrong are commonly thought unanswerable by science. But Sam Harris argues that science can -- and should -- be an authority on moral issues, shaping human values and setting out what constitutes a good life. Biologist Juliana Machado Ferreira, a TED Senior Fellow, talks about her work helping to save birds and other animals stolen from the wild in Brazil. Once these animals are seized from smugglers, she asks, then what? Tax forms, credit agreements, healthcare legislation: They're crammed with gobbledygook, says Alan Siegel, and incomprehensibly long. He calls for a simple, sensible redesign -- and plain English -- to make legal paperwork intelligible to the rest of us. Planetary scientist Joel Levine shows some intriguing -- and puzzling -- new discoveries about Mars: craters full of ice, traces of ancient oceans, and compelling hints at the presence, sometime in the past, of life. He makes the case for going back to Mars to find out more. Robert Gupta, violinist with the LA Philharmonic, talks about a violin lesson he once gave to a brilliant, schizophrenic musician -- and what he learned. Called back onstage later, Gupta plays his own transcription of the prelude from Bach's Cello Suite No. 1. Patsy Rodenburg says the world needs actors more than ever. In this talk at Michael Howard Studios, she tells the story of a profound encounter that reveals the deeper role theater can play in people's lives. In this moving yet pragmatic talk, Kevin Bales explains the business of modern slavery, a multibillion-dollar economy that underpins some of the worst industries on earth. He shares stats and personal stories from his on-the-ground research -- and names the price of freeing every slave on earth right now. Educating the poor is more than just a numbers game, says Shukla Bose. She tells the story of her groundbreaking Parikrma Humanity Foundation, which brings hope to India's slums by looking past the daunting statistics and focusing on treating each child as an individual. How many of today's headlines will matter in 100 years? 1000? Kirk Citron's "Long News" project collects stories that not only matter today, but will resonate for decades -- even centuries -- to come. At TED2010, he highlights recent headlines with the potential to shape our future. With help from some surprising footage, Derek Sivers explains how movements really get started. (Hint: it takes two.) Child prodigy Adora Svitak says the world needs "childish" thinking: bold ideas, wild creativity and especially optimism. Kids' big dreams deserve high expectations, she says, starting with grownups' willingness to learn from children as much as to teach. Games are invading the real world -- and the runaway popularity of Farmville and Guitar Hero is just the beginning, says Jesse Schell. At the DICE Summit, he makes a startling prediction: a future where 1-ups and experience points break "out of the box" and into every part of our daily lives. Armed with bracing logic, wit and her "public-health nerd" glasses, Elizabeth Pisani reveals the myriad of inconsistencies in today's political systems that prevent our dollars from effectively fighting the spread of HIV. Her research with at-risk populations -- from junkies in prison to sex workers on the street in Cambodia -- demonstrates the sometimes counter-intuitive measures that could stall the spread of this devastating disease. Soldiers who've lost limbs in service face a daily struggle unimaginable to most of us. At TEDMED, Dean Kamen talks about the profound people and stories that motivated his work to give parts of their lives back with his design for a remarkable prosthetic arm. Meet seven all-terrain robots -- like the humanoid, soccer-playing DARwIn and the cliff-gripping CLIMBeR -- built by Dennis Hong's robotics team at RoMeLa, based at Virginia Tech. Watch to the end for the five creative secrets to his lab's success. Pollen goes unnoticed by most of us, except when hay fever strikes. But microscopes reveal it comes in stunning colors and shapes -- and travels remarkably well. Jonathan Drori gives an up-close glimpse of these fascinating flecks of plant courtship. Natalie Merchant sings from her new album, "Leave Your Sleep." Lyrics from near-forgotten 19th-century poetry pair with her unmistakable voice for a performance that brought the TED audience to its feet. Vaccine-autism claims, "Frankenfood" bans, the herbal cure craze: All point to the public's growing fear (and, often, outright denial) of science and reason, says Michael Specter. He warns the trend spells disaster for human progress. Photographs do more than document history -- they make it. At TED University, Jonathan Klein of Getty Images shows some of the most iconic, and talks about what happens when a generation sees an image so powerful it can't look away -- or back. In a short, funny, data-packed talk at TED U, Catherine Mohr walks through all the geeky decisions she made when building a green new house -- looking at real energy numbers, not hype. What choices matter most? Not the ones you think. Thelma Golden, curator at the Studio Museum in Harlem, talks through three recent shows that explore how art examines and redefines culture. The "post-black" artists she works with are using their art to provoke a new dialogue about race and culture -- and about the meaning of art itself. 185 voices from 12 countries join a choir that spans t

the globe: "Lux Aurumque," composed and conducted by Eric Whitacre, merges hundreds of tracks individually recorded and posted to YouTube. It's an astonishing illustration of how technology can connect us. Some 80 to 90 percent of undersea creatures make light -- and we know very little about how or why. Bioluminescence expert Edith Widder explores this glowing, sparkling, luminous world, sharing glorious images and insight into the unseen depths (and brights) of the ocean. Legendary skeptic James Randi takes a fatal dose of homeopathic sleeping pills onstage, kicking off a searing 18-minute indictment of irrational beliefs. He throws out a challenge to the world's psychics: Prove what you do is real, and I'll give you a million dollars. (No takers yet.) Drugs alone can't stop disease in sub-Saharan Africa: We need diagnostic tools to match. TED Senior Fellow Frederick Balagadde shows how we can multiply the power and availability of an unwieldy, expensive diagnostic lab -- by miniaturizing it to the size of a chip. Tom Wujec presents some surprisingly deep research into the "marshmallow problem" -- a simple team-building exercise that involves dry spaghetti, one yard of tape and a marshmallow. Who can build the tallest tower with these ingredients? And why does a surprising group always beat the average? Want your local politician to pay attention to an issue you care about? Send a monthly handwritten letter, says former mayor Omar Ahmad -- it's more effective than an email, phone, or even writing a check. He shares four steps to writing a letter that works. Investing in women can unlock infinite potential around the globe. But how can women walk the line between Western-style empowerment and traditional culture? Kavita Ramdas of the Global Fund for Women talks about three encounters with powerful women who fight to make the world better -- while preserving the traditions that sustain them. Stephen Wolfram, creator of Mathematica, talks about his quest to make all knowledge computational -- able to be searched, processed and manipulated. His new search engine, Wolfram Alpha, has no lesser goal than to model and explain the physics underlying the universe. Five years ago, Roz Savage quit her high-powered London job to become an ocean rower. She's crossed the Atlantic solo, and just started the third leg of a Pacific solo row, the first for a woman. Why does she do it? Hear her reasons, both deeply personal and urgently activist. Simplicity: We know it when we see it -- but what is it, exactly? In this funny, philosophical talk, George Whitesides chisels out an answer. In a brilliantly tongue-in-cheek analysis, Sebastian Wernicke turns the tools of statistical analysis on TEDTalks, to come up with a metric for creating "the optimum TEDTalk" based on user ratings. How do you rate it? "Jaw-dropping"? "Unconvincing"? Or just plain "Funny"? Alleviating poverty is more guesswork than science, and lack of data on aid's impact raises questions about how to provide it. But Clark Medal-winner Esther Duflo says it's possible to know which development efforts help and which hurt -- by testing solutions with randomized trials. Simon Sinek has a simple but powerful model for inspirational leadership -- starting with a golden circle and the question "Why?" His examples include Apple, Martin Luther King, and the Wright brothers ... In this bracing talk, coral reef ecologist Jeremy Jackson lays out the shocking state of the ocean today: overfished, overheated, polluted, with indicators that things will get much worse. Astonishing photos and stats make the case. Anil Gupta is on the hunt for the developing world's unsung inventors -- indigenous entrepreneurs whose ingenuity, hidden by poverty, could change many people's lives. He shows how the Honey Bee Network helps them build the connections they need -- and gain the recognition they deserve. To write his first studio album in decades, "A Map of the Floating City," Thomas Dolby has been working in the inspirational setting of a restored lifeboat. At TED2010 he premieres a gorgeous, evocative song from that album -- about one night with a legend. He's backed by members of the modern string quartet Ethel. We're all embedded in vast social networks of friends, family, co-workers and more. Nicholas Christakis tracks how a wide variety of traits -- from happiness to obesity -- can spread from person to person, showing how your location in the network might impact your life in ways you don't even know. Nathan Myhrvold and team's latest inventions -- as brilliant as they are bold -- remind us that the world needs wild creativity to tackle big problems like malaria. And just as that idea sinks in, he rolls out a live demo of a new, mosquito-zapping gizmo you have to see to believe. Enric Sala shares glorious images -- and surprising insights and data -- from some of the most pristine areas of the ocean. He shows how we can restore more of our oceans to this healthy, balanced state, and the powerful ecological and economic benefits of doing so. Today's math curriculum is teaching students to expect -- and excel at -- paint-by-numbers classwork, robbing kids of a skill more important than solving problems: formulating them. Dan Meyer shows classroom-tested math exercises that prompt students to stop and think. Despite her best efforts, comedian Julia Sweeney is forced to tell a little white lie when her 8-year-old begins learning about frog reproduction -- and starts to ask some very smart questions. In this rare clip from 1972, legendary psychiatrist and Holocaust-survivor Viktor Frankl delivers a powerful message about the human search for meaning -- and the most important gift we can give others. William Li presents a new way to think about treatin

and cancer and other diseases: anti-angiogenesis, preventing the growth of blood vessels that feed a tumor. The crucial first (and best) step: Eating cancer-fighting foods that cut off the supply lines and beat cancer at its own game. NOTE: This talk was given in 2010, and this field of science has developed quickly since then. Enjoy it as a piece of science history but not as the last word on this topic. Read "Criticism & updates" below for more details. We all know the arguments that being vegetarian is better for the environment and for the animals -- but in a carnivorous culture, it can be hard to make the change. Graham Hill has a powerful, pragmatic suggestion: Be a weekday veg. Think of penguins as ocean sentinels, says Dee Boersma -- they're on the frontlines of sea change.

Sharing stories of penguin life and culture, she suggests that we start listening to what penguins are telling us. As the world's attention focuses on the perils of oil exploration, we present Richard Sears' talk from early February 2010. Sears, an expert in developing new energy resources, talks about our inevitable and necessary move away from oil. Toward ... what? Craig Venter and team make a historic announcement: they've created the first fully functioning, reproducing cell controlled by synthetic DNA. He explains how they did it and why the achievement marks the beginning of a new era for science. In this poignant, funny follow-up to his fabled 2006 talk, Sir Ken Robinson makes the case for a radical shift from standardized schools to personalized learning -- creating conditions where kids' natural talents can flourish. Copyright law's grip on film, music and software barely touches the fashion industry ... and fashion benefits in both innovation and sales, says Johanna Blakley. In her talk, she talks about what all creative industries can learn from fashion's free culture. Filmmaker Sharmeen Obaid-Chinoy takes on a terrifying question: How does the Taliban convince children to become suicide bombers? Propaganda footage from a training camp is intercut with her interviews of young camp graduates. A shocking vision. Seth Berkley explains how smart advances in vaccine design, production and distribution are bringing us closer than ever to eliminating a host of global threats -- from AIDS to malaria to flu pandemics. This haunting, intimate performance by European singer-songwriter Sophie Hunger features songs from her breakout debut "Monday's Ghost" and the just-released album "1983." Former "young Republican" Larry Lessig talks about what Democrats can learn about copyright from their opposite party, considered more conservative. A surprising lens on remix culture. Minority Report science adviser and inventor John Underkoffler demos g-speak -- the real-life version of the film's eye-popping, tai chi-meets-cyberspace computer interface. Is this how tomorrow's computers will be controlled? Photographer Brian Skerry shoots life above and below the waves -- as he puts it, both the horror and the magic of the ocean. Sharing amazing, intimate shots of undersea creatures, he shows how powerful images can help make change. The founder of 4chan, a controversial, uncensored online imageboard, describes its subculture, some of the Internet "memes" it has launched, and the incident in which its users managed a very public, precision hack of a mainstream media website. The talk raises questions about the power -- and price -- of anonymity. In tough economic times, our exploratory science programs -- from space probes to the LHC -- are first to suffer budget cuts. Brian Cox explains how curiosity-driven science pays for itself, powering innovation and a profound appreciation of our existence. The band OK Go dreamed up the idea of a massive Rube Goldberg machine for their next music video -- and Adam Sadowsky's team was charged with building it. He tells the story of the effort and engineering behind their labyrinthine creation that quickly became the YouTube sensation "This Too Shall Pass." Democracy thrives on civil debate, Michael Sandel says -- but we're shamefully out of practice. He leads a fun refresher, with TEDsters sparring over a recent Supreme Court case (PGA Tour Inc. v. Martin) whose outcome reveals the critical ingredient in justice. In his home of Namibia, John Kasaona is working on an innovative way to protect endangered animal species: giving nearby villagers (including former poachers) responsibility for caring for the animals. And it's working. It may seem that big problems require big solutions, but ad man Rory Sutherland says many flashy, expensive fixes are just obscuring better, simpler answers. To illustrate, he uses behavioral economics and hilarious examples. Nuclear power: the energy crisis has even die-hard environmentalists reconsidering it. In this first-ever TED debate, Stewart Brand and Mark Z. Jacobson square off over the pros and cons. A discussion that'll make you think -- and might even change your mind. As his career grew, David Byrne went from playing CBGB to Carnegie Hall. He asks: Does the venue make the music? From outdoor drumming to Wagnerian operas to arena rock, he explores how context has pushed musical innovation. Michael Shermer says the human tendency to believe strange things -- from alien abductions to dowsing rods -- boils down to two of the brain's most basic, hard-wired survival skills. He explains what they are, and how they get us into trouble. Margaret Gould Stewart, YouTube's head of user experience, talks about how the ubiquitous video site works with copyright holders and creators to foster (at the best of times) a creative ecosystem where everybody wins. Peter Tyack of Woods Hole talks about a hidden wonder of the sea: underwater sound. Onstag

at Mission Blue, he explains the amazing ways whales use sound and song to communicate across hundreds of miles of ocean. Bored in school, failing classes, at odds with peers: This child might be an entrepreneur, says Cameron Herold. In his talk, he makes the case for parenting and education that helps would-be entrepreneurs flourish -- as kids and as adults. Renowned classical Indian dancer Ananda Shankar Jayant was diagnosed with cancer in 2008. She tells her personal story of not only facing the disease but dancing through it, and gives a performance revealing the metaphor of strength that helped her do it. When the dotcom bubble burst, hotelier Chip Conley went in search of a business model based on happiness. In an old friendship with an employee and in the wisdom of a Buddhist king, he learned that success comes from what you count. In graphic design, Marian Bantjes says, throwing your individuality into a project is heresy. She explains how she built her career doing just that, bringing her signature delicate illustrations to storefronts, valentines and even genetic diagrams. Charles Leadbeater went looking for radical new forms of education -- and found them in the slums of Rio and Kibera, where some of the world's poorest kids are finding transformative new ways to learn. And this informal, disruptive new kind of school, he says, is what all schools need to become. Developmental disorders in children are typically diagnosed by observing behavior, but Aditi Shankardass suggests we should be looking directly at brains. She explains how one EEG technique has revealed mistaken diagnoses and transformed children's lives. Lego blocks: playtime mainstay for industrious kids, obsession for many (ahem!) mature adults. Hil Le Cooperman takes us on a trip through the beloved bricks' colorful, sometimes oddball grownup subculture, featuring CAD, open-source robotics and a little adult behavior. Clay Shirky looks at "cognitive surplus" -- the shared, online work we do with our spare brain cycles. While we're busy editing Wikipedia, posting to Ushahidi (and yes, making LOLcats), we're building a better, more cooperative world. Can we rebuild our broken suburbs? Ellen Dunham-Jones shares a vision of dying malls rehabilitated, dead "big box" stores re-inhabited, and endless parking lots transformed into thriving wetlands. What's link between the ocean's health and our health? Marine biologist Stephen Palumbi shows how toxins at the bottom of the ocean food chain find their way into our bodies -- and tells a shocking story of toxic contamination in the fish market, where consumers were being tricked into buying fish that's not only mislabeled but unsafe. For the last 12 years, Carter Emmart has been coordinating the efforts of scientists, artists and programmers to build a complete 3D visualization of our known universe. He demos this stunning tour and explains how it's being shared with facilities around the world. TED Fellow and urban designer Mitchell Joachim presents his vision for sustainable, organic architecture: eco-friendly abodes grown from plants and -- wait for it -- meat. At TED2010, mathematics legend Benoit Mandelbrot develops a theme he first discussed at TED in 1984 -- the extreme complexity of roughness, and the way that fractal math can find order within patterns that seem unknowably complicated. Co-creator of the philanthropic FEED bags, Ellen Gustafson says hunger and obesity are two sides of the same coin. In her talk, she launches The 30 Project -- a way to change how we farm and eat in the next 30 years, and solve the global food inequalities behind both epidemics. Nalini Nadkarni challenges our perspective on trees and prisons -- she says both can be more dynamic than we think. Through a partnership with the state of Washington, she brings science classes and conservation programs to inmates, with unexpected results. The world's population will grow to 9 billion over the next 50 years -- and only by raising the living standards of the poorest can we check population growth. This is the paradoxical answer that Hans Rosling unveils at TED@Cannes using colorful new data display technology (you'll see). Even as the Deepwater Horizon tragedy unfolded, Carl Safina took the stage at TEDxOilSpill to share what the facts were known at the time. In a blood-boiling cross-examination, he suggests that the consequences will stretch far beyond the Gulf -- and many so-called solutions are making the situation worse. At TEDGlobal 2010, author Matt Ridley shows how, throughout history, the engine of human progress has been the meeting and mating of ideas to make new ideas. It's not important how clever individuals are, he says; what really matters is how smart the collective brain is. Sure, the web connects the globe, but most of us end up hearing mainly from people just like ourselves. Blogger and technologist Ethan Zuckerman wants to help share the stories of the whole wide world. He talks about clever strategies to open up your Twitter world and read the news in languages you don't even know. Listening to stories widens the imagination; telling them lets us leap over cultural walls, embrace different experiences, feel what others feel. Elif Shafak builds on this simple idea to argue that fiction can overcome identity politics. The controversial website WikiLeaks collects and posts highly classified documents and video. Founder Julian Assange, who's reportedly being sought for questioning by US authorities, talks to TED's Chris Anderson about how the site operates, what it has accomplished -- and what drives him. The interview includes graphic footage of a recent US airstrike in Baghdad. In "THE 99," Naif Al-Mutawa's new generation of comic book heroes fight mo

crimes -- they smash stereotypes and battle extremism. Named after the 99 attributes of Allah, his characters reinforce positive messages of Islam and cross cultures to create a new moral framework for confronting evil, even teaming up with the Justice League of America. Astronomer Dimitar Sasselov and his colleagues search for Earth-like planets that may, someday, help us answer centuries-old questions about the origin and existence of biological life elsewhere (and on Earth). Preliminary results show that they have found 706 "candidates" -- some of which further research may prove to be planets with Earth-like geochemical characteristics. NOTE: This talk was given in 2010, and this field of science has developed quickly since then. Read "Criticisms & updates" below for more details. Tan Le's astonishing new computer interface reads its user's brainwaves, making it possible to control virtual objects, and even physical electronics, with mere thoughts (and a little concentration). She demos the headset, and talks about its far-reaching applications. Arthritis and injury grind down millions of joints, but few get the best remedy -- real biological tissue. Kevin Stone shows a treatment that could sidestep the high costs and donor shortfall of human-to-human transplants with a novel use of animal tissue. Sheena Iyengar studies how we make choices -- and how we feel about the choices we make. At TEDGlobal, she talks about both trivial choices (Coke v. Pepsi) and profound ones, and shares her groundbreaking research that has uncovered some surprising attitudes about our decisions. Break down the oil slick, keep it off the shores: that's grounds for pumping toxic dispersant into the Gulf, say clean-up overseers. Susan Shaw shows evidence it's sparing some beaches only at devastating cost to the health of the deep sea. In this Princeton University graduation address, Amazon founder Jeff Bezos makes the case that our character is reflected not in the gifts we're endowed with at birth, but by the choices we make over the course of a lifetime. Oceanographer John Delaney is leading the team that is building an underwater network of high-def cameras and sensors that will turn our ocean into a global interactive lab -- sparking an explosion of rich data about the world below. Laurie Santos looks for the roots of human irrationality by watching the way our primate relatives make decisions. A clever series of experiments in "monkeynomics" shows that some of the silly choices we make, monkeys make too. After he swam the North Pole, Lewis Pugh vowed never to take another cold-water dip. Then he heard of Lake Imja in the Himalayas, created by recent glacial melting, and Lake Pumori, a body of water at an altitude of 5300 m on Everest -- and so began a journey that would teach him a radical new way to approach swimming and think about climate change. Convince just 100 key companies to go sustainable, and WWF's Jason Clay says global markets will shift to protect the planet our consumption has already outgrown. Hear how his extraordinary roundtables are getting big brand rivals to agree on green practices first -- before their products duke it out on store shelves. Sheryl WuDunn's book "Half the Sky" investigates the oppression of women globally. Her stories shock. Only when women in developing countries have equal access to education and economic opportunity will we be using all our human resources. Hours before New York lawmakers rejected a key marriage equality bill (38-24), State Senator Diane J. Savino made the passionate case for a government that recognizes and administers same-sex marriages. Here's her fresh, thought-provoking perspective on one of the most contentious issues in US culture, religion and government. Peter Molyneux demos Milo, a hotly anticipated video game for Microsoft's Kinect controller. Perceptive and impressionable like a real 11-year-old, the virtual boy watches, listens and learns -- recognizing and responding to you. Jamil Abu-Wardeh jump-started the comedy scene in the Arab world by founding the Axis of Evil Middle East Comedy Tour, which brings standup comedians to laughing audiences all over the region. He's found that, by respecting the "three B's" (blue material, beliefs and "bolitics"), the Axis of Evil comics find plenty of cross-border laughs. A founding member of the Axis of Evil Comedy Tour, standup comic Maz Jobrani riffs on the challenges and conflicts of being Iranian-American -- "like, part of me thinks I should have a nuclear program; the other part thinks I can't be trusted ..." In this far-seeing talk, Seth Priebatsch shows how game dynamics are reshaping the world -- from a classroom where students "level up" instead of being graded, to a pervasive game called "happy hour" that you may already be playing. Get ready to meet the "game layer," a pervasive net of behavior-steering game dynamics that will reshape education and commerce. David McCandless turns complex data sets (like worldwide military spending, media buzz, Facebook status updates) into beautiful, simple diagrams that tease out unseen patterns and connections. Good design, he suggests, is the best way to navigate information glut -- and it may just change the way we see the world. Science columnist Lee Hotz describes a remarkable project at WAIS Divide, Antarctica, where a hardy team are drilling into ten-thousand-year-old ice to extract vital data on our changing climate. In this talk from RSA Animate, bestselling author Jeremy Rifkin investigates the evolution of empathy and the profound ways it has shaped human development and society. Cartoonist Jim Toomey created the comic strip Sherman's Lagoon, a wry look at underwater life starring Sherman the talking shark. As he ske

atches some of his favorite sea creatures live onstage. Toomey shares his love of the ocean and the stories it can tell. Speaking one month after the massive Gulf of Mexico oil spill, Lisa Margonelli shows how drilling moratoriums and executive ousters make for good theater, but distract us from the issue at heart: our unrestrained oil consumption. She shares her bold plan to wean America off oil -- by confronting consumers with its real cost. Physics and marketing don't seem to have much in common, but Dan Cobley is passionate about both. He brings these unlikely bedfellows together using Newton's second law, Heisenberg's uncertainty principle, the scientific method and the second law of thermodynamics to explain the fundamental theories of branding. Statistician Nic Marks asks why we measure a nation's success by its productivity -- instead of by the happiness and well-being of its people. He introduces the Happy Planet Index, which tracks national well-being against resource use (because a happy life doesn't have to cost the earth). Which countries rank highest in the HPI? You might be surprised. Human growth has strained the Earth's resources, but as Johan Rockstrom reminds us, our advances also give us the science to recognize this and change behavior. His research has found nine "planetary boundaries" that can guide us in protecting our planet's many overlapping ecosystems. His Holiness the Karmapa talks about how he was discovered to be the reincarnation of a revered figure in Tibetan Buddhism. In telling his story, he urges us to work on not just technology and design, but the technology and design of the heart. He is translated onstage by Tyler Dewar. After hitting on a brilliant new life plan, our first instinct is to tell someone, but Derek Sivers says it's better to keep goals secret. He presents research stretching as far back as the 1920s to show why people who talk about their ambitions may be less likely to achieve them. Rachel Sussman shows photographs of the world's oldest continuously living organisms -- from 2,000-year-old brain coral off Tobago's coast to an "underground forest" in South Africa that has lived since before the dawn of agriculture. Education scientist Sugata Mitra tackles one of the greatest problems of education -- the best teachers and schools don't exist where they're needed most. In a series of real-life experiments from New Delhi to South Africa to Italy, he gave kids self-supervised access to the web and saw results that could revolutionize how we think about teaching. Alwar Balasubramaniam's sculpture plays with time, shape, shadow, perspective: four tricky sensations that can reveal -- or conceal -- what's really out there. At TEDIndia, the artist shows slides of his extraordinary installations. After 15 years in the British diplomatic corps, Carne Ross became a "freelance diplomat," running a bold nonprofit that gives small, developing and yet-unrecognized nations a voice in international relations. At the BIF-5 conference, he calls for a new kind of diplomacy that gives voice to small countries, that works with changing boundaries and that welcomes innovation. How can the magic of live theater, live music, live dance compete with the always-on Internet? Ben Cameron offers a bold look forward to a world where live arts matter more than ever -- to link humans together at a primal level of shared experience. Why are so many things broken? In a hilarious talk from the 2006 Gel conference, Seth Godin gives a tour of things poorly designed, the 7 reasons why they are that way, and how to fix them. Rob Dunbar hunts for data on our climate from 12,000 years ago, finding clues inside ancient seabeds and corals and inside ice sheets. His work is vital in setting baselines for fixing our current climate -- and in tracking the rise of deadly ocean acidification. TED's Chris Anderson says the rise of web video is driving a worldwide phenomenon he calls Crowd Accelerated Innovation -- a self-fueling cycle of learning that could be as significant as the invention of print. But to tap into its power, organizations will need to embrace radical openness. And for TED, it means the dawn of a whole new chapter ... In today's world, balancing school, work, kids and more, most of us can only hope for the recommended eight hours of sleep. Examining the science behind our body's internal clock, Jessa Gamble reveals the surprising and substantial program of rest we should be observing. After mapping humans' intricate social networks, Nicholas Christakis and colleague James Fowler began investigating how this information could better our lives. Now, he reveals his hot-off-the-press findings: These networks can be used to detect epidemics earlier than ever, from the spread of innovative ideas to risky behaviors to viruses (like H1N1). Caroline Phillips cranks out tunes on a seldom-heard folk instrument: the hurdy-gurdy, a.k.a. the wheel fiddle. A searching, Basque melody follows her fun lesson on its unique anatomy and 1,000-year history. Christien Meindertsma, author of "Pig 05049" looks at the astonishing afterlife of the ordinary pig, parts of which make their way into at least 185 non-pork products, from bullets to artificial hearts. People often credit their ideas to individual "Eureka!" moments. But Steven Johnson shows how history tells a different story. His fascinating tour takes us from the "liquid networks" of London's coffee houses to Charles Darwin's long, slow hunch to today's high-velocity web. In sub-Saharan Africa, HIV infections are more prevalent and doctors scarcer than anywhere else in the world. With a lack of medical professionals, Mitchell Besser enlisted the help of his patients to create mothers2mothers -- an extraordinary



network of HIV-positive women who share support for each other while changing and saving lives. For the last eight years, pop singer Annie Lennox has devoted the majority of her time to her SING campaign, raising awareness and money to combat HIV/AIDS. She shares the experiences that have inspired her, from working with Nelson Mandela to meeting a little African girl in a desperate situation. In this short, amazing demo, Fabian Hemmert imagines one future of the mobile phone -- a shape-shifting and weight-shifting handset that "displays" information nonvisually. It's a delightfully intuitive way to communicate.

Julian Treasure says our increasingly noisy world is gnawing away at our mental health -- even costing lives. He lays out an 8-step plan to soften this sonic assault (starting with those cheap earbuds) and restore our relationship with sound. Birds, a perennial human fascination, entertained medieval homes long before science took them for serious study. "Wisdom of Birds" author Tim Birkhead tours some intriguing birdwatcher lore (dug up in old field journals) -- and talks about the role it plays in ornithology today. At TED@Cannes, Gary Wolf gives a 5-min intro to an intriguing new pastime: using mobile apps and always-on gadgets to track and analyze your body, mood, diet, spending -- just about everything in daily life you can measure -- in gloriously geeky detail. Sebastian Seung is mapping a massively ambitious new model of the brain that focuses on the connections between each neuron. He calls it our "connectome," and it's as individual as our genome -- and understanding it could open a new way to understand our brains and our minds. When Jungian analyst Inge Missmahl visited Afghanistan, she saw the inner wounds of war -- widespread despair, trauma and depression. And yet, in this country of 30 million people, there were only two dozen psychiatrists. Missmahl talks about her work helping to build the country's system of psychosocial counseling, promoting both individual and, perhaps, national healing. Thailand's "Mr. Condom," Mechai Viravaidya, retells the country's bold plan to raise its standard of living, starting in the 1970s. First step: population control. And that means a lot of frank, funny -- and very effective -- talk about condoms. Product designer Eben Bayer reveals his recipe for a new, fungus-based packaging material that protects fragile stuff like furniture, plasma screens -- and the environment. As the world faces recession, climate change, inequity and more, Tim Jackson delivers a piercing challenge to established economic principles, explaining how we might

stop feeding the crises and start investing in our future. Tuna are ocean athletes -- fast, far-ranging predators whose habits we're just beginning to understand. Marine biologist Barbara Block fits tuna with tracking tags (complete with transponders) that record unprecedented amounts of data about these gorgeous, threatened fish and the ocean habitats they move through. Hans Rosling reframes 10 years of UN data with his spectacular visuals, lighting up an astonishing -- and under-reported -- piece of front-page good news: We're winning the war against child death. Along the way, he debunks one flawed approach to stats that blots out such vital stories. Stacey Kramer offers a moving, personal, 3-minute parable that shows how an unwanted experience -- frightening, traumatic, costly -- can turn out to be a priceless gift. Plants behave in some oddly intelligent ways: fighting predators, maximizing food opportunities ... But can we think of them as actually having a form of intelligence of their own? Italian botanist Stefano Mancuso presents intriguing evidence. Melinda Gates makes a provocative case: What can nonprofits learn from mega-corporations like Coca-Cola, whose global network of marketers and distributors ensures that every remote village wants -- and can get -- an ice-cold Coke? Maybe this model could work for distributing health care, vaccinations, sanitation, even condoms ... "Haiti was not a natural disaster," says TED Fellow Peter Haas: "It was a disaster of engineering." As the country rebuilds after January's deadly quake, are bad old building practices creating another ticking time bomb? Haas's group, AIDG, is helping Haiti's builders learn modern building and engineering practices, to assemble a strong country brick by brick. Natalie Jeremijenko's unusual lab puts art to work, and addresses environmental woes by combining engineering know-how with public art and a team of volunteers. These real-life experiments include: Walking tadpoles, texting "fish," planting fire-hydrant gardens and more. On the web, a new "Friend" may be just a click away, but true connection is harder to find and express. Ze Frank presents a medley of zany Internet toys that require deep participation -- and reward it with something more nourishing. You're invited, if you promise you'll share. In a courageous, intensely emotional talk at the city council in Fort Worth, Texas, councilman Joel Burns reaches out to the targets of teen bullying -- kids who are gay, perceived as gay, or just different -- with a vital message about their lives, and the harassment they face. What do you think of people in poverty? Maybe what Jessica Jackley once did: "they" need "our" help, in the form of a few coins in a jar. The co-founder of Kiva.org talks about how her attitude changed -- and how her work with microloans has brought new power to people who live on a few dollars a day. Did you know you have functioning neurons in your intestines -- about a hundred million of them? Food scientist Heribert Watzke tells us about the "hidden brain" in our gut and the surprising things it makes us feel. Artist Dianna Cohen shares som

the tough truths about plastic pollution in the ocean and in our lives -- and some thoughts on how to free ourselves from the plastic gyre. In a series of witty punchlines, Patrick Chappatte makes a poignant case for the power of the humble cartoon. His projects in Lebanon, West Africa and Gaza show how, in the right hands, the pencil can illuminate serious issues and bring the most unlikely people together. David Byrne sings the Talking Heads' 1988 hit, "(Nothing But) Flowers." He's accompanied by Thomas Dolby and string quartet Ethel, who made up the TED2010 house band. Engineer RA Mashelkar shares three stories of ultra-low-cost design from India that use bottom-up rethinking, and some clever engineering, to bring expensive products (cars, prosthetics) into the realm of the possible for everyone. Historian and diplomat Joseph Nye gives us the 30,000-foot view of the shifts in power between China and the US, and the global implications as economic, political and "soft" power shifts and moves around the globe. Chef Barton Seaver presents a modern dilemma: Seafood is one of our healthier protein options, but overfishing is desperately harming our oceans. He suggests a simple way to keep fish on the dinner table that includes every mom's favorite adage -- "Eat your vegetables!" What's the difference between a pest and a bug? Shimon Steinberg makes the case for using good bugs to fight bad bugs, avoiding chemicals in our quest for perfect produce. Using animation, projections and her own moving shadow, Miwa Matreyek performs a gorgeous, meditative piece about inner and outer discovery. Take a quiet 10 minutes and dive in. With music from Anna Oxygene, Mirah, Caroline Lufkin and Mileece. We're bringing gameplay into more aspects of our lives, spending countless hours -- and real money -- exploring virtual worlds for imaginary treasures. Why? As Tom Chatfield shows, games are perfectly tuned to dole out rewards that engage the brain and keep us questing for more. David Bismark demos a new system for voting that contains a simple, verifiable way to prevent fraud and miscounting -- while keeping each person's vote secret. Aboard Mission Blue, scientist Greg Stone tells the story of how he helped the Republic of Kiribati to create an enormous protected area in the middle of the Pacific -- protecting fish, sealife and perhaps the island nation itself. In the quest to map the brain, many scientists have attempted the incredibly daunting task of recording the activity of each neuron. Gero Miesenboeck works backward -- manipulating specific neurons to figure out exactly what they do, through a series of stunning experiments that reengineer the way fruit flies perceive light. Musical innovator Andrew Bird winds together his trademark violin technique with xylophone, vocals and sophisticated electronic looping. Add in his uncanny ability to whistle anything, and he becomes a riveting one-man orchestra. Designer Emily Pilloton moved to rural Bertie County, in North Carolina, to engage in a bold experiment of design-led community transformation. She's teaching a design-build class called Studio H that engages high schoolers' minds and bodies while bringing smart design and new opportunities to the poorest county in the state. Civil wars and ethnic conflicts have brought the world incredible suffering, but Stefan Wolff's figures show that, in the last 20 years, their number has steadily decreased. He extracts critical lessons from Northern Ireland, Liberia, Timor and more to show that leadership, diplomacy and institutional design are our three most effective weapons in waging peace. Aaron Huey's effort to photograph poverty in America led him to the Pine Ridge Indian Reservation, where the struggle of the native Lakota people -- appalling, and largely ignored -- compelled him to refocus. Five years of work later, his haunting photos intertwine with a shocking history lesson. FLA head Aret van Heerden talks about the next frontier of workers' rights -- globalized industries where no single national body can keep workers safe and protected. How can we keep our global supply chains honest? Van Heerden makes the business case for fair labor. Ecologist Eric Berlow doesn't feel overwhelmed when faced with complex systems. He knows that more information can lead to a better, simpler solution. Illustrating the tips and tricks for breaking down big issues, he distills an overwhelming infographic on U.S. strategy in Afghanistan to a few elementary points. From rockets to stock markets, many of humanity's most thrilling creations are powered by math. So why do kids lose interest in it? Conrad Wolfram says the part of math we teach -- calculation by hand -- isn't just tedious, it's mostly irrelevant to real mathematics and the real world. He presents his radical idea: teaching kids math through computer programming. TED collaborates with animator Andrew Park to illustrate Denis Dutton's provocative theory on beauty -- that art, music and other beautiful things, far from being simply "in the eye of the beholder," are a core part of human nature with deep evolutionary origins. Computer science professor Shimon Schocken is also an avid mountain biker. To share the life lessons he learned while riding, he began an outdoor program with Israel's juvenile inmates and was touched by both their intense difficulties and profound successes. Photographs by Raphael Rabinovitz. Join John Hardy on a tour of the Green School, his off-the-grid school in Bali that teaches kids how to build, garden, create (and get into college). The centerpiece of campus is the spiraling Heart of School, perhaps the world's largest freestanding bamboo building. Kristina Gjerde studies the law of the high seas -- the 64 percent of our o

mean that isn't protected by any national law at all. Gorgeous photos show the hidden worlds that Gjerde and other lawyers are working to protect from trawling and trash-dumping, through smart policymaking and a healthy dose of PR. Neuropsychologist Kim Gorgens makes the case for better protecting our brains against the risk of concussion -- with a compelling pitch for putting helmets on kids. In war we often see only the frontline stories of soldiers and combat. AT TEDGlobal 2010, Zainab Salbi tells powerful "backline" stories of women who keep everyday life going during conflicts, and calls for women to have a place at the negotiating table once fighting is over. Jason Fried has a radical theory of working: that the office isn't a good place to do it. He calls out the two main offenders (call them the M&Ms) and offers three suggestions to make the workplace actually work. In this funny and inspiring talk, Dan Phillips tours us through a dozen homes he's built in Texas using recycled and reclaimed materials in wildly creative ways.

Brilliant, low-tech design details will refresh your own drive to make more with less.

At a TEDx event, 11-year-old Birke Baehr presents his take on a major source of our food -- far-away and less-than-picturesque industrial farms. Keeping farms out of sight promotes a rosy, unreal picture of big-box agriculture, he argues, as he outlines the case to green and localize food production. William Ury, author of "Getting to Yes," offers an elegant, simple (but not easy) way to create agreement in even the most difficult situations -- from family conflict to, perhaps, the Middle East. Marcel Dicke makes an appetizing case for adding insects to everyone's diet. His message to squeamish chefs and foodies: delicacies like locusts and caterpillars compete with meat in flavor, nutrition and eco-friendliness. No one knows exactly how many landmines still litter the world, but it's safe to say: millions, waiting to kill and maim unsuspecting civilians. Clearing them is slow, expensive and dangerous. The founder of Apopo, Bart Weetjens, talks about his extraordinary project: training rats to sniff out land mines. He shows clips of his "hero rats" in action, and previews his work's next phase: teaching them to turn up tuberculosis in the lab. If you've been in a restaurant kitchen, you've seen how much food, water and energy can be wasted there. Chef Arthur Potts-Dawson shares his very personal vision for drastically reducing restaurant, and supermarket, waste -- creating recycling, composting, sustainable engines for good (and good food). Halla Tómasdóttir managed to take her company Audur Capital through the eye of the financial storm in Iceland by applying 5 traditionally "feminine" values to financial services. At TEDWomen, she talks about these values and the importance of balance. At TEDWomen, Tony Porter makes a call to men everywhere: Don't "act like a man." Telling powerful stories from his own life, he shows how this mentality, drummed into so many men and boys, can lead men to disrespect, mistreat and abuse women and each other. His solution: Break free of the "man box." Kiran Bedi has a surprising resume. Before becoming Director General of the Indian Police Service, she managed one of the country's toughest prisons -- and used a new focus on prevention and education to turn it into a center of learning and meditation.

She shares her thoughts on visionary leadership at TEDWomen. Hanna Rosin reviews startling new data that shows women actually surpassing men in several important measures, such as college graduation rates. Do these trends, both US-centric and global, signal the "end of men"? Probably not -- but they point toward an important societal shift worth deep discussion. Diana Laufenberg shares three surprising things she has learned about teaching -- including a key insight about learning from mistakes. Babble.com publishers Rufus Griscom and Alisa Volkman, in a lively tag-team, expose 4 facts that parents never, ever admit -- and why they should. Funny and honest, for parents and nonparents alike. In her talk, Rachel Botsman says we're "wired to share" -- and shows how websites like Zipcar and Swaptree are changing the rules of human behavior. In this talk from RSA Animate, Sir Ken Robinson lays out the link between 3 troubling trends: rising drop-out rates, schools' dwindling stake in the arts, and ADHD. An important, timely talk for parents and teachers. Beverly + Dereck Joubert live in the bush, filming and photographing lions and leopards in their natural habitat. With stunning footage (some never before seen), they discuss their personal relationships with these majestic animals -- and their quest to save the big cats from human threats. Facebook COO Sheryl Sandberg looks at why a smaller percentage of women than men reach the top of their professions -- and offers 3 powerful pieces of advice to women aiming for the C-suite. The future of green is local. Majora Carter tells three inspiring stories of people who are saving their own communities while saving the planet. Brené Brown studies human connection -- our ability to empathize, belong, love. In a poignant, funny talk, she shares a deep insight from her research, one that sent her on a personal quest to know herself as well as to understand humanity. A talk to share. In an intimate talk, Barry Schwartz dives into the question "How do we do the right thing?" With help from collaborator Kenneth Sharpe, he shares stories that illustrate the difference between following the rules and truly choosing wisely. In this short talk, Arianna Huffington shares a small idea that can awaken much bigger ones: the power of a good night's sleep. Instead of bragging about our sleep deficit

she urges us to shut our eyes and see the big picture: We can sleep our way to increased productivity and happiness -- and smarter decision-making. Lesley Hazleton sat down one day to read the Koran. And what she found -- as a non-Muslim, a self-identified "tourist" in the Islamic holy book -- wasn't what she expected. With serious scholarship and warm humor, Hazleton shares the grace, flexibility and mystery she found, in this myth-debunking talk. Musician and researcher Charles Limb wondered how the brain works during musical improvisation -- so he put jazz musicians and rappers in an fMRI to find out. What he and his team found has deep implications for our understanding of creativity of all kinds. Working with a team of physicists, Dr. Deborah Rhodes developed a new tool for tumor detection that's 3 times as effective as traditional mammograms for women with dense breast tissue. The life-saving implications are stunning. So why haven't we heard of it? Rhodes shares the story behind the tool's creation, and the web of politics and economics that keep it from mainstream use. Neil Pasricha's blog 1000 Awesome Things savors life's simple pleasures, from free refills to clean sheets. In this heartfelt talk, he reveals the 3 secrets (all starting with A) to leading a life that's truly awesome. Nobel Peace laureate Jody Williams brings tough love to the dream of world peace, with her razor-sharp take on what "peace" really means, and a set of profound stories that zero in on the creative struggle -- and sacrifice -- of those who work for it. Technology is evolving us, says Amber Case, as we become a screen-staring, button-clicking new version of homo sapiens. We now rely on "external brains" (cell phones and computers) to communicate, remember, even live out secondary lives. But will these machines ultimately connect or conquer us? Case offers surprising insight into our cyborg selves. It takes an entire civilization to build a toaster. Designer Thomas Thwaites found out the hard way, by attempting to build one from scratch: mining ore for steel, deriving plastic from oil ... it's frankly amazing he got as far as he got. A parable of our interconnected society, for designers and consumers alike. There's an angry divisive tension in the air that threatens to make modern politics impossible. Elizabeth Lesser explores the two sides of human nature within us (call them "the mystic" and "the warrior") that can be harnessed to elevate the way we treat each other. She shares a simple way to begin real dialogue -- by going to lunch with someone who doesn't agree with you, and asking them three questions to find out what's really in their hearts. In her talk, Ali Carr-Chellman pinpoints three reasons boys are tuning out of school in droves, and lays out her bold plan to re-engage them: bringing their culture into the classroom, with new rules that let boys be boys, and video games that teach as well as entertain. Days before this talk, journalist Naomi Klein was on a boat in the Gulf of Mexico, looking at the catastrophic results of BP's risky pursuit of oil. Our societies have become addicted to extreme risk in finding new energy, new financial instruments and more ... and too often, we're left to clean up a mess afterward. Klein's question: What's the backup plan? You'll never sing again, said her doctor. But in a story from the very edge of medical possibility, operatic soprano Charity Tillemann-Dick tells a double story of survival -- of her body, from a double lung transplant, and of her spirit, fueled by an unwavering will to sing. A powerful story from TEDMED 2010. When we throw away our plastic trash, where does it go? In this hard-hitting talk, Van Jones shows us how our throwaway culture hits poor people and poor countries "first and worst," with consequences we all share no matter where we live. He offers some ways to reclaim our planet from plastic garbage. Medical scans can produce thousands of images for a single patient in seconds, but how do doctors know what's useful? Scientific visualization expert Anders Ynnerman shows us sophisticated new tools -- like virtual autopsies -- for analyzing our data, and hints at the sci-fi-sounding medical technologies coming up next. This talk contains some graphic medical imagery. In this first-of-its-kind demo, Heather Knight introduces Data, a robotic stand-up comedian that does much more than rattle off one-liners -- it gathers audience feedback (using software co-developed with Scott Satkin and Varun Ramakrishna at CMU) and tunes its act as the crowd responds. Is this thing on? Speaking at a TED Salon in London, Martin Jacques asks: How do we in the West make sense of China and its phenomenal rise? The author of "When China Rules the World," he examines why the West often puzzles over the growing power of the Chinese economy, and offers three building blocks for understanding what China is and will become. Your medical chart: it's hard to access, impossible to read -- and full of information that could make you healthier if you just knew how to use it. At TEDMED, Thomas Goetz looks at medical data, making a bold call to redesign it and get more insight from it. New Yorker cartoonist Liza Donnelly shares a portfolio of her wise and funny cartoons about modern life -- and talks about how humor can empower women to change the rules. Imagine playing a video game controlled by your mind. Now imagine that game also teaches you about your own patterns of stress, relaxation and focus. Ariel Garten shows how looking at our own brain activity gives new meaning to the ancient dictum "know thyself." Diagnosed with cancer, Bruce Feiler worried first about his young family. So -- as he shares in this funny, rambling and ultimately thoughtful

talk -- he asked his closest friends to become a "council of dads," bringing their own lifetimes of wisdom to advise his twin daughters as they grow. Architect Kate Orff sees the oyster as an agent of urban change. Bundled into beds and sunk into city rivers, oysters slurp up pollution and make legendarily dirty waters clean -- thus driving even more innovation in "oyster-tecture." Orff shares her vision for an urban landscape that links nature and humanity for mutual benefit. America was built by makers -- curious, enthusiastic amateur inventors whose tinkering habit sparked whole new industries. At TED@MotorCity, MAKE magazine publisher Dale Dougherty says we're all makers at heart, and shows cool new tools to tinker with, like Arduinos, affordable 3D printers, even DIY satellites. Media and advertising companies still use the same old demographics to understand audiences, but they're becoming increasingly harder to track online, says media researcher Johanna Blakley. As social media outgrows traditional media, and women users outnumber men, Blakley explains what changes are in store for the future of media. Christopher McDougall explores the mysteries of the human desire to run. How did running help early humans survive -- and what urges from our ancient ancestors spur us on today? McDougall tells the story of the marathoner with a heart of gold, the unlikely ultra-runner, and the hidden tribe in Mexico that runs to live. Poet Suheir Hammad performs two spine-tin-gling spoken-word pieces: "What I Will" and "break (clustered)" -- meditations on war and peace, on women and power. Wait for the astonishing line: "Do not fear what has blown up. If you must, fear the unexploded." Work-life balance, says Nigel Marsh, is too important to be left in the hands of your employer. Marsh lays out an ideal day balanced between family time, personal time and productivity -- and offers some stirring encouragement to make it happen. Cynthia Breazeal wonders: Why can we use robots on Mars, but not in our living rooms? The key, she says, is in training robots to interact with people. Now she dreams up and builds robots that teach, learn -- and play. Watch for amazing demo footage of a new interactive game for kids. They've been called the "saints of Somalia." Doctor Hawa Abdi and her daughter Deqo Mohamed discuss their medical clinic in Somalia, where -- in the face of civil war and open oppression of women -- they've built a hospital, a school and a community of peace. How can architects build a new world of sustainable beauty? By learning from nature. Michael Pawlyn describes three habits of nature that could transform architecture and society: radical resource efficiency, closed loops, and drawing energy from the sun. World champion whistler Geert Chatrou performs the whimsical "Eleonora" by A. Honhoff, and his own "Fête de la Belle." In a fascinating interlude, he talks about what brought him to the craft. The term "compassion" -- typically reserved for the saintly or the sappy -- has fallen out of touch with reality. At a special TEDPrize@UN, journalist Krista Tippett deconstructs the meaning of compassion through several moving stories, and proposes a new, more attainable definition for the word. Patricia Kuhl shares astonishing findings about how babies learn one language over another -- by listening to the humans around them and "taking statistics" on the sounds they need to know. Clever lab experiments (and brain scans) show how 6-month-old babies use sophisticated reasoning to understand their world. We each want to live a life of purpose, but where to start? In this luminous, wide-ranging talk, Jacqueline Novogratz introduces us to people she's met in her work in "patient capital" -- people who have immersed themselves in a cause, a community, a passion for justice. These human stories carry powerful moments of inspiration. Lisa Gansky, author of "The Mesh," talks about a future of business that's about sharing all kinds of stuff, either via smart and tech-enabled rental or, more boldly, peer-to-peer. Examples across industries -- from music to cars -- show how close we are to this meshy future. Former US Secretary of State Madeleine Albright talks bluntly about politics and diplomacy, making the case that women's issues deserve a place at the center of foreign policy. Far from being a "soft" issue, she says, women's issues are often the very hardest ones, dealing directly with life and death. A frank and funny Q&A with Pat Mitchell from the Paley Center. We make important decisions every day -- and we often rely on experts to help us decide. But, says economist Noreena Hertz, relying too much on experts can be limiting and even dangerous. She calls for us to start democratizing expertise -- to listen not only to "surgeons and CEOs, but also to shop staff." Maxillofacial surgeon Iain Hutchison works with people whose faces have been severely disfigured. By pushing to improve surgical techniques, he helps to improve their lives; and by commissioning their portraits, he celebrates their humanity. NOTE: This talk contains images of disfigured and badly injured faces that may be disturbing -- and Hutchison provides thoughtful answers as to why a disfigured face can shock us so deeply. Squeamish? Hide your screen from 12:10 - 13:19, but do keep listening. Portraits shown in this talk come from Mark Gilbert. It's been said that when an elder dies, it's as if a library is burned. Anthropologist Elizabeth Lindsey, a National Geographic Fellow, collects the deep cultural knowledge passed down as stories and lore. Danny Hillis makes a case for the next frontier of cancer research: proteomics, the study of proteins in the body. As Hillis explains it, genomics shows us a list of the ingredien

of the body -- while proteomics shows that those ingredients produce understanding what's going on in your body at the protein level may lead to a new understanding of how cancer happens. The three Ahn sisters (cellist Maria, pianist Lucia, violinist Angelina) breathe new life into the piano trio with their passionate musicmaking. At TEDWomen, they start with the bright and poppy "Skylife," by David Balakrishnan, then play a gorgeous, slinky version of "Oblivion," by Astor Piazzolla. As a democratic revolution led by tech-empowered young people sweeps the Arab world, Wadah Khanfar, the head of Al Jazeera, shares a profoundly optimistic view of what's happening in Egypt, Tunisia, Libya and beyond -- at this powerful moment when people realized they could step out of their houses and ask for change. French street artist JR uses his camera to show the world its true face, by pasting photos of the human face across massive canvases. At TED2011, he makes his audacious TED Prize wish: to use art to turn the world inside out. Wael Ghonim is the Google executive who helped jumpstart Egypt's democratic revolution ... with a Facebook page memorializing a victim of the regime's violence. Speaking at TEDxCairo, he tells the inside story of the past two months, when everyday Egyptians showed that "the power of the people is stronger than the people in power." America's school systems are funded by the 50 states. In this fiery talk, Bill Gates says that state budgets are riddled with accounting tricks that disguise the true cost of health care and pensions and weighted with worsening deficits -- with the financing of education at the losing end. Surgeon Anthony Atala demonstrates an early-stage experiment that could someday solve the organ-donor problem: a 3D printer that uses living cells to output a transplantable kidney. Using similar technology, Dr. Atala's young patient Luke Massella received an engineered bladder 10 years ago; we meet him onstage. NOTE: This talk was given in 2011, and this field of science has developed quickly since then. Read "Criticisms & updates" below for more details. Blogger Courtney E. Martin examines the perennially loaded word "feminism" in this personal and heartfelt talk. She talks through the three essential paradoxes of her generation's quest to define the term for themselves. Salman Khan talks about how and why he created the remarkable Khan Academy, a carefully structured series of educational videos offering complete curricula in math and, now, other subjects. He shows the power of interactive exercises, and calls for teachers to consider flipping the traditional classroom script -- give students video lectures to watch at home, and do "homework" in the classroom with the teacher available to help. MIT researcher Deb Roy wanted to understand how his infant son learned language -- so he wired up his house with videocameras to catch every moment (with exceptions) of his son's life, then parsed 90,000 hours of home video to watch "gaaaa" slowly turn into "water." Astonishing, data-rich research with deep implications for how we learn. With streams and rivers drying up because of over-usage, Rob Harmon talks about a clever market mechanism to bring back the water. Farmers and beer companies find their fates intertwined in the century-old tale of Prickly Pear Creek. Columnist David Brooks unpacks new insights into human nature from the cognitive sciences -- insights with massive implications for economics and politics as well as our own self-knowledge. In a talk full of humor, he shows how you can't hope to understand humans as separate individuals making choices based on their conscious awareness. We think of space as a silent place. But physicist Janna Levin says the universe has a soundtrack -- a sonic composition that records some of the most dramatic events in outer space. (Black holes, for instance, bang on spacetime like a drum.) An accessible and mind-expanding soundwalk through the universe. Volunteer firefighter Mark Bezos tells a story of an act of heroism that didn't go quite as expected -- but that taught him a big lesson: Don't wait to be a hero. Lighting architect Rogier van der Heide offers a beautiful new way to look at the world -- by paying attention to light (and to darkness). Examples from classic buildings illustrate a deeply thought-out vision of the play of light around us. "If I should have a daughter, instead of Mom, she's gonna call me Point B ..." began spoken word poet Sarah Kay, in a talk that inspired two standing ovations at TED2011. She tells the story of her metamorphosis -- from a wide-eyed teenager soaking in verse at New York's Bowery Poetry Club to a teacher connecting kids with the power of self-expression through Project V.O.I.C.E. -- and gives two breathtaking performances of "B" and "Hiroshima." What was the greatest invention of the industrial revolution? Hans Rosling makes the case for the washing machine. With newly designed graphics from Gapminder, Rosling shows us the magic that pops up when economic growth and electricity turn a boring wash day into an intellectual day of reading. With never-before-seen video, primatologist Isabel Behncke Izquierdo (a TED Fellow) shows how bonobo ape society learns from constantly playing -- solo, with friends, even as a prelude to sex. Indeed, play appears to be the bonobos' key to problem-solving and avoiding conflict. If it works for our close cousins, why not for us? Glowing dogs ... mice that grow human ears ... bioethicist Paul Root Wolpe describes an astonishing series of recent bio-engineering experiments, and asks: Isn't it time to set some ground rules? Eythor Bender of Berkeley Bionics brings onstage two amazing exoskeletons, HULC and eLEGS -- r

obotic add-on that could allow one day to carry 200 pounds without tiring, or allow a wheelchair user to stand and walk. It's a powerful onstage demo, with implications for human potential of all kinds. "The human voice: mysterious, spontaneous, primal."

With these words, soprano Claron McFadden invites us to explore the mysteries of breathing and singing, as she performs the intriguing modern song "Aria," by John Cage. Patricia Ryan is a longtime English teacher who asks a provocative question: Is the world's focus on English preventing the spread of great ideas in other languages? In other words:

What if Einstein had to pass the TOEFL? It's a passionate defense of translating and sharing ideas. When first discovered in 2010, the Stuxnet computer worm posed a baffling puzzle.

Beyond its sophistication loomed a more troubling mystery: its purpose. Ralph Langner and team helped crack the code that revealed this digital warhead's final target. In a fascinating look inside cyber-forensics, he explains how -- and makes a bold (and, it turns out, correct) guess at its shocking origins. "Puppets always have to try to

be alive," says Adrian Kohler of the Handspring Puppet Company, a gloriously ambitious troupe of human and wooden actors. Beginning with the tale of a hyena's subtle paw, puppeteers Kohler and Basil Jones build to the story of their latest astonishment: the wonderfully life-like Joey, the War Horse, who trots (and gallops) convincingly onto the TED stage. Sebastian Thrun helped build Google's amazing driverless car, powered by a very personal quest to save lives and reduce traffic accidents. Jawdropping video shows the

DARPA Challenge-winning car motoring through busy city traffic with no one behind the wheel, and dramatic test drive footage from TED2011 demonstrates how fast the thing can really go. In a moving and madly viral video last year, composer Eric Whitacre led a virtual choir of singers from around the world. He talks through the creative challenges of

making music powered by YouTube, and unveils the first 2 minutes of his new work, "Sleep," with a video choir of 2,052. The full piece premiered a few weeks later (yes, on YouTube!). In a zippy demo at TED U, AnnMarie Thomas shows how two different kinds of homemade play dough can be used to demonstrate electrical properties -- by lighting up LEDs, spinning motors, and turning little kids into circuit designers. Four-star general Stanley McChrystal shares what he learned about leadership over his decades in the military.

How can you build a sense of shared purpose among people of many ages and skill sets? By listening and learning -- and addressing the possibility of failure. Google's "Jolly

Good Fellow," Chade-Meng Tan, talks about how the company practices compassion in its everyday business -- and its bold side projects. With humor and persistence, filmmaker Morgan Spurlock dives into the hidden but influential world of brand marketing, on his quest to make a completely sponsored film about sponsorship. (And yes, onstage naming rights for this talk were sponsored too. By whom and for how much? He'll tell you.) The nerve disease ALS left graffiti artist TEMPT paralyzed from head to toe, forced to communicate blink by blink. In a remarkable talk at TEDActive, entrepreneur Mick Ebeling shares how he and a team of collaborators built an open-source invention that gave the artist --

and gives others in his circumstance -- the means to make art again. Activist Caroline

Casey tells the story of her extraordinary life, starting with a revelation (no spoilers). In a talk that challenges perceptions, Casey asks us all to move beyond the limits we may think we have. Jackson Browne plays a song about being on the ocean ... or really, being anywhere among passionate friends. (He started writing this song aboard Mission Blue Voyage, a Sylvia Earle-inspired conference about saving the ocean.) "If I could be a

nywhere," he sings, "anywhere right now, I would be here." Backed by stunning illustrations, David Christian narrates a complete history of the universe, from the Big Bang to the Internet, in a riveting 18 minutes. This is "Big History": an enlightening, wide-angle look at complexity, life and humanity, set against our slim share of the cosmic timeline. Local politics -- schools, zoning, council elections -- hit us where we live. So why don't more of us actually get involved? Is it apathy? Dave Meslin says no. He identifies 7 barriers that keep us from taking part in our communities, even when we truly care.

When film critic Roger Ebert lost his lower jaw to cancer, he lost the ability to eat and speak. But he did not lose his voice. In a moving talk from TED2011, Ebert and his wife, Chaz, with friends Dean Ornish and John Hunter, come together to tell his remarkable story. Using wikis and digital fabrication tools, TED Fellow Marcin Jakubowski is open-sourcing the blueprints for 50 farm machines, allowing anyone to build their own tractor or harvester from scratch. And that's only the first step in a project to write an instruction set for an entire self-sustaining village (starting cost: \$10,000). Pioneering

surgeon Susan Lim performed the first liver transplant in Asia. But a moral concern with transplants (where do donor livers come from ...) led her to look further, and to ask: Could we be transplanting cells, not whole organs? At the INK Conference, she talks through her new research, discovering healing cells in some surprising places. Can two countries at war dare to empathize with one another? Step by methodical step, sociologist Sam Richards gives his audience an extraordinary challenge: to allow a group of (mainly) Americans to understand -- not approve of, but understand -- the motivations of an Iraqi

insurgent. A powerful talk. Most of us will do anything to avoid being wrong. But what if we're wrong about that? "Wrongologist" Kathryn Schulz makes a compelling case for not just admitting but embracing our fallibility. John Hunter puts all the problems of the world on a 4'x5' plywood board -- and lets his 4th-graders solve them. At TED2011, he explains how his World Peace Game engages schoolkids, and why the complex lessons it teaches -- spontaneous, and always surprising -- go further than classroom lectures can.

All over the planet, giant telescopes and detectors are looking (and listening) for clues to the workings of the universe. At the INK Conference, science writer Anil Ananthaswamy tours us around these amazing installations, taking us to some of the most remote and silent places on Earth. Ric Elias had a front-row seat on Flight 1549, the plane that crash-landed in the Hudson River in New York in January 2009. What went through his mind as the doomed plane went down? At TED, he tells his story publicly for the first time.

Medical ethicist Harvey Fineberg shows us three paths forward for the ever-evolving human species: to stop evolving completely, to evolve naturally -- or to control the next steps of human evolution, using genetic modification, to make ourselves smarter, faster, better. Neo-evolution is within our grasp. What will we do with it? The feeling of security and the reality of security don't always match, says computer-security expert Bruce Schneier. In his talk, he explains why we spend billions addressing news story risks, like the "security theater" now playing at your local airport, while neglecting more probable risks -- and how we can break this pattern. Inspired by an abalone shell, Angela Belcher programs viruses to make elegant nanoscale structures that humans can use. Selecting for high-performing genes through directed evolution, she's produced viruses that can construct powerful new batteries, clean hydrogen fuels and record-breaking solar cells. In her talk, she shows us how it's done. Software developer Mike Matas demos the first full-length interactive book for the iPad -- with clever, swipeable video and graphics and some very cool data visualizations to play with. The book is "Our Choice," Al Gore's sequel to "An Inconvenient Truth." At the INK Conference, Arvind Gupta shares simple yet stunning plans for turning trash into seriously entertaining, well-designed toys that kids can build themselves -- while learning basic principles of science and design. As web companies strive to tailor their services (including news and search results) to our personal tastes, there's a dangerous unintended consequence: We get trapped in a "filter bubble" and don't get exposed to information that could challenge or broaden our worldview. Eli Pariser argues powerfully that this will ultimately prove to be bad for us and bad for democracy. Phyllis Rodriguez and Aicha el-Wafi have a powerful friendship born of unthinkable loss. Rodriguez's son was killed in the World Trade Center attacks on September 11, 2001; el-Wafi's son Zacarias Moussaoui was convicted of a role in those attacks and is serving a life sentence. In hoping to find peace, these two moms have come to understand and respect one another. With his team at SENSEable City Lab, MIT's Carlo Ratti makes cool things by sensing the data we create. He pulls from passive data sets -- like the calls we make, the garbage we throw away -- to create surprising visualizations of city life. And he and his team create dazzling interactive environments from moving water and flying light, powered by simple gestures caught through sensors. Designer Suzanne Lee shares her experiments in growing a kombucha-based material that can be used like fabric or vegetable leather to make clothing. The process is fascinating, the results are beautiful (though there's still one minor drawback ...) and the potential is simply stunning. Cosmologist Sean Carroll attacks -- in an entertaining and thought-provoking tour through the nature of time and the universe -- a deceptively simple question: Why does time exist at all? The potential answers point to a surprising view of the nature of the universe, and our place in it. Pollination: it's vital to life on Earth, but largely unseen by the human eye. Filmmaker Louie Schwartzberg shows us the intricate world of pollen and pollinators with gorgeous high-speed images from his film "Wings of Life," inspired by the vanishing of one of nature's primary pollinators, the honeybee. Diving under the Antarctic ice to get close to the much-feared leopard seal, photographer Paul Nicklen found an extraordinary new friend. Share his hilarious, passionate stories of the polar wonderlands, illustrated by glorious images of the animals who live on and under the ice. Fiorenzo Omenetto shares 20+ astonishing new uses for silk, one of nature's most elegant materials -- in transmitting light, improving sustainability, adding strength and making medical leaps and bounds. On stage, he shows a few intriguing items made of the versatile stuff. Ron Gutman reviews a raft of studies about smiling, and reveals some surprising results. Did you know your smile can be a predictor of how long you'll live -- and that a simple smile has a measurable effect on your overall well-being? Prepare to flex a few facial muscles as you learn more about this evolutionarily contagious behavior. Imagine being able to see artwork in the greatest museums around the world without leaving your chair. Driven by his passion for art, Amit Sood tells the story of how he developed Art Project to let people do just that. What's it like to be pals with a genius? Physicist Leonard Susskind spins a few stories about his friend



rdship with the legendary Richard Feynman, discussing his unconventional approach to problems both serious and ... less so. Ed Boyden shows how, by inserting genes for light-sensitive proteins into brain cells, he can selectively activate or de-activate specific neurons with fiber-optic implants. With this unprecedented level of control, he's managed to cure mice of analogs of PTSD and certain forms of blindness. On the horizon: neural prosthetics. Session host Juan Enriquez leads a brief post-talk Q&A. A future more beautiful? Architect Thomas Heatherwick shows five recent projects featuring ingenious bio-inspired designs. Some are remakes of the ordinary: a bus, a bridge, a power station ...

And one is an extraordinary pavilion, the Seed Cathedral, a celebration of growth and light. We think of pain as a symptom, but there are cases where the nervous system develops feedback loops and pain becomes a terrifying disease in itself. Starting with the story of a girl whose sprained wrist turned into a nightmare, Elliot Krane talks about the complex mystery of chronic pain, and reviews the facts we're just learning about how it works and how to treat it. In the deep, dark ocean, many sea creatures make their own light for hunting, mating and self-defense. Bioluminescence expert Edith Widder was one of the first to film this glimmering world. At TED2011, she brings some of her glowing friends onstage, and shows more astonishing footage of glowing undersea life. Terry Moore found out he'd been tying his shoes the wrong way his whole life. In the spirit of TED, he takes the stage to share a better way. At the onstage introduction of Twirlr, a new social-sharing platform, someone forgets to silence their cell phone. And then ... this happens. (Song by Scott Brown and Anthony King; edit by Nathan Russell.) Artist Aaron

Koblin takes vast amounts of data -- and at times vast numbers of people -- and weaves them into stunning visualizations. From elegant lines tracing airline flights to landscapes of cell phone data, from a Johnny Cash video assembled from crowd-sourced drawings to the "Wilderness Downtown" video that customizes for the user, his works brilliantly explore how modern technology can make us more human. Polio is almost completely eradicated. But as Bruce Aylward says: Almost isn't good enough with a disease this terrifying. Aylward lays out the plan to continue the scientific miracle that ended polio in most of the world -- and to snuff it out everywhere, forever. Iranian-born artist Shirin Neshat explores the paradox of being an artist in exile: a voice for her people, but unable to go home. In her work, she explores Iran pre- and post-Islamic Revolution, tracing political and societal change through powerful images of women. Journalist Mustafa Akyol talks about the way that some local cultural practices (such as the seclusion of women) have become linked, in the popular mind, to the articles of faith of Islam. Has the world's general idea of the Islamic faith focused too much on tradition, and not enough on core beliefs? It's a master class in collaboration as violinist Robert Gupta and cellist

Joshua Roman perform Halvorsen's "Passacaglia" for violin and viola. Roman takes the viola part on his Stradivarius cello. It's powerful to watch the two musicians connect moment to moment (and recover from a mid-performance hiccup). The two are both TED Fellows, and their deep connection powers this sparkling duet. How does one find authentic creativity? In his last talk before passing away, Malcolm McLaren tells remarkable stories from his own life, from failing school to managing the Sex Pistols. He argues that we're living in a karaoke culture, with false promises of instant success, and that messiness and failure are the key to true learning. Using robotics, laser rangefinders, GPS and smart feedback tools, Dennis Hong is building a car for drivers who are blind. It's not a "self-driving" car, he's careful to note, but a car in which a non-sighted driver can determine speed, proximity and route -- and drive independently. Using simple, delightful illustrations, designer Stefan Sagmeister shares his latest thinking on happiness -- both the conscious and unconscious kind. His seven rules for life and design happiness can (with some customizations) apply to everyone seeking more joy. Physicists are used to the idea that subatomic particles behave according to the bizarre rules of quantum mechanics, completely different to human-scale objects. In a breakthrough experiment, Aaron O'Connell has blurred that distinction by creating an object that is visible to the unaided eye, but provably in two places at the same time. In this talk he suggests an intriguing way of thinking about the result. Designer Jessi Arrington packed nothing for TEDActive but 7 pairs of undies, buying the rest of her clothes in thrift stores around LA. It's a meditation on conscious consumption -- wrapped in a rainbow of color and creativity. Damon Horowitz reviews the enormous new powers that technology gives us: to know more -- and more about each other -- than ever before. Drawing the audience into a philosophical discussion, Horowitz invites us to pay new attention to the basic philosophy -- the ethical principles -- behind the burst of invention remaking our world. Where's the moral operating system that allows us to make sense of it? Renowned paleontologist Jack Horner has spent his career trying to reconstruct a dinosaur. He's found fossils with extraordinarily well-preserved blood vessels and soft tissues, but never intact DNA. So, in a new approach, he's taking living descendants of the dinosaur (chickens) and genetically engineering them to reactivate ancestral traits -- including teeth, tails,

and even hands -- to make a "Chickenosaurus". Janet Echelman found her true voice as an artist when her paints went missing -- which forced her to look to an unorthodox new art material. Now she makes billowing, flowing, building-sized sculpture with a surprisingly geeky edge. A transporting 10 minutes of pure creativity. Back in 2009, Paul Romer unveiled the idea for a "charter city" -- a new kind of city with rules that favor democracy and trade. This year, at TED2011, he tells the story of how such a city might just happen in Honduras ... with a little help from his TEDTalk. Alice Dreger works with people at the edge of anatomy, such as conjoined twins and intersexed people. In her observations, it's often a fuzzy line between male and female, among other anatomical distinctions. Which brings up a huge question: Why do we let our anatomy determine our fate? Even when our lives appear fine from the outside, locked within can be a world of quiet suffering, leading some to the decision to end their life. At TEDYou, JD Schramm asks us to break the silence surrounding suicide and suicide attempts, and to create much-needed resources to help people who reclaim their life after escaping death. Resources: <http://t.co/wsNrY9C> Daniel Kraft offers a fast-paced look at the next few years of innovations in medicine, powered by new tools, tests and apps that bring diagnostic information right to the patient's bedside. How do you stage an international art show with work from 100 different artists? If you're Shea Hembrey, you invent all of the artists and artwork yourself -- from large-scale outdoor installations to tiny paintings drawn with a single-haired brush. Watch this funny, mind-bending talk to see the explosion of creativity and diversity of skills a single artist is capable of. Steve Keil fights the "serious meme" that has infected his home of Bulgaria -- and calls for a return to play to revitalize the economy, education and society. A sparkling talk with a universal message for people everywhere who are reinventing their workplaces, schools, lives. Photographer Camille Seaman shoots icebergs, showing the world the complex beauty of these massive, ancient chunks of ice. Dive in to her photo slideshow, "The Last Iceberg." Musician and inventor Onyx Ashanti demonstrates "beatjazz" -- his music created with two handheld controllers, an iPhone and a mouthpiece, and played with the entire body. At TED's Full Spectrum Auditions, after locking in his beats and loops, he plays a 3-minute song that shares his vision for the future of music. Cellist Maya Beiser plays a gorgeous eight-part modern etude with seven copies of herself, and segues into a meditative music/video hybrid -- using tech to create endless possibilities for transformative sound. Music is Steve Reich's "Cello Counterpoint," with video from Bill Morrison, then David Lang's "World to Come," with video by Irit Batsry. Bill Ford is a car guy -- his great-grandfather was Henry Ford, and he grew up inside the massive Ford Motor Co. So when he worries about cars' impact on the environment, and about our growing global gridlock problem, it's worth a listen. His vision for the future of mobility includes "smart roads," even smarter public transport and going green like never before. Daniel Tammet has linguistic, numerical and visual synesthesia -- meaning that his perception of words, numbers and colors are woven together into a new way of perceiving and understanding the world. The author of "Born on a Blue Day," Tammet shares his art and his passion for languages in this glimpse into his beautiful mind. Did you ever have a teacher who cared for you when no one else did? Jok Church tells a short, moving story of the teacher who sheltered him as a young gay teen and helped him grow -- and how, many years later, he and his partner had the privilege of returning the favor. Artist-technologist Honor Harger listens to the weird and wonderful noises of stars and planets and pulsars. In her work, she tracks the radio waves emitted by ancient celestial objects and turns them into sound, including "the oldest song you will ever hear," the sound of cosmic rays left over from the Big Bang. At TED's Full Spectrum Auditions, comedian Joshua Walters, who's bipolar, walks the line between mental illness and mental "skillness." In this funny, thought-provoking talk, he asks: What's the right balance between medicating craziness away and riding the manic edge of creativity and drive? In this passionate talk that's already caused a sensation in Mexico, Emiliano Salinas, son of former president Carlos Salinas de Gortari, confronts the current climate of violence in Mexico -- or rather, how Mexican society responds to it. He calls on ordinary citizens to move from denial and fear to peaceful, community-based action. (Delivered in Spanish with English subtitles.) Rajesh Rao is fascinated by "the mother of all crossword puzzles": how to decipher the 4000-year-old Indus script. He's enlisting modern computation to try to read this lost language, the key to understanding this ancient civilization. When Dave deBronkart learned he had a rare and terminal cancer, he turned to a group of fellow patients online -- and found the medical treatment that saved his life. Now he calls on all patients to talk with one another, know their own health data, and make health care better one e-Patient at a time. New York was planning to tear down the High Line, an abandoned elevated railroad in Manhattan, when Robert Hammond and a few friends suggested: Why not make it a park? He shares how it happened in this tale of local cultural activism. Is there something you've always meant to do, wanted to do, but just ... haven't? Matt Cutts suggests: Try it for 30 days. Th

is short, lighthearted talk offers a neat way to think about setting and achieving goals. Cookbook author (and geek) Nathan Myhrvold talks about his magisterial work, "Modernist Cuisine" -- and shares the secret of its cool photographic illustrations, which show cross-sections of food in the very act of being cooked. In this visually dazzling talk, Jonathan Drori shows the extraordinary ways flowering plants -- over a quarter million species -- have evolved to attract insects to spread their pollen: growing \"landing-strips\" to guide the insects in, shining in ultraviolet, building elaborate traps, and even mimicking other insects in heat. After a catastrophic car accident that left him in a coma, Simon Lewis found ways to recover -- physically and mentally -- beyond all expectations. At the INK Conference he tells how this remarkable story led him to concern over all threats to consciousness, and how to overcome them. Tissue engineer and TED Fellow Nina Tandon is growing artificial hearts and bones. To do that, she needs new ways of caring for artificially grown cells -- techniques she's developed by the simple but powerful method of copying their natural environments. In this powerful talk from TEDGlobal, Rebecca MacKinnon describes the expanding struggle for freedom and control in cyberspace, and asks: How do we design the next phase of the Internet with accountability and freedom at its core, rather than control? She believes the internet is headed for a "Magna Carta" moment when citizens around the world demand that their governments protect free speech and their right to connection. Why do transnational extremist organizations succeed where democratic movements have a harder time taking hold? Maajid Nawaz, a former Islamist extremist, asks for new grassroots stories and global social activism to spread democracy in the face of nationalism and xenophobia. Economics writer Tim Harford studies complex systems -- and finds a surprising link among the successful ones: they were built through trial and error. In this sparkling talk from TEDGlobal 2011, he asks us to embrace our randomness and start making better mistakes. As political turmoil in Yemen continues, the editor of the Yemen Times, Nadia Al-Sakkaf, talks at TEDGlobal with host Pat Mitchell. Al-Sakkaf's independent, English-language paper is vital for sharing news -- and for sharing a new vision of Yemen and of that country's women as equal partners in work and change. It's been 25 years since the first PC virus (Brain A) hit the net, and what was once an annoyance has become a sophisticated tool for crime and espionage. Computer security expert Mikko Hyppönen tells us how we can stop these new viruses from threatening the internet as we know it. Actor Thandie Newton tells the story of finding her "otherness" -- first, as a child growing up in two distinct cultures, and then as an actor playing with many different selves. A warm, wise talk, fresh from stage at TEDGlobal 2011. We live in a world run by algorithms, computer programs that make decisions or solve problems for us. In this riveting, funny talk, Kevin Slavin shows how modern algorithms determine stock prices, espionage tactics, even the movies you watch. But, he asks: If we depend on complex algorithms to manage our daily decisions -- when do we start to lose control? Plenty of robots can fly -- but none can fly like a real bird. That is, until Markus Fischer and his team at Festo built SmartBird, a large, lightweight robot, modeled on a seagull, that flies by flapping its wings. A soaring demo fresh from TEDGlobal 2011. British MP Rory Stewart walked across Afghanistan after 9/11, talking with citizens and warlords alike. Now, a decade later, he asks: Why are Western and coalition forces still fighting there? He shares lessons from past military interventions that worked -- Bosnia, for instance -- and shows that humility and local expertise are the keys to success. Physicist Geoffrey West has found that simple, mathematical laws govern the properties of cities -- that wealth, crime rate, walking speed and many other aspects of a city can be deduced from a single number: the city's population. In this mind-bending talk from TEDGlobal he shows how it works and how similar laws hold for organisms and corporations. Why do we like an original painting better than a forgery? Psychologist Paul Bloom argues that human beings are essentialists -- that our beliefs about the history of an object change how we experience it, not simply as an illusion, but as a deep feature of what pleasure (and pain) is. Josette Sheeran, the head of the UN's World Food Program, talks about why, in a world with enough food for everyone, people still go hungry, still die of starvation, still use food as a weapon of war. Her vision: "Food is one issue that cannot be solved person by person. We have to stand together." In our louder and louder world, says sound expert Julian Treasure, "We are losing our listening." In this short, fascinating talk, Treasure shares five ways to re-tune your ears for conscious listening -- to other people and the world around you. Many of us have a social media presence -- a virtual personality made up of status updates, tweets and connections, stored in the cloud. Adam Ostrow asks a big question: What happens to that personality after you've died? Could it ... live on? What if every light bulb in the world could also transmit data? At TEDGlobal, Harald Haas demonstrates, for the first time, a device that could do exactly that. By flickering the light from a single LED, a change too quick for the human eye to detect, he can transmit far more data than a cellular tower -- and do it in a way that's more efficient, secure and widespread. Biologist Mark Pagel shares

an intriguing theory evolved by humans evolved our complex language system. He suggests that language is a piece of "social technology" that allowed early human tribes to access a powerful new tool: cooperation. Should we keep the outdoors out of hospitals? Ecologist and TED Fellow Jessica Green has found that mechanical ventilation does get rid of many types of microbes, but the wrong kinds: the ones left in the hospital are much more likely to be pathogens. Psychologist Philip Zimbardo asks, "Why are boys struggling?"

He shares some stats (lower graduation rates, greater worries about intimacy and relationships) and suggests a few reasons -- and challenges the TED community to think about solutions. NOTE: Statements in this talk have been challenged by scientists working in this field. Poet, writer, activist Eve Ensler lived in her head. In this powerful talk from TEDWomen, she talks about her lifelong disconnection from her body -- and how two shocking events helped her to connect with the reality, the physicality of being human. How can cities help save the future? Alex Steffen shows some cool neighborhood-based green projects that expand our access to things we want and need -- while reducing the time we spend in cars. The world's largest volunteer animal rescue, saved more than 40,000 penguins after an oil spill off the coast of South Africa. Dyan deNapoli tells the triumphant story. How does a job this big get done? Penguin by penguin by penguin ... Here's a crazy idea: Persuade the world to try living in peace for just one day, every September 21. In this energetic, honest talk, Jeremy Gilley tells the story of how this crazy idea became real -- real enough to help millions of kids in war-torn regions. How do we find planets -- even habitable planets -- around other stars? By looking for tiny dimming as a planet passes in front of its sun, TED Fellow Lucianne Walkowicz and the Kepler mission have found some 1,200 potential new planetary systems. With new techniques, they may even find ones with the right conditions for life. Using three iPods like magical props, Marco Tempest spins a clever, surprisingly heartfelt meditation on truth and lies, art and emotion. In this short talk, psychologist Dan Ariely tells two personal stories that explore scientific conflict of interest: How the pursuit of knowledge and insight can be affected, consciously or not, by shortsighted personal goals. When we're thinking about the big questions, he reminds us, let's be aware of our all-too-human brains. Sharing the results of a massive, worldwide study, geneticist Svante Pääbo shows the DNA proof that early humans mated with Neanderthals after we moved out of Africa. (Yes, many of us have Neanderthal DNA.) He also shows how a tiny bone from a baby finger was enough to identify a whole new humanoid species. In 2003, the Palestinian village of Budrus mounted a 10-month-long nonviolent protest to stop a barrier being built across their olive groves. Did you hear about it? Didn't think so. Brazilian filmmaker Julia Bacha asks why we only pay attention to violence in the Israel-Palestine conflict -- and not to the nonviolent leaders who may one day bring peace. MIT researcher Skylar Tibbits works on self-assembly -- the idea that instead of building something (a chair, a skyscraper), we can create materials that build themselves, much the way a strand of DNA zips itself together. It's a big concept at early stages; Tibbits shows us three in-the-lab projects that hint at what a self-assembling future might look like. Buddhist roshi Joan Halifax works with people at the last stage of life (in hospice and on death row). She shares what she's learned about compassion in the face of death and dying, and a deep insight into the nature of empathy. Every new invention changes the world -- in ways both intentional and unexpected. Historian Edward Tenner tells stories that illustrate the underappreciated gap between our ability to innovate and our ability to foresee the consequences. Sarah Kaminsky tells the extraordinary story of her father Adolfo and his activity during World War II -- using his ingenuity and talent for forgery to save lives. Before life existed on Earth, there was just matter, inorganic dead "stuff." How improbable is it that life arose? And -- could it use a different type of chemistry? Using an elegant definition of life (anything that can evolve), chemist Lee Cronin is exploring this question by attempting to create a fully inorganic cell using a "Lego kit" of inorganic molecules -- no carbon -- that can assemble, replicate and compete. Artist Raghava KK demos his new children's book for iPad with a fun feature: when you shake it, the story -- and your perspective -- changes. In this charming short talk, he invites all of us to shake up our perspective a little bit. Economist Yasheng Huang compares China to India, and asks how China's authoritarian rule contributed to its astonishing economic growth -- leading to a big question: Is democracy actually holding India back? Huang's answer may surprise you. Despite multibillion-dollar investments in cybersecurity, one of its root problems has been largely ignored: who are the people who write malicious code? Underworld investigator Misha Glenny profiles several convicted coders from around the world and reaches a startling conclusion. Artist Kate Hartman uses wearable electronics to explore how we communicate, with ourselves and with the world. In this quirky and thought-provoking talk, she shows the "Talk to Yourself Hat", the "Inflatable Heart", the "Glacier Embracing Suit", and other unexpected devices. Cheap and fast genome sequencing is about to turn health care (and insurance, and politics) upside down. Richard Resnick shows ho

w, in this accessible talk. TV executive Lauren Zalaznick deeply about pop television. Sharing results of a bold study that tracks attitudes against TV ratings over five decades, she makes a case that television reflects who we truly are -- in ways we might not have expected. In this inspiring talk at the NextGen:Charity conference, Sasha Dichter of the Acumen Fund shares the results of his month-long "Generosity Experiment" where he said "yes" to every request for help. Over the past few centuries, Western cultures have been very good at creating general prosperity for themselves. Historian Niall Ferguson asks: Why the West, and less so the rest? He suggests half a dozen big ideas from Western culture -- call them the 6 killer apps -- that promote wealth, stability and innovation. And in this new century, he says, these apps are all shareable. Have you played with Google Labs' Ngram Viewer? It's an addicting tool that lets you search for words and ideas in a database of 5 million books from across centuries. Erez Lieberman Aiden and Jean-Baptiste Michel show us how it works, and a few of the surprising things we can learn from 500 billion words. HIV is a serious problem in the DR Congo, and aid agencies have flooded the country with free and cheap condoms. But few people are using them. Why? "Reformed marketer" Amy Lockwood offers a surprising answer that upends a traditional model of philanthropy. (Some NSFW images.) What is killing the Tasmanian devil? A virulent cancer is infecting them by the thousands -- and unlike most cancers, it's contagious. Researcher Elizabeth Murchison tells us how she's fighting to save the Taz, and what she's learning about all cancers from this unusual strain. Contains disturbing images of facial cancer. Studies show that sketching and doodling improve our comprehension -- and our creative thinking. So why do we still feel embarrassed when we're caught doodling in a meeting? Sunni Brown says: Doodlers, unite! She makes the case for unlocking your brain via pad and pen. Modern medicine is in danger of losing a powerful, old-fashioned tool: human touch. Physician and writer Abraham Verghese describes our strange new world where patients are merely data points, and calls for a return to the traditional one-on-one physical exam. Some kids learn by listening; others learn by doing. Geoff Mulgan gives a short introduction to the Studio School, a new kind of school in the UK where small teams of kids learn by working on projects that are, as Mulgan puts it, "for real." Jarreth Merz, a Swiss-Ghanaian filmmaker, came to Ghana in 2008 to film the national elections. What he saw there taught him new lessons about democracy -- and about himself. Every day there are news reports of new health advice, but how can you know if they're right? Doctor and epidemiologist Ben Goldacre shows us, at high speed, the ways evidence can be distorted, from the blindingly obvious nutrition claims to the very subtle tricks of the pharmaceutical industry. Can opera be ever-so-slightly sexy? The glorious soprano Danielle de Niese shows how, singing the flirty "Meine Lippen, sie küssen so heiss." Which, translated, means, as you might guess: "I kiss so hot." From Giuditta by Franz Lehár; accompanist: Ingrid Surgenor. Yang Lan, a journalist and entrepreneur who's been called "the Oprah of China," offers insight into the next generation of young Chinese citizens -- urban, connected (via microblogs) and alert to injustice. How do we search for alien life if it's nothing like the life that we know? Christoph Adami shows how he uses his research into artificial life -- self-replicating computer programs -- to find a signature, a "biomarker," that is free of our preconceptions of what life is. Writer and designer Graham Hill asks: Can having less stuff, in less room, lead to more happiness? He makes the case for taking up less space, and lays out three rules for editing your life. At his Stanford University commencement speech, Steve Jobs, CEO and co-founder of Apple and Pixar, urges us to pursue our dreams and see the opportunities in life's setbacks -- including death itself. Less than 10% of plastic trash is recycled -- compared to almost 90% of metals -- because of the massively complicated problem of finding and sorting the different kinds. Frustrated by this waste, Mike Biddle has developed a cheap and incredibly energy efficient plant that can, and does, recycle any kind of plastic. Conductor Charles Hazlewood talks about the role of trust in musical leadership -- then shows how it works, as he conducts the Scottish Ensemble onstage. He also shares clips from two musical projects: the opera "U-Carmen eKhayelitsha" and the ParaOrchestra. "Babies and young children are like the R&D division of the human species," says psychologist Alison Gopnik. Her research explores the sophisticated intelligence-gathering and decision-making that babies are really doing when they play. A story, a work of art, a face, a designed object -- how do we tell that something is beautiful? And why does it matter so much to us? Designer Richard Seymour explores our response to beauty and the surprising power of objects that exhibit it. Imagine it's late 1990, and you've just met a nice young man named Tim Berners-Lee, who starts telling you about his proposed system called the World Wide Web. Ian Ritchie was there. And ... he didn't buy it. A short story about information, connectivity and learning from mistakes. On any given day we're relied to from 10 to 200 times, and the clues to detect those lies can be subtle and counter-intuitive. Pamela Meyer, author of Liespotting, shows the manners and "hotspots" used by those trained to recognize deception -- and she argues honesty is a value worth

preserving. Here's a powerful lesson from artist Jae Rhim Lee. Can we commit our bodies to a cleaner, greener Earth, even after death? Naturally -- using a special burial suit seeded with pollution-gobbling mushrooms. Yes, this just might be the strangest TEDTalk you'll ever see ... In Rajasthan, India, an extraordinary school teaches rural women and men -- many of them illiterate -- to become solar engineers, artisans, dentists and doctors in their own villages. It's called the Barefoot College, and its founder, Bunker Roy, explains how it works. What would happen if we could generate power from our windowpanes? In this moving talk, entrepreneur Justin Hall-Tipping shows the materials that could make that possible, and how questioning our notion of 'normal' can lead to extraordinary breakthroughs. Nations can now attack other nations with cyber weapons: silent strikes on another country's computer systems, power grids, dams that leave no trace behind. (Think of the Stuxnet worm.) Guy-Philippe Goldstein shows how cyberattacks can leap between the digital and physical worlds to prompt armed conflict -- and how we might avert this global security hazard. Psychiatrist and engineer Todd Kuiken is building a prosthetic arm that connects with the human nervous system -- improving motion, control and even feeling. Onstage, patient Amanda Kitts helps demonstrate this next-gen robotic arm. Artist Nathalie Miebach takes weather data from massive storms and turns it into complex sculptures that embody the forces of nature and time. These sculptures then become musical scores for a string quartet to play. We feel instinctively that societies with huge income gaps are somehow going wrong. Richard Wilkinson charts the hard data on economic inequality, and shows what gets worse when rich and poor are too far apart: real effects on health, lifespan, even such basic values as trust. Psychiatrist Iain McGilchrist describes the real differences between the left and right halves of the human brain. It's not simply "emotion on the right, reason on the left," but something far more complex and interesting. A Best of the Web talk from RSA Animate. Master storyteller Malcolm Gladwell tells the tale of the Norden bombsight, a groundbreaking piece of World War II technology with a deeply unexpected result. How does cancer know it's cancer? At Jay Bradner's lab, they found a molecule that might hold the answer, JQ1. But instead of patenting it and reaping the profits (as many other labs have done) -- they published their findings and mailed samples to 40 other labs to work on. An inspiring look at the open-source future of medical research. With scissors and paper, artist Béatrice Coron creates intricate worlds, cities and countries, heavens and hells. Striding onstage in a glorious cape cut from Tyvek, she describes her creative process and the way her stories develop from snips and slices. After he ended up on a watch list by accident, Hasan Elahi was advised by his local FBI agents to let them know when he was traveling. He did that and more ... much more. What drives our desire to behave morally? Neuroeconomist Paul Zak shows why he believes oxytocin (he calls it "the moral molecule") is responsible for trust, empathy and other feelings that help build a stable society. NOTE: Research and statements in this talk have been challenged by other scientists working in this field. A flying car -- it's an iconic image of the future. But after 100 years of flight and automotive engineering, no one has really cracked the problem. Pilot Anna Mracek Dietrich and her team flipped the question, asking: Why not build a plane that you can drive? Neuroscientist Daniel Wolpert starts from a surprising premise: the brain evolved, not to think or feel, but to control movement. In this entertaining, data-rich talk he gives us a glimpse into how the brain creates the grace and agility of human motion. Using sleight-of-hand techniques and charming storytelling, illusionist Marco Tempest brings a jaunty stick figure to life onstage at TEDGlobal. Two murders sat unexplained and unsolved -- until reporter Paul Lewis starting talking to bystanders who had evidence on their mobile phones. Step by step, Lewis pieced together their evidence and their stories to find justice for the victims. It's the future of investigative journalism, powered by the crowd. Medical, legal, and financial documents should be easy to read, but too often they aren't. With spot-on (and funny) examples, Sandra Fisher Martins shows how overly complex language separates us from the information we need -- and three steps to change that. In Portuguese with English subtitles. In his lab, Martin Hanczyc makes "protocells," experimental blobs of chemicals that behave like living cells. His work demonstrates how life might have first occurred on Earth ... and perhaps elsewhere too. Artist and TED Fellow Aparna Rao re-imagines the familiar in surprising, often humorous ways. With her collaborator Soren Pors, Rao creates high-tech art installations -- a typewriter that sends emails, a camera that tracks you through the room only to make you invisible on screen -- that put a playful spin on ordinary objects and interactions. Ancient monuments give us clues to astonishing past civilizations -- but they're under threat from pollution, war, neglect. Ben Kacyra, who invented a groundbreaking 3D scanning system, is using his invention to scan and preserve the world's heritage in archival detail. (Watch to the end for a little demo.) How can we begin to understand the way the brain works? The same way we begin to understand a city: by making a map. In this visually stunning talk, Allan Jones shows how his team is mapping which genes are turned on in each

tiny region, and how it all connects up Charlie Todd causes bizarre, hilarious, and unexpected public scenes: Seventy synchronized dancers in storefront windows, "ghostbusters" running through the New York Public Library, and the annual no-pants subway ride. His group, Improv Everywhere, uses these scenes to bring people together. The next big shift is now, and it's not what you think: Facebook is the new Windows; Google must be sacrificed. Tech investor Roger McNamee presents 6 bold ways to prepare for the next internet. What if every scientist could share their data as easily as they tweet about their lunch? Michael Nielsen calls for scientists to embrace new tools for collaboration that will enable discoveries to happen at the speed of Twitter. Image-maker Alexander Tsiaras shares a powerful medical visualization, showing human development from conception to birth and beyond. (Some graphic images.) Strapped to a jet-powered wing, Yves Rossy is the

Jetman -- flying free, his body as the rudder, above the Swiss Alps and the Grand Canyon. After a powerful short film shows how it works, Rossy takes the TEDGlobal stage to share the experience and thrill of flying. Most 12-year-olds love playing videogames -- but Thomas Suarez taught himself how to create them. After developing iPhone apps like "Justin Jeiber," a whack-a-mole game, he is now using his skills to help other kids become

developers. What controls aging? Biochemist Cynthia Kenyon has found a simple genetic mutation that can double the lifespan of a simple worm, *C. elegans*. The lessons from that discovery, and others, are pointing to how we might one day significantly extend youthful human life. Does science ruin the magic of life? In this grumpy but charming monologue, Robin Ince makes the argument against. The more we learn about the astonishing behavior of the universe -- the more we stand in awe. Can playing video games make you more productive? Gabe Zichermann shows how games are making kids better problem-solvers, and will make us better at everything from driving to multi-tasking. At 18, Natalie Warne's work with the Invisible Children movement made her a hero for young activists. She uses her inspiring story to remind us that no one is too young to change the world. What's six miles wide and can end civilization in an instant? An asteroid -- and there are lots of them out there. With humor and great visuals, Phil Plait shows us all the ways asteroids can kill us (yipes), and what we must do to avoid them. Engineering student Péter Fankhauser demonstrates Rezero, a robot that balances on a ball. Designed and built by students, Rezero is the first ballbot made to move quickly and gracefully -- and even dance.

(Could the Star Wars sphere droid be real? Watch this and judge.) iPad storyteller Joe Sabia introduces us to Lothar Meggendorfer, who created a bold technology for storytelling: the pop-up book. Sabia shows how new technology has always helped us tell our own stories, from the walls of caves to his own onstage iPad. Britta Riley wanted to grow her own food (in her tiny apartment). So she and her friends developed a system for growing plants in discarded plastic bottles -- researching, testing and tweaking the system using social media, trying many variations at once and quickly arriving at the optimal system. Call it distributed DIY. And the results? Delicious. When she was 19, Amy Purdy lost both her legs below the knee. And now ... she's a pro snowboarder (and a killer competitor on "Dancing with the Stars"! ). In this powerful talk, she shows us how to draw inspiration from life's obstacles. Damon Horowitz teaches philosophy through the Prison University Project, bringing college-level classes to inmates of San Quentin State Prison.

In this powerful short talk, he tells the story of an encounter with right and wrong that quickly gets personal. Pop quiz: When does learning begin? Answer: Before we are born. Science writer Annie Murphy Paul talks through new research that shows how much we learn in the womb -- from the lilt of our native language to our soon-to-be-favorite foods. Instead of a boring slide deck at your next presentation, how about bringing in a troupe of dancers? That's science writer John Bohannon's "modest proposal" in this spellbinding choreographed talk. He makes his case by example, in collaboration with dancers from Black Label Movement. Charles Limb performs cochlear implantation, a surgery that treats hearing loss and can restore the ability to hear speech. But as a musician too, Limb thinks about what the implants lack: They don't let you fully experience music yet.

(There's a hair-raising example.) At TEDMED, Limb reviews the state of the art and the way forward. We're taught to try to live life without regret. But why? Using her own tattoo as an example, Kathryn Schulz makes a powerful and moving case for embracing our regrets. Real narratives are complicated: Africa isn't a country, and it's not a disaster zone, says reporter and researcher Leslie Dodson. She calls for journalists, researchers and NGOs to stop representing entire continents as one big tragedy. Spoken-word poet Sarah Kay was stunned to find she couldn't be a princess, ballerina and astronaut all in one lifetime. In this talk, she delivers two powerful poems that show us how we can live other lives. People-powered resistance: can it work? Srdja Popovic led the nonviolent movement that took down Milosevic in Serbia in 2000; he lays out the plans, skills and tools that a people-powered movement needs -- from nonviolent tactics to a sense of humor. After re-purposing CAPTCHA so each human-typed response helps digitize books, Luis von Ahn wondered how else to use small contributions by many on the Internet f

or greater good. In their talk, he shares how his ambitious new project, Duolingo, will help millions learn a new language while translating the web quickly and accurately -- all for free. Cheryl Hayashi studies spider silk, one of nature's most high-performance materials. Each species of spider can make up to 7 very different kinds of silk. How do they do it? Hayashi explains at the DNA level -- then shows us how this super-strong, super-flexible material can inspire. Imagine having a surgery with no knives involved. At TEDMED, Yoav Medan shares a technique that uses MRI to find trouble spots and focused ultrasound to treat such issues as brain lesions, uterine fibroids and several kinds of cancerous growths. What is a mistake? By talking through examples with his improvisational Jazz quartet, Stefon Harris walks us to a profound truth: many actions are perceived as mistakes only because we don't react to them appropriately. What could you do with the world's smallest 3D printer? Klaus Stadlmann demos his tiny, affordable printer that could someday make customized hearing aids -- or sculptures smaller than a human hair. International aid groups make the same mistakes over and over again. David Damberger analyzes his own engineering failure in India -- and calls for his friends in the development sector to publicly admit, scrutinize and learn from their missteps. Photographer Monika Bulaj shares powerful, intimate images of Afghanistan -- of home life, of ritual, of men and women. Behind the headlines, what does the world truly know about this place? Surgeons are taught from textbooks which conveniently color-code the types of tissues, but that's not what it looks like in real life -- until now. At TEDMED Quyen Nguyen demonstrates how a molecular marker can make tumors light up in neon green, showing surgeons exactly where to cut. Every day, we use materials from the earth without thinking, for free. But what if we had to pay for their true value: would it make us more careful about what we use and what we waste? Think of Pavan Sukhdev as nature's banker -- assessing the value of the Earth's assets. Eye-opening charts will make you think differently about the cost of air, water, trees ... Homaro Cantu and Ben Roche come from Moto, a Chicago restaurant that plays with new ways to cook and eat food. But beyond the fun and flavor-tripping, there's a serious intent: Can we use new food technology for good? When Ramona Pierson was 22, she was hit by a drunk driver and spent 18 months in a coma. In this talk, she tells the remarkable story of her recovery -- drawing on the collective skills and wisdom of a senior citizens' home. A vegetable garden can do more than save you money -- it can save the world. In this talk, Roger Doiron shows how gardens can re-localize our food and feed our growing population. Sad but true: Many of the cures and vaccines our world desperately needs -- for illnesses millions of people have -- just aren't being produced or developed, because there's no financial incentive. Thomas Pogge proposes a \$6 billion plan to revolutionize the way medications are developed and sold. Every morning we wake up and regain consciousness -- that is a marvelous fact -- but what exactly is it that we regain? Neuroscientist Antonio Damasio uses this simple question to give us a glimpse into how our brains create our sense of self. At TEDMED, Sheila Nirenberg shows a bold way to create sight in people with certain kinds of blindness: by hooking into the optic nerve and sending signals from a camera direct to the brain. Every day, we make decisions that have good or bad consequences for our future selves. (Can I skip flossing just this one time?) Daniel Goldstein makes tools that help us imagine our lives over time, so that we make smart choices for Future Us. Political prisoners aren't the only ones being tortured -- the vast majority of judicial torture happens in ordinary cases, even in 'functioning' legal systems. Social activist Karen Tse shows how we can, and should, stand up and end the use of routine torture. Alberto Cairo's clinics in Afghanistan used to close down during active fighting. Now, they stay open. In this powerful talk, Cairo tells the moving story of why -- and how he found humanity and dignity in the midst of war. For a full year, AJ Jacobs followed every piece of health advice he could -- from applying sunscreen by the shot glass to wearing a bicycle helmet while shopping. Onstage at TEDMED, he shares the surprising things he learned. Within this generation, an extra 30 years have been added to our life expectancy -- and these years aren't just a footnote. Jane Fonda asks how we can re-imagine this new phase of our lives. Paddy Ashdown believes we are living in a moment in history where power is changing in ways it never has before. In a spellbinding talk he outlines the three major global shifts that he sees coming. Sebastian Wernicke thinks every TED Talk can be summarized in six words. In this talk, he shows how to do just that -- and less. We don't just need better laws -- we need better culture. Nate Garvis asks: What can we do to create an environment in which powerful institutions are used for the common good? How do you measure a nebula? With a brain scan. In this talk, TED Fellow Michelle Borkin shows why collaboration between doctors and astronomers can lead to surprising discoveries. Like all of us, economist Tyler Cowen loves a good story. But in this intriguing talk, he asks us to step away from thinking of our lives -- and our messy, complicated irrational world -- in terms of a simple narrative. In 2011 three young women swept the top prizes of the first Google Science Fair. Lauren Hodge, Shree Bose and Naomi Shah describe their extr



ordinary projects -- and their route to a passion for science, it seems counterintuitive to engage in dialogue with violent groups, with radicals and terrorists, and with the states that support them. But Jonas Gahr Støre, the foreign minister of Norway, makes a compelling case for open discussion, even when our values diverge. We have no ways to directly observe molecules and what they do -- but Drew Berry wants to change that. He demos his scientifically accurate (and entertaining!) animations that help researchers see unseeable processes within our own cells. Inspired by Aung San Suu Kyi's call to action, "If you're feeling helpless, help someone," Morley composed this song. She sings it at TEDxWomen in her gorgeous, warm voice. Kirk Sorensen shows us the liquid fuel thorium reactor -- a way to produce energy that is safer, cleaner and more efficient than current nuclear power. There are millions of prodigiously gifted musicians of disability around the world, and Charles Hazlewood is determined to give them a platform. Watch the debut performance of the British Paraorchestra. After a crisis, how can we tell if water is safe to drink? Current tests are slow and complex, and the delay can be deadly, as in the cholera outbreak after Haiti's earthquake in 2010. TED Fellow Sonaar Luthra previews his design for a simple tool that quickly tests water for safety -- the Water Canary. What aspects of religion should atheists (respectfully) adopt? Alain de Botton suggests a "religion for atheists" -- call it Atheism 2.0 -- that incorporates religious forms and traditions to satisfy our human need for connection, ritual and transcendence. Cybercrime expert Mikko Hypponen talks us through three types of online attack on our privacy and data -- and only two are considered crimes. "Do we blindly trust any future government? Because any right we give away, we give away for good." What does a bill like PIPA/SOPA mean to our shareable world? At the TED offices, Clay Shirky delivers a proper manifesto -- a call to defend our freedom to create, discuss, link and share, rather than passively consume. We all want customized experiences and products -- but when faced with 700 options, consumers freeze up. With fascinating new research, Sheena Iyengar demonstrates how businesses (and others) can improve the experience of choosing. Scott Rickard set out to engineer the ugliest possible piece of music, devoid of repetition, using a mathematical concept known as the Costas Array. In this surprisingly entertaining talk, he shares the math behind musical beauty ... and its opposite. Algae plus salt water equals ... fuel? At TEDxNASA@SiliconValley, Bilal Bomani reveals a self-sustaining ecosystem that produces biofuels -- without wasting arable land or fresh water. What makes you, you? Is it how you think of yourself, how others think of you, or something else entirely? Philosopher Julian Baggini draws from philosophy and neuroscience to give a surprising answer. 2012 may be the year of 3D printing, when this three-decade-old technology finally becomes accessible and even commonplace. Lisa Harouni gives a useful introduction to this fascinating way of making things -- including intricate objects once impossible to create. In the 1970s, Diana Nyad set long-distance swim records that are still unbroken. Thirty years later, at 60, she attempted her longest swim yet, from Cuba to Florida. In this funny, powerful talk at TEDMED, she talks about how to prepare mentally to achieve an extreme dream, and asks: What will YOU do with your wild, precious life? Every doctor makes mistakes. But, says physician Brian Goldman, medicine's culture of denial (and shame) keeps doctors from ever talking about those mistakes, or using them to learn and improve. Telling stories from his own long practice, he calls on doctors to start talking about being wrong. Women aren't micro--so why do they only get micro-loans? Reporter Gayle Tzemach Lemmon argues that women running all types of firms-- from home businesses to major factories-- are the overlooked key to economic development. Bjørke Ingels' architecture is luxurious, sustainable and community-driven. In this talk, he shows us his playful designs, from a factory chimney that blows smoke rings to a ski slope built atop a waste processing plant. We make millions of online purchases daily, but who (or what) actually puts our items into packages? In this talk, Mick Mountz weaves a fascinating, surprisingly robot-filled tale of what happens inside a warehouse. Peter van Uhm is the Netherlands' chief of defense, but that does not mean he is pro-war. In this talk, he explains how his career is one shaped by a love of peace, not a desire for bloodshed -- and why we need armies if we want peace. Surgery, chemotherapy and radiation are the best-known methods for treating cancer. At TEDMED, Bill Doyle presents a new approach, called Tumor Treating Fields, which uses electric fields to interrupt cancer cell division. Still in its infancy -- and approved for only certain types of cancer -- the treatment comes with one big benefit: quality of life. We believe we should work hard in order to be happy, but could we be thinking about things backwards? In this fast-moving and very funny talk, psychologist Shawn Achor argues that, actually, happiness inspires us to be more productive. What if you're in surgery and the power goes out? No lights, no oxygen -- and your anesthesia stops flowing. It happens constantly in hospitals throughout the world, turning routine procedures into tragedies. Erica Frenkel demonstrates one solution: the universal anesthesia machine. From deep in the TED archive, Danny Hillis outlines an intriguing theory of how and why technological change seems to be accel

linking, by linking it to the very evolution of life itself. The presentation techniques he uses may look dated, but the ideas are as relevant as ever. Underwater filmmaker Mike deGruy has spent decades looking intimately at the ocean. A consummate storyteller, he takes the stage at Mission Blue to share his awe and excitement -- and his fears -- about the blue heart of our planet. Five billion people can't use the Internet. Aleph Molinari empowers digitally excluded people, by giving them access to computers and sharing the know-how to use them. From the "I have a dream" speech to Steve Jobs' iPhone launch, many great talks have a common structure that helps their message resonate with listeners. In this talk, presentation expert Nancy Duarte shares practical lessons on how to make a powerful call-to-action. How do you remember where you parked your car? How do you know if you're moving in the right direction? Neuroscientist Neil Burgess studies the neural mechanisms that map the space around us, and how they link to memory and imagination. Pepper spray, Tasers, tear gas, rubber bullets -- these "non-lethal" weapons are being used by more and more local police forces, as well as military forces brought in to control civilian crowds and other situations. Despite their name, non-lethal weapons have been known to cause deaths ... and as Stephen Coleman suggests, there are other, more insidious hazards as well. He explores the complex ethics -- and the unexpected consequences -- of using non-lethal weapons to control civilians. Sheikha Al Mayassa, a patron of artists, storytellers and filmmakers in Qatar, talks about how art and culture create a country's identity -- and allow every country to share its unique identity with the wider world. As she says: "We don't want to be all the same, but we do want to understand each other." In a spellbinding talk, paleontologist Jack Horner tells the story of how iconoclastic thinking revealed a shocking secret about some of our most beloved dinosaurs. Erik Johansson creates realistic photos of impossible scenes -- capturing ideas, not moments. In this witty how-to, the Photoshop wizard describes the principles he uses to make these fantastical scenarios come to life, while keeping them visually plausible. We have all changed someone's life -- usually without even realizing it. In this funny talk, Drew Dudley calls on all of us to celebrate leadership as the everyday act of improving each other's lives. Keith Nolan always wanted to join the United States military. The challenge: He is Deaf, which is an automatic disqualification according to military rules. In this talk, he describes his fight to fight for his country. (In American Sign Language, with real-time translation.) Filmmaker Penelope Jagessar Chaffer was curious about the chemicals she was exposed to while pregnant: Could they affect her unborn child? So she asked scientist Tyrone Hayes to brief her on one he studied closely: atrazine, a herbicide used on corn. (Hayes, an expert on amphibians, is a critic of atrazine, which displays a disturbing effect on frog development.) Onstage together at TEDWomen, Hayes and Chaffer tell their story. In this funny, casual talk from TEDx, writer Jenna McCarthy shares surprising research on how marriages (especially happy marriages) really work. One tip: Do not try to win an Oscar for best actress. Singer Inara George and guitarist Mike Andrews play the quietly lovely love song "Family Tree." You can use your smartphone to find a local ATM, but what if you need a defibrillator? Lucien Engelen shows us online innovations that are changing the way we save lives, including a crowdsourced map of local AEDs. They're the second-largest fish in the world, they're almost extinct, and we know almost nothing about them. In this talk, Simon Berrow describes the fascinating basking shark ("great fish of the sun" in Irish), and the exceptional -- and wonderfully low-tech -- ways he's learning enough to save them. The disastrous earthquake in Haiti taught humanitarian groups an unexpected lesson: the power of mobile devices to coordinate, inform and guide relief efforts. At TEDxRC2, Paul Conneally shows extraordinary examples of social media and other technologies becoming central to humanitarian aid. What does environmental devastation actually look like? At TEDxVictoria, photographer Garth Lenz shares shocking photos of the Alberta Tar Sands mining project -- and the beautiful (and vital) ecosystems under threat. How often do you see the true beauty of the night sky? TED Fellow Lucianne Walkowicz shows how light pollution is ruining the extraordinary -- and often ignored -- experience of seeing directly into space. A clay cylinder covered in Akkadian cuneiform script, damaged and broken, the Cyrus Cylinder is a powerful symbol of religious tolerance and multi-culturalism. In this enthralling talk Neil MacGregor, Director of the British Museum, traces 2600 years of Middle Eastern history through this single object. Every act of communication is, in some way, an act of translation. Writer Chris Bliss talks about the way that great comedy can translate deep truths for a mass audience. Has our technology -- our cell phones and iPods and cameras -- stopped us from dreaming? Young artist Shilo Shiv Suleman says no, as she demos "Kho ya," her new storybook for iPad, which floats us through a magical world in 7 minutes of pure creativity. It's easy to imagine saving money next week, but how about right now? Generally, we want to spend it. Economist Shlomo Benartzi says this is one of the biggest obstacles to saving enough for retirement, and asks: How do we turn this behavioral challenge into a behavioral solution? In 2010, technologist Tan Le took the TEDGlobal stage

ge to demo a new interface. But now, at TEDxWomen, she tells a very personal story: the story of her family -- mother, grandmother and sister -- fleeing Vietnam and building a new life. Could someone hack your pacemaker? Avi Rubin shows how hackers are compromising cars, smartphones and medical devices, and warns us about the dangers of an increasingly hack-able world. Were you the favorite child, the wild child or the middle child? Jeffrey Kluger explores the profound life-long bond between brothers and sisters, and the influence of birth order, favoritism and sibling rivalry. Kevin Allocca is YouTube's trends manager, and he has deep thoughts about silly web video. In this talk from TEDYouth, he shares the 4 reasons a video goes viral. Oceanographer Paul Snelgrove shares the results of a ten-year project with one goal: to take a census of all the life in the oceans. He shares amazing photos of some of the surprising finds of the Census of Marine Life. The ocean has degraded within our lifetimes, as shown in the decreasing average size of fish. And yet, as Daniel Pauly shows us onstage at Mission Blue, each time the baseline drops, we call it the new "normal." At what point do we stop readjusting downward? Onstage at TED2012, Peter Diamandis makes a case for optimism -- that we'll invent, innovate and create ways to solve the challenges that loom over us. "I'm not saying we don't have our set of problems; we surely do. But ultimately, we knock them down." Have we used up all our resources? Have we filled up all the livable space on Earth? Paul Gilding suggests we have, and the possibility of devastating consequences, in a talk that's equal parts terrifying and, oddly, hopeful. In his lab at Penn, Vijay Kumar and his team build flying quadrotors, small, agile robots that swarm, sense each other, and form ad hoc teams -- for construction, surveying disasters and far more. In a culture where being social and outgoing are prized above all else, it can be difficult, even shameful, to be an introvert. But, as Susan Cain argues in this passionate talk, introverts bring extraordinary talents and abilities to the world, and should be encouraged and celebrated. In an engaging and personal talk -- with cameo appearances from his grandmother and Rosa Parks -- human rights lawyer Bryan Stevenson shares some hard truths about America's justice system, starting with a massive imbalance along racial lines: a third of the country's black male population has been incarcerated at some point in their lives. These issues, which are wrapped up in America's unexamined history, are rarely talked about with this level of candor, insight and persuasiveness. Filmmaker Andrew Stanton ("Toy Story," "WALL-E") shares what he knows about storytelling -- starting at the end and working back to the beginning. Contains graphic language ... (Note: this talk is not available for download.) Top climate scientist James Hansen tells the story of his involvement in the science of and debate over global climate change. In doing so he outlines the overwhelming evidence that change is happening and why that makes him deeply worried about the future. Can government be run like the Internet, permissionless and open? Coder and activist Jennifer Pahlka believes it can -- and that apps, built quickly and cheaply, are a powerful new way to connect citizens to their governments -- and their neighbors. Colin Robertson had 3 minutes on the TED stage to tell the world about his solar-powered crowdsourced health care solution. And then... Kelli Anderson shatters our expectations about reality by injecting humor and surprise into everyday objects. She shares her disruptive and clever designs. In this funny and blunt talk, Larry Smith pulls no punches when he calls out the absurd excuses people invent when they fail to pursue their passions. By dissecting a cockroach ... yes, live on stage ... TED Fellow and neuroscientist Greg Gage shows how brains receive and deliver electric impulses -- and how legs can respond. This talk comes from the TED-Ed project. TED curator Chris Anderson shares his obsession with questions that no one (yet) knows the answers to. A short intro leads into two questions: Why can't we see evidence of alien life? And How many universes are there? In the deepest, darkest parts of the oceans are ecosystems with more diversity than a tropical rainforest. Taking us on a voyage into the ocean -- from the deepest trenches to the remains of Titanic -- marine biologist David Gallo explores the wonder and beauty of marine life. Adam Savage walks through two spectacular examples of profound scientific discoveries that came from simple, creative methods anyone could have followed -- Eratosthenes' calculation of the Earth's circumference around 200 BC and Hippolyte Fizeau's measurement of the speed of light in 1849. Psychologist Jonathan Haidt asks a simple, but difficult question: why do we search for self-transcendence? Why do we attempt to lose ourselves? In a tour through the science of evolution by group selection, he proposes a provocative answer. Comic author Rob Reid unveils Copyright Math (TM), a remarkable new field of study based on actual numbers from entertainment industry lawyers and lobbyists. Shame is an unspoken epidemic, the secret behind many forms of broken behavior. Brené Brown, whose earlier talk on vulnerability became a viral hit, explores what can happen when people confront their shame head-on. Her own humor, humanity and vulnerability shine through every word. Prosthetics can't replicate the look and feel of lost limbs but they can carry a lot of personality. Designer Scott Summit shows 3D-printed, individually designed prosthetic legs that are unabashedly artificial and completely personal.

l -- from machos to fabulous -- can bring people together, or divide them -- witness the skyscraper, costly, inefficient, and only serving small portions of the community. At TEDxPortofSpain, Mark Raymond encourages city governments to let go of their old notions of success and consider the balance of environment, economy, and society to design cities for social change. The US consumes 25% of the world's oil -- but as energy tycoon T. Boone Pickens points out onstage, the country has no energy policy to prepare for the inevitable. Is alternative energy our bridge to an oil-free future? After losing \$150 million investing in wind energy, Pickens suggests it isn't, not yet. What might get us there? Natural gas. After the talk, watch for a lively Q&A with TED Curator Chris Anderson. Surprising, but true: More women now die of heart disease than men, yet cardiovascular research has long focused on men. Pioneering doctor C. Noel Bairey Merz shares what we know and don't know about women's heart health -- including the remarkably different symptoms women present during a heart attack (and why they're often missed). T aylor Wilson believes nuclear fusion is a solution to our future energy needs, and that kids can change the world. And he knows something about both of those: When he was 14, he built a working fusion reactor in his parents' garage. Now 17, he takes the TED stage at short notice to tell (the short version of) his story. Combining dry wit with artistic depth, Billy Collins shares a project in which several of his poems were turned into delightful animated films in a collaboration with Sundance Channel. Five of them are included in this wonderfully entertaining and moving talk -- and don't miss the hilarious final poem! Jer Thorp creates beautiful data visualizations to put abstract data into a human context. At TEDxVancouver, he shares his moving projects, from graphing an entire year's news cycle, to mapping the way people share articles across the internet. We can't control if we'll die, but we can "occupy death," in the words of Peter Saul, an emergency doctor. He asks us to think about the end of our lives -- and to question the modern model of slow, intubated death in hospital. Two big questions can help you start this tough conversation. What's the key to using alternative energy, like solar and wind? Storage -- so we can have power on tap even when the sun's not out and the wind's not blowing. In this accessible, inspiring talk, Donald Sadoway takes to the blackboard to show us the future of large-scale batteries that store renewable energy. As he says: "We need to think about the problem differently. We need to think big. We need to think cheap." "What would you attempt to do if you knew you could not fail?" asks Regina Dugan, then director of DARPA, the Defense Advanced Research Projects Agency. In this breath-taking talk she describes some of the extraordinary projects -- a robotic hummingbird, a prosthetic arm controlled by thought, and, well, the internet -- that her agency has created by not worrying that they might fail. (Followed by a Q&A with TED's Chris Anderson) Nobel Peace Prize winner Leymah Gbowee has two powerful stories to tell -- of her own life's transformation, and of the untapped potential of girls around the world. Can we transform the world by unlocking the greatness of girls? Imagine a set of electronics as easy to play with as Legos. TED Fellow Ayah Bdeir introduces littleBits, a set of simple, interchangeable blocks that make programming as simple and important a part of creativity as snapping blocks together. Marco Tempest spins a beautiful story of what magic is, how it entertains us and how it highlights our humanity -- all while working extraordinary illusions with his hands and an augmented reality machine. Solar-powered LED light bulbs could transform the lives of rural Haitians, but as Daniel Schnitzer found, they don't simply sell themselves. At TEDxPittsburgh, he shows how smart health and energy products for the developing world are useless unless the market works too. The Pirate Party fights for transparency, anonymity and sensible copyright laws. At TEDxObserver, Rick Falkvinge explains how he became the leader of Europe's tech-driven political party, which so far has won 17 seats across national parliaments in Europe. New videography techniques have opened up the oceans' microscopic ecosystem, revealing it to be both mesmerizingly beautiful and astoundingly complex. Explore this hidden world that underpins our own food chain -- in the first-ever TEDTalk given by a fish ... As we expect more from technology, do we expect less from each other? Sherry Turkle studies how our devices and online personas are redefining human connection and communication -- and asks us to think deeply about the new kinds of connection we want to have. Chip Kidd doesn't judge books by their cover, he creates covers that embody the book -- and he does it with a wicked sense of humor. In one of the funniest talks from TED2012, he shows the art and deep thought of his cover designs. This talk is from The Design Studio session at TED2012, guest-curated by Chee Pearlman and David Rockwell. Onstage at TED2012, Jack Choi demonstrates a powerful tool for training medical students: a stretcher-sized multi-touch screen of the human body that lets you explore, dissect and understand the body's parts and systems. TED Fellow Lucy McRae is a body architect -- she imagines ways to merge biology and technology in our own bodies. In this visually stunning talk, she shows her work, from clothes that recreate the body's insides for a music video with pop-star Robyn, to a pill that, when swallowed, lets you sweat perfume. At TEDYouth 2011, performance arti

st Carvens Lissaint shows how to use language and imagery to express a powerful idea -- as in this spoken-word performance, a stirring plea to make college education more accessible. A skyrocketing demand for food means that agriculture has become the largest driver of climate change, biodiversity loss and environmental destruction. Jonathan Foley shows why we desperately need to begin "terraculture" -- farming for the whole planet. "Secrets can take many forms -- they can be shocking, or silly, or soulful." Frank Warren, the founder of PostSecret.com, shares some of the half-million secrets that strangers have mailed him on postcards. What happens when two monkeys are paid unequally? Fairness, reciprocity, empathy, cooperation -- caring about the well-being of others seems like a very human trait. But Frans de Waal shares some surprising videos of behavioral tests, on primates and other mammals, that show how many of these moral traits all of us share. Contraception. The topic has become controversial in recent years. But should it be? Melinda Gates believes that many of the world's social change issues depend on ensuring that women are able to control their rate of having kids. In this significant talk at TEDxChange, she makes the case for the world to re-examine an issue she intends to lend her voice to for the next decade. Tal Golesworthy is a boiler engineer -- he knows piping and plumbing. When he needed surgery to repair a life-threatening problem with his aorta, he mixed his engineering skills with his doctors' medical knowledge to design a better repair job. TED Fellow Abigail Washburn wanted to be a lawyer improving US-China relations -- until she picked up a banjo. She tells a moving story of the remarkable connections she's formed touring across the United States and China while playing that banjo and singing in Chinese. Our medical systems are broken. Doctors are capable of extraordinary (and expensive) treatments, but they are losing their core focus: actually treating people. Doctor and writer Atul Gawande suggests we take a step back and look at new ways to do medicine -- with fewer cowboys and more pit crews. Drew Curtis, the founder of fark.com, tells the story of how he fought a lawsuit from a company that had a patent, "...for the creation and distribution of news releases via email." Along the way he shares some nutty statistics about the growing legal problem of frivolous patents. Taryn Simon captures the essence of vast, generation-spanning stories by photographing the descendants of people at the center of the narrative. In this riveting talk she shows a stream of these stories from all over the world, investigating the nature of genealogy and the way our lives are shaped by the interplay of many different forces. In the 20th century we added an unprecedented number of years to our lifespans, but is the quality of life as good? Surprisingly, yes! Psychologist Laura Carstensen shows research that demonstrates that as people get older they become happier, more content, and have a more positive outlook on the world. Imagine what we could learn about diseases by studying the history of human disease, from ancient hominids to the present. But how? TED Fellow Christina Warinner is an archaeological geneticist, and she's found a spectacular new tool -- the microbial DNA in fossilized dental plaque. Is there more than one universe? In this visually rich, action-packed talk, Brian Greene shows how the unanswered questions of physics (starting with a big one: What caused the Big Bang?) have led to the theory that our own universe is just one of many in the "multiverse." At TEDxCambridge, Michael Norton shares fascinating research on how money can indeed buy happiness -- when you don't spend it on yourself. Listen for surprising data on the many ways pro-social spending can benefit you, your work, and (of course) other people. Just how small are atoms? Really, really, really small. This fast-paced animation from TED-Ed uses metaphors (imagine a blueberry the size of a football stadium!) to give a visceral sense of just how small atoms are. Lesson by Jon Bergmann, animation by Cognitive Media. Eduardo Paes is the mayor of Rio de Janeiro, a sprawling, complicated, beautiful city of 6.5 million. He shares four big ideas about leading Rio -- and all cities -- into the future, including bold (and do-able) infrastructure upgrades and how to make a city "smarter." When Nancy Lublin started texting teenagers to help with her social advocacy organization, what she found was shocking -- they started texting back about their own problems, from bullying to depression to abuse. So she's setting up a text-only crisis line, and the results might be even more important than she expected. You use paper towels to dry your hands every day, but chances are, you're doing it wrong. In this enlightening and funny short talk, Joe Smith reveals the trick to perfect paper towel technique. It's never easy to get across the magnitude of complex tragedies -- so when Brenda Romero's daughter came home from school asking about slavery, she did what she does for a living -- she designed a game. She describes the surprising effectiveness of this game, and others, in helping the player really understand the story. How do you make a great public space inside a not-so-great building? Liz Diller shares the story of creating a welcoming, lighthearted -- even, dare we say it, sexy -- addition to the Hirshhorn Museum in Washington, DC. (From The Design Studio session at TED2012, guest-curated by Chee Pearlman and David Rockwell.) In this intimate talk filmed at TED's offices, energy innovator Amory Lovins shows how to get the US off oil and coal by 2050, \$5 trillion cheaper, with no Act of Con

gress, led by business for profit. The key is integrating all four energy-using sectors -- and four kinds of innovation. Reuben Margolin is a kinetic sculptor, crafting beautiful pieces that move in the pattern of raindrops falling and waves combining. Take nine minutes and be mesmerized by his meditative art -- inspired in equal parts by math and nature. As you surf the Web, information is being collected about you. Web tracking is not 100% evil -- personal data can make your browsing more efficient; cookies can help your favorite websites stay in business. But, says Gary Kovacs, it's your right to know what data is being collected about you. He unveils a Firefox add-on, Collusion, to do just that. (Update: Collusion is now called Lightbeam.) The circumstances of our lives may matter less than how we see them, says Rory Sutherland. At TEDxAthens, he makes a compelling case for how reframing is the key to happiness. Fifteen-year-old Tavi Gevinson had a hard time finding strong female, teenage role models -- so she built a space where they could find each other. At TEDxTeen, she illustrates how the conversations on sites like Rookie, her wildly popular web magazine for and by teen girls, are putting a new, unapologetically uncertain and richly complex face on modern feminism. Rick Guidotti is a fashion photographer with a passion project: finding and sharing the beauty of kids with albinism and other conditions that affect their physical appearance -- and the way society treats them. At TEDxPhoenix, he shares some of their stories and the empowering effects of a little glamour as he redefines their beauty in a flash. In this epic overview, Michael Tilson Thomas traces the development of classical music through the development of written notation, the record, and the re-mix. How do we consume data? At TED@SXSWi, technologist JP Rangaswami muses on our relationship to information, and offers a surprising and sharp insight: we treat it like food. At TED2012, filmmaker Karen Bass shares some of the astonishing nature footage she's shot for the BBC and National Geographic -- including brand-new, previously unseen footage of the tube-lipped nectar bat, who feeds in a rather unusual way ... There are people who can quickly memorize lists of thousands of numbers, the order of all the cards in a deck (or ten!), and much more. Science writer Joshua Foer describes the technique -- called the memory palace -- and shows off its most remarkable feature: anyone can learn how to use it, including him. Oops! Nobody wants to see the 404: Page Not Found. But as Renny Gleeson shows us, while he runs through a slideshow of creative and funny 404 pages, every error is really a chance to build a better relationship. The revolution that made music more marketable, more personal and easier to pirate began ... at the dawn of the 19th century. José Bowen outlines how new printing technology and an improved piano gave rise to the first music industry. We can use a mosquito's own instincts against her. In a rather unforgettable presentation, Bart Knols demos the imaginative solutions his team is developing to fight malaria -- including Limburger cheese and a deadly pill. Are we born to be optimistic, rather than realistic? Tali Sharot shares new research that suggests our brains are wired to look on the bright side -- and how that can be both dangerous and beneficial. What can mathematics say about history? According to TED Fellow Jean-Baptiste Michel, quite a lot. From changes to language to the deadliness of wars, he shows how digitized history is just starting to reveal deep underlying patterns. Is your school or workplace divided into "creatives" versus practical people? Yet surely, David Kelley suggests, creativity is not the domain of only a chosen few. Telling stories from his legendary design career and his own life, he offers ways to build the confidence to create... (From The Design Studio session at TED2012, guest-curated by Chee Pearlman and David Rockwell.) There have been remarkable advances in understanding the brain, but how do you actually study the neurons inside it? Using gorgeous imagery, neuroscientist and TED Fellow Carl Schoonover shows the tools that let us see inside our brains. Street artist JR made a wish in 2011: Join me in a worldwide photo project to show the world its true face. One year after making his TED Prize wish, he shows how giant posters of human faces, pasted in public, are connecting communities, making change, and turning the world inside out. Michael McDaniel designed housing for disaster relief zones -- inexpensive, easy to transport, even beautiful -- but found that no one was willing to build it. Persistent and obsessed, he decided to go it alone. At TEDxAustin, McDaniel shows us his Exo Reaction Housing Solution, and asks us to prepare for the next natural disaster. An average teaspoon of ocean water contains five million bacteria and fifty million viruses -- and yet we are just starting to discover how these "invisible engineers" control our ocean's chemistry. At TEDxMonterey, Melissa Garren sheds light on marine microbes that provide half the oxygen we breathe, maintain underwater ecosystems, and demonstrate surprising hunting skills. (Apologies for the small audio glitches in this video.) We've been to the moon, we've mapped the continents, we've even been to the deepest point in the ocean -- twice. What's left for the next generation to explore? Biologist and explorer Nathan Wolfe suggests this answer: Almost everything. And we can start, he says, with the world of the unseeably small. Hans Rosling had a question: Do some religions have a higher birth rate than others -- and how does this affect global population growth? Speaking at the TEDxSummit in Doha, Qatar

r, he graphs data over time and across religions. With his trademark humor and sharp insight, Hans reaches a surprising conclusion on world fertility rates. Even a death-defying magician has to start somewhere. High-wire artist Philippe Petit takes you on an intimate journey from his first card trick at age 6 to his tightrope walk between the Twin Towers. There is an epidemic of HIV, and with it an epidemic of bad laws -- laws that effectively criminalize being HIV positive. At the TEDxSummit in Doha, TED Fellow Shereen El-Feki gives a forceful argument that these laws, based in stigma, are actually helping the disease spread. Reggie Watts\'' beats defy boxes. Unplug your logic board and watch as he blends poetry and crosses musical genres in this larger-than-life performance. How much land mass would renewables need to power a nation like the UK? An entire country\'s worth. In this pragmatic talk, David MacKay tours the basic mathematics that show worrying limitations on our sustainable energy options ... and explains why we should pursue them anyway. The more that robots ingrain themselves into our everyday lives, the more we\'re forced to examine ourselves as people. At TEDxBerkeley, Ken Goldberg shares four very human lessons that he\'s learned from working with robots. How do you read a two-thousand-year-old manuscript that has been erased, cut up, written on and painted over? With a powerful particle accelerator, of course! Ancient books curator William Noel tells the fascinating story behind the Archimedes palimpsest, a Byzantine prayer book containing previously-unknown original writings from ancient Greek mathematician Archimedes and others. Pollster Dalia Mogahed shares surprising data on Egyptian people\'s attitudes and hopes before the Arab Spring -- with a special focus on the role of women in sparking change. What does your chair say about what you value? Designer Sebastian Deterding shows how our visions of morality and "the good life" are reflected in the design of objects around us.\r\n Quixotic Fusion is an ensemble of artists that brings together aerial acrobatics, dance, theater, film, music and visual fx. Watch as they perform three transporting dance pieces at TED2012. SETI researcher Seth Shostak bets that we will find extraterrestrial life in the next twenty-four years, or he\'ll buy you a cup of coffee. He explains why new technologies and the laws of probability make the breakthrough so likely -- and predicts how the discovery of civilizations far more advanced than ours might affect us here on Earth. Bartenders need to know your age, retailers need your PIN, but almost no one actually needs your name -- except for identity thieves. ID expert David Birch proposes a safer approach to personal identification -- a "fractured" approach -- that would almost never require your real name. Throughout human evolution, multiple versions of humans co-existed. Could we be mid-upgrade now? Juan Enriquez sweeps across time and space to bring us to the present moment -- and shows how technology is revealing evidence that suggests rapid evolution may be under way. We\'re not done with anatomy. We know a tremendous amount about genomics, proteomics and cell biology, but as Diane Kelly makes clear at TEDMED, there are basic facts about the human body we\'re still learning. Case in point: How does the mammalian erection work? Why is \'x\' the symbol for an unknown? In this short and funny talk, Terry Moore gives the surprising answer. The world needs clean water, and more and more, we\'re pulling it from the oceans, desalinating it, and drinking it. But what to do with the salty brine left behind? In this intriguing short talk, TED Fellow Damian Palin proposes an idea: Mine it for other minerals we need, with the help of some collaborative metal-munching bacteria. John Hodgman, comedian and resident expert, "explains" the design of three iconic modern objects. (From The Design Studio session at TED2012, guest-curated by Chee Pearlman and David Rockwell.) Early diagnosis of autism spectrum disorder can improve the lives of everyone affected, but the complex network of causes make it incredibly difficult to predict. At TEDxPeachtree, Ami Klin describes a new early detection method that uses eye-tracking technologies to gauge babies\' social engagement skills and reliably measure their risk of developing autism. Journalist John Hockenberry tells a personal story inspired by a pair of flashy wheels in a wheelchair-parts catalogue -- and how they showed him the value of designing a life of intent. (From The Design Studio session at TED2012, guest-curated by Chee Pearlman and David Rockwell.) Rebecca Onie asks audacious questions: What if waiting rooms were a place to improve daily health care? What if doctors could prescribe food, housing and heat in the winter? At TEDMED she describes Health Leads, an organization that does just that -- and does it by building a volunteer base as elite and dedicated as a college sports team. Movies have the power to create a shared narrative experience and to shape memories and worldviews. British film director Beeban Kidron invokes iconic film scenes -- from Miracle in Milan to Boyz n the Hood -- as she shows how her group FILM CLUB shares great films with kids. In this short talk, TED Fellow Sarah Parcak introduces the field of "space archaeology" -- using satellite images to search for clues to the lost sites of past civilizations. In a funny talk with an urgent message, LZ Granderson points out the absurdity in the idea that there\'s a "gay lifestyle," much less a "gay agenda." What\'s actually on his agenda? Being a good partner -- and being a good parent. Rodney Mullen is the godfather of street skating, and in this exuberant talk he share

his love of the open skateboarding community. He shows how the unique environments skaters play in drive the creation of new tricks -- fostering prolific ingenuity purely for passion's sake. How do you tell women's stories? Ask women to tell them. At TEDxABQ, Megan Kamerick shows how the news media underrepresents women as reporters and news sources, and because of that tells an incomplete story. What happens before a murder? In looking for ways to reduce death penalty cases, David R. Dow realized that a surprising number of death row inmates had similar biographies. In this talk he proposes a bold plan, one that prevents murders in the first place. Reuters health editor Ivan Oransky warns that we're suffering from an epidemic of preposterous preconditions -- pre-diabetes, pre-cancer, and many more. In this engaging talk from TEDMED he shows how health care can find a solution... by taking an important lesson from baseball. Combining projection mapping and a pop-up book, Marco Tempest tells the visually arresting story of Nikola Tesla -- called "the greatest geek who ever lived" -- from his triumphant invention of alternating current to his penniless last days. In the fall of 2011 Peter Norvig taught a class with Sebastian Thrun on artificial intelligence at Stanford attended by 175 students in situ -- and over 100,000 via an interactive webcast. He shares what he learned about teaching to a global classroom. During the hot summer months, watching an outdoor sports match or concert can be tantamount to baking uncomfortably in the sun -- but it doesn't have to be. At the TEDxSummit in Doha, physicist Wolfgang Kessling reveals sustainable design innovations that cool us from above and below, and even collects solar energy for later use. Want to navigate the solar system without having to buy a spacecraft? Jon Nguyen demos NASA JPL's "Eyes on the Solar System" -- free-to-use software for exploring the planets, moons, asteroids, and spacecraft that rotate around our sun in real-time. Can India become a global hub for innovation? Nirmalya Kumar thinks it already has. He details four types of "invisible innovation" coming out of India and explains why companies that used to just outsource manufacturing jobs are starting to move top management positions overseas, too. "The world needs you, badly," says legendary biologist E.O. Wilson in his letter to a young scientist. He gives advice collected from a lifetime of experience -- and reminds us that wonder and creativity are the center of the scientific life. Prompted by the Encyclopaedia Britannica ending its print publication, performance poet Rives resurrects a game from his childhood. Speaking at the TEDxSummit in Doha, Rives takes us on a charming tour through random (and less random) bits of human knowledge: from Chimborazo, the farthest point from the center of the Earth, to Ham the Astrochimp, the first chimpanzee in outer space. Massimo Banzi helped invent the Arduino, a tiny, easy-to-use open-source microcontroller that's inspired thousands of people around the world to make the coolest things they can imagine -- from toys to satellite gear. Because, as he says, "You don't need anyone's permission to make something great." The recent generations have been bathed in connecting technology from birth, says futurist Don Tapscott, and as a result the world is transforming into one that is far more open and transparent. In this inspiring talk, he lists the four core principles that show how this open world can be a far better place. "Is it okay if I totally trash your office?" It's a question Elyn Saks once asked her doctor, and it wasn't a joke. A legal scholar, in 2007 Saks came forward with her own story of schizophrenia, controlled by drugs and therapy but ever-present. In this powerful talk, she asks us to see people with mental illness clearly, honestly and compassionately. How can a super-thin 3-inch disk levitate something 70,000 times its own weight? In a riveting demonstration, Boaz Almog shows how a phenomenon known as quantum locking allows a superconductor disk to float over a magnetic rail -- completely frictionlessly and with zero energy loss. Experiment: Prof. Guy Deutscher, Mishaël Azoulay, Boaz Almog, of the High Tc Superconductivity Group, School of Physics and Astronomy, Tel Aviv University. When faced with a parent suffering from Alzheimer's, most of us respond with denial ("It won't happen to me") or extreme efforts at prevention. But global health expert and TED Fellow Alanna Shaikh sees it differently. She's taking three concrete steps to prepare for the moment -- should it arrive -- when she herself gets Alzheimer's disease. You might have a 5-year plan, but what about a 200-year plan? Artist Raghava KK has set his eyes on an ultra-long-term horizon; at TEDxSummit, he shows how it helps guide today's choices and tomorrow's goals -- and encourages you to make your own 200-year plan too. When TED Senior Fellow Cesar Harada heard about the devastating effects of the BP Oil spill in the Gulf of Mexico in 2010, he quit his dream job and moved to New Orleans to develop a more efficient way to soak up the oil. He designed a highly maneuverable, flexible boat capable of cleaning large tracts quickly. But rather than turn a profit, he has opted to open-source the design. Usman Riaz is a 21-year-old whiz at the percussive guitar, a style he learned to play by watching his heroes on YouTube. The TED Fellow plays onstage at TEDGlobal 2012 -- followed by a jawdropping solo from the master of percussive guitar, Preston Reed. And watch these two guitarists take on a very spur-of-the-moment improv. When game designer Jane McGonigal found herself bedridden and suicidal following a severe concussion, she had a fasc



introducing idea to get better. She dove into the scientific research and created the healing game, SuperBetter. In this moving talk, McGonigal explains how a game can boost resilience -- and promises to add 7.5 minutes to your life. Our bodies are covered in a sea of microbes -- both the pathogens that make us sick and the "good" microbes, about which we know less, that might be keeping us healthy. At TEDMED, microbiologist Jonathan Eisen shares what we know, including some surprising ways to put those good microbes to work. Autonomous cars are coming -- and they're going to drive better than you. Chris Gerdes reveals how he and his team are developing robotic race cars that can drive at 150 mph while avoiding every possible accident. And yet, in studying the brainwaves of professional racing drivers, Gerdes says he has gained a new appreciation for the instincts of professional drivers. The world is becoming increasingly open, and that has implications both bright and dangerous. Marc Goodman paints a portrait of a grave future, in which technology's rapid development could allow crime to take a turn for the worse. Designer Jared Ficklin creates wild visualizations that let us see music, using color and even fire (a first for the TED stage) to analyze how sound makes us feel. He takes a brief digression to analyze the sound of a skatepark -- and how audio can clue us in to developing creativity. Todd Humphreys forecasts the near-future of geolocation when millimeter-accurate GPS "dots" will enable you to find pin-point locations, index-search your physical possessions ... or to track people without their knowledge. And the response to the sinister side of this technology may have unintended consequences of its own. Using video mapping and projection, artist Gabriel Barcia-Colombo captures and shares his memories and friendships. At TED Fellow Talks, he shows his charming, thoughtful work -- which appears to preserve the people in his life in jars, suitcases, blenders ... For decades, researcher Mina Bissell pursued a revolutionary idea -- that a cancer cell doesn't automatically become a tumor, but rather, depends on surrounding cells (its microenvironment) for cues on how to develop. She shares the two key experiments that proved the prevailing wisdom about cancer growth was wrong. In 2000, the UN laid out 8 goals to make the world better by reducing poverty and disease -- with a deadline of 2015. As that deadline approaches, Jamie Drummond of ONE.org runs down the surprising successes of the 8 Millennium Development Goals, and suggests a crowdsourced reboot for the next 15 years. Over the years, research has shown a counterintuitive fact about human nature: Sometimes, having too much choice makes us less happy. This may even be true when it comes to medical treatment. Baba Shiv shares a fascinating study that measures why choice opens the door to doubt, and suggests that ceding control -- especially on life-or-death decisions -- may be the best thing for us. Matt Mills and Tamara Roukaerts demonstrate AuraSma, a new augmented reality tool that can seamlessly animate the world as seen through a smartphone. Going beyond previous augmented reality, their "auras" can do everything from making a painting talk to overlaying live news onto a printed newspaper. Artist Neil Harbisson was born completely color blind, but these days a device attached to his head turns color into audible frequencies. Instead of seeing a world in grayscale, Harbisson can hear a symphony of color -- and yes, even listen to faces and paintings. Computer science began in the '30s ... the 1830s. John Graham-Cumming tells the story of Charles Babbage's mechanical, steam-powered "analytical engine" and how Ada Lovelace, mathematician and daughter of Lord Byron, saw beyond its simple computational abilities to imagine the future of computers. Two-thirds of the world may not have access to the latest smartphone, but local electronic shops are adept at fixing older tech using low-cost parts. Vinay Venkatraman explains his work in "technology crafts," through which a mobile phone, a lunchbox and a flashlight can become a digital projector for a village school, or an alarm clock and a mouse can be melded into a medical device for local triage. Imagine global security driven by collaboration -- among agencies, government, the private sector and the public. That's not just the distant hope of open-source fans, it's the vision of James Stavridis, a US Navy Admiral. Stavridis shares vivid moments from recent military history to explain why security of the future should be built with bridges rather than walls. What kind of data is your cell phone company collecting? Malte Spitz wasn't too worried when he asked his operator in Germany to share information stored about him. Multiple unanswered requests and a lawsuit later, Spitz received 35,830 lines of code -- a detailed, nearly minute-by-minute account of half a year of his life. When Tracy Chevalier looks at paintings, she imagines the stories behind them: How did the painter meet his model? What would explain that look in her eye? Why is that man ... blushing? She shares three stories inspired by portraits, including the one that led to her best-selling novel "Girl With a Pearl Earring." Ramesh Raskar presents femto-photography, a new type of imaging so fast it visualizes the world one trillion frames per second, so detailed it shows light itself in motion. This technology may someday be used to build cameras that can look "around" corners or see inside the body without X-rays. Inspired by cell division, Michael Hansmeyer writes algorithms that design outrageously fascinating shapes and forms with millions of facets. No person could draft them by hand, but they're

bees and they could revolutionize the way we think of architectural form. Bees have been rapidly and mysteriously disappearing from rural areas, with grave implications for agriculture. But bees seem to flourish in urban environments -- and cities need their help, too. Noah Wilson-Rich suggests that urban beekeeping might play a role in revitalizing both a city and a species. Giles Duley gave up a life of glamour and celebrity as a fashion photographer to travel the world and document the stories of the forgotten and marginalized. While on assignment in Afghanistan he stepped on a landmine, a horrific event that left him a triple amputee. In this moving talk Duley tells us stories of lives lost and found -- including his. Michael Anti (aka Jing Zhao) has been blogging from China for 12 years. Despite the control the central government has over the Internet -- "All the servers are in Beijing" -- he says that hundreds of millions of microbloggers are in fact creating the first national public sphere in the country's history, and shifting the balance of power in unexpected ways. A whirlwind of energy and ideas, Stephen Ritz is a teacher in New York's tough South Bronx, where he and his kids grow lush gardens for food, greenery -- and jobs. Just try to keep up with this New York treasure as he spins through the many, many ways there are to grow hope in a neighborhood many have written off, or in your own. Daphne Koller is enticing top universities to put their most intriguing courses online for free -- not just as a service, but as a way to research how people learn. With Coursera (cofounded by Andrew Ng), each keystroke, quiz, peer-to-peer discussion and self-graded assignment builds an unprecedented pool of data on how knowledge is processed. In the wake of the 2011 Japanese earthquake and tsunami, mixed into the wreckage were lost and damaged photos of families and loved ones. Photo retoucher Becci Manson, together with local volunteers and a global group of colleagues she recruited online, helped clean and fix them, restoring those memories to their owners. Mark Applebaum writes music that breaks the rules in fantastic ways, composing a concerto for a florist and crafting a musical instrument from junk and found objects. This quirky talk might just inspire you to shake up the "rules" of your own creative work. Can an algorithm forecast the site of the next riot? In this accessible talk, mathematician Hannah Fry shows how complex social behavior can be analyzed and perhaps predicted through analogies to natural phenomena, like the patterns of a leopard's spots or the distribution of predators and prey in the wild. How do you deal with a bully without becoming a thug? In this wise and soulful talk, peace activist Scilla Elworthy maps out the skills we need -- as nations and individuals -- to fight extreme force without using force in return. To answer the question of why and how nonviolence works, she evokes historical heroes -- Aung San Suu Kyi, Mahatma Gandhi, Nelson Mandela -- and the personal philosophies that powered their peaceful protests. Most people instinctively avoid conflict, but as Margaret Heffernan shows us, good disagreement is central to progress. She illustrates (sometimes counterintuitively) how the best partners aren't echo chambers -- and how great research teams, relationships and businesses allow people to deeply disagree. Parkinson's disease affects 6.3 million people worldwide, causing weakness and tremors, but there's no objective way to detect it early on. Yet. Applied mathematician and TED Fellow Max Little is testing a simple, cheap tool that in trials is able to detect Parkinson's with 99 percent accuracy -- in a 30-second phone call. What should a community do with its unused land? Plant food, of course. With energy and humor, Pam Warhurst tells at the TEDSalon the story of how she and a growing team of volunteers came together to turn plots of unused land into communal vegetable gardens, and to change the narrative of food in their community. Nothing is original, says Kirby Ferguson, creator of Everything is a Remix. From Bob Dylan to Steve Jobs, he says our most celebrated creators borrow, steal and transform. Photographer Lisa Kristine travels the world documenting the unbearably harsh realities of modern-day slavery. She shares hauntingly beautiful images -- miners in the Congo, bricklayers in Nepal -- that illuminate the plight of the 27 million souls enslaved worldwide. Most politicians choose their words carefully, to shape the reality they hope to create. But does it work? Etymologist Mark Forsyth shares a few entertaining word-origin stories from British and American history (for instance, did you ever wonder how George Washington became "president"? ) and draws a surprising conclusion. It seems the more we know about how democracy works -- through government transparency, better media coverage, even new insights about our brains -- the less we trust democracy itself. Yet it's still, arguably, the best system of government available. As Ivan Krastev says, "What went right is also what went wrong." Can democracy survive? When a freak tornado hit their hometown, sisters Caitria and Morgan O'Neill -- just 20 and 24 at the time -- realized they had to jump in and help. What they learned is: After a natural disaster, there's only a tiny window before the world turns its sympathy (and its donations) elsewhere -- so it's important to be prepared for every aspect of recovery. Watch this talk to learn how to step up in a timely fashion for your own community. Is there a definitive line that divides crazy from sane? With a hair-raising delivery, Jon Ronson, author of The Psychopath Test, illuminates the gra

areas between the two. (With live-mixed sound by Julian Treasure and animation by Evan Grant.) Timothy Presterio thought he'd designed the perfect incubator for newborns in the developing world -- he even won awards for it. But he and his team learned a hard lesson when their incubator completely failed to catch on. Hear his hard-earned manifesto on the importance of designing for real-world use, not accolades. Rob Legato creates movie effects so good they (sometimes) trump the real thing. In this warm and funny talk, he shares his vision for enhancing reality on-screen in movies like *Apollo 13*, *Titanic* and *Hugo*. Robert Neuwirth spent four years among the chaotic stalls of street markets, talking to pushcart hawkers and gray marketers, to study the remarkable "System D," the world's unlicensed economic network. Responsible for some 1.8 billion jobs, it's an economy of underappreciated power and scope. Brute computing force alone can't solve the world's problems. Data mining innovator Shyam Sankar explains why solving big problems (like catching terrorists or identifying huge hidden trends) is not a question of finding the right algorithm, but rather the right symbiotic relationship between computation and human creativity. Legendary sculptor Antony Gormley riffs on space and the human form. His works explore the interior space we feel within our own bodies -- and the exterior space we feel around us, knowing that we are just dots in space and time. Call it "fuel without fossils": Jonathan Trent is working on a plan to grow new biofuel by farming microalgae in floating offshore pods that eat wastewater from cities. Hear his team's bold vision for Project OMEGA (Offshore Membrane Enclosures for Growing Algae) and how it might power the future. How can we fit more people into cities without overcrowding? Kent Larson shows off folding cars, quick-change apartments and other innovations that could make the city of the future work a lot like a small village of the past. Scott Fraser studies how humans remember crimes -- and bear witness to them. In this powerful talk, which focuses on a deadly shooting at sunset, he suggests that even close-up eyewitnesses to a crime can create "memories" they could not have seen. Why? Because the brain abhors a vacuum. Editor's note: In the original version of this talk, Scott Fraser misspoke about available footage of Two World Trade Center (Tower 2). The misstatement has been edited out for clarity. Nearly 450 million people are affected by mental illness worldwide.

In wealthy nations, just half receive appropriate care, but in developing countries, close to 90 percent go untreated because psychiatrists are in such short supply. Vikram Patel outlines a highly promising approach -- training members of communities to give mental health interventions, empowering ordinary people to care for others. In the ongoing debate about globalization, what's been missing is the voices of workers -- the millions of people who migrate to factories in China and other emerging countries to make goods sold all over the world. Reporter Leslie T. Chang sought out women who work in one of China's booming megacities, and tells their stories. Calling them "our bodies' own repair kits," Susan Solomon advocates research using lab-grown stem cells. By growing individual pluripotent stem cell lines, her team creates testbeds that could accelerate research into curing diseases -- and perhaps lead to individualized treatment, targeted not just to a particular disease but a particular person. We all use our body on a daily basis, and yet few of us think about our physicality the way Wayne McGregor does. He demonstrates how a choreographer communicates ideas to an audience, working with two dancers to build phrases of dance, live and unscripted, on the TEDGlobal stage. What can governments learn from the open-data revolution? In this stirring talk, Beth Noveck, the former deputy CTO at the White House, shares a vision of practical openness -- connecting bureaucracies to citizens, sharing data, creating a truly participatory democracy. Imagine the "writable society" ... Western countries throw out nearly half of their food, not because it's inedible -- but because it doesn't look appealing. Tristram Stuart delves into the shocking data of wasted food, calling for a more responsible use of global resources.

Why do teenagers seem so much more impulsive, so much less self-aware than grown-ups? Cognitive neuroscientist Sarah-Jayne Blakemore compares the prefrontal cortex in adolescents to that of adults, to show us how typically "teenage" behavior is caused by the growing and developing brain. Because of poor acoustics, students in classrooms miss 50 percent of what their teachers say and patients in hospitals have trouble sleeping because they continually feel stressed. Julian Treasure sounds a call to action for designers to pay attention to the "invisible architecture" of sound. When a squirrel chewed through a cable and knocked him offline, journalist Andrew Blum started wondering what the Internet was really made of. So he set out to go see it -- the underwater cables, secret switches and other physical bits that make up the net. Your mobile phone, computer and game console have a bloody past -- tied to tantalum mining, which funds the war in the Democratic Republic of the Congo. Drawing on his personal story, activist and refugee Bandi Mububi gives a stirring call to action. One day, Ed Gavagan was sitting on the subway, watching two young med students practicing their knots. And a powerful memory washed over him -- of one shocking moment that changed his life forever. An unforgettable story of crime, skill and gratitude. There's been an explosion of collaborative consumption --

of sharing of cars, apartments, skills. Rachel Botsman explores the currency that makes systems like Airbnb and TaskRabbit work: trust, influence, and what she calls "reputation capital." Robots and algorithms are getting good at jobs like building cars, writing articles, translating -- jobs that once required a human. So what will we humans do for work? Andrew McAfee walks through recent labor data to say: We ain't seen nothing yet. But then he steps back to look at big history, and comes up with a surprising view of what comes next. Mice, bugs and hamsters are no longer the only way to study the brain. Functional MRI (fMRI) allows scientists to map brain activity in living, breathing, decision-making human beings. Read Montague gives an overview of how this technology is helping us understand the complicated ways in which we interact with each other. The open-source world has learned to deal with a flood of new, oftentimes divergent, ideas using hosting services like GitHub -- so why can't governments? In this rousing talk Clay Shirky shows how democracies can take a lesson from the Internet, to be not just transparent but also to draw on the knowledge of all their citizens. Gravity. The stars in day. Thoughts. The human genome. Time. Atoms. So much of what really matters in the world is impossible to see. A stunning animation of John Lloyd's classic TEDTalk from 2009, which will make you question what you actually know. When a new drug gets tested, the results of the trials should be published for the rest of the medical world -- except much of the time, negative or inconclusive findings go unreported, leaving doctors and researchers in the dark. In this impassioned talk, Ben Goldacre explains why these unreported instances of negative data are especially misleading and dangerous. Art historian Bahiyya Shehab has long been fascinated with the Arabic script for 'no.' When revolution swept through Egypt in 2011, she began spraying the image in the streets saying no to dictators, no to military rule and no to violence. Aris Venetikidis is fascinated by the maps we draw in our minds as we move around a city -- less like street maps, more like schematics or wiring diagrams, abstract images of relationships between places. How can we learn from these mental maps to make better real ones? As a test case, he remakes the notorious Dublin bus map. As Vicki Arroyo says, it's time to prepare our homes and cities for our changing climate, with its increased risk of flooding, drought and uncertainty. She illustrates this inspiring talk with bold projects from cities all over the world -- local examples of thinking ahead. Body language affects how others see us, but it may also change how we see ourselves. Social psychologist Amy Cuddy argues that "power posing" -- standing in a posture of confidence, even when we don't feel confident -- can boost feelings of confidence, and might have an impact on our chances for success. NOTE: Some of the findings presented in this talk have been referenced in an ongoing debate among social scientists about robustness and reproducibility. Read "Criticisms & updates" below for more details as well as Amy Cuddy's response. When Robert Gupta was caught between a career as a doctor and as a violinist, he realized his place was in the middle, with a bow in his hand and a sense of social justice in his heart. He tells a moving story of society's marginalized and the power of music therapy, which can succeed where conventional medicine fails. In this gripping talk, lawyer Jason McCue urges for a new way to attack terrorism, to weaken its credibility with those who are buying the product -- the recruits. He shares stories of real cases where he and other activists used this approach to engage and create change. Shimon Schocken and Noam Nisan developed a curriculum for their students to build a computer, piece by piece. When they put the course online -- giving away the tools, simulators, chip specifications and other building blocks -- they were surprised that thousands jumped at the opportunity to learn, working independently as well as organizing their own classes in the first Massive Open Online Course (MOOC). A call to forget about grades and tap into the self-motivation to learn. As the director of the Metropolitan Museum of Art in New York, Thomas P. Campbell thinks deeply about curating--not just selecting art objects, but placing them in a setting where the public can learn their stories. With glorious images, he shows how his curation philosophy works for displaying medieval tapestries--and for the over-the-top fashion/art of Alexander McQueen. (From The Design Studio session at TED2012, guest-curated by Chee Pearlman and David Rockwell.) The days are past (if they ever existed) when a person, company or brand could tightly control their reputation -- online chatter and spin mean that if you're relevant, there's a constant, free-form conversation happening about you that you have no control over. Tim Leberecht offers three big ideas about accepting that loss of control, even designing for it -- and using it as an impetus to recommit to your values. John Maeda, former President of the Rhode Island School of Design, delivers a funny and charming talk that spans a lifetime of work in art, design and technology, concluding with a picture of creative leadership in the future. Watch for demos of Maeda's earliest work -- and even a computer made of people. Diseases of the body garner sympathy, says comedian Ruby Wax -- except those of the brain. Why is that? With dazzling energy and humor, Wax, diagnosed a decade ago with clinical depression, urges us to put an end to the stigma of mental illness. Melissa Marshall brings a message to all scientists (from

non-scientists): We're fascinated by what you're doing. So tell us about it -- in a way we can understand. In just 4 minutes, she shares powerful tips on presenting complex scientific ideas to a general audience. Art history is far from set in stone. Engineer Maurizio Seracini spent 30 years searching for Leonardo da Vinci's lost fresco "The Battle of Anghiari," and in the process discovered that many paintings have layers of history hidden underneath. Should they be part of the viewing experience too? The world is changing much more rapidly than most people realize, says business educator Eddie Obeng -- and creative output cannot keep up. In this spirited talk, he highlights three important changes we should understand for better productivity, and calls for a stronger culture of "smart failure." When you're getting medical treatment, or taking part in medical testing, privacy is important; strict laws limit what researchers can see and know about you. But what if your medical data could be used -- anonymously -- by anyone seeking to test a hypothesis? John Wilbanks wonders if the desire to protect our privacy is slowing research, and if opening up medical data could lead to a wave of health care innovation. What do science and play have in common? Neuroscientist Beau Lotto thinks all people (kids included) should participate in science and, through the process of discovery, change perceptions. He's seconded by 12-year-old Amy O'Toole, who, along with 25 of her classmates, published the first peer-reviewed article by schoolchildren, about the Blackwinton bees project. It starts: "Once upon a time ... " Our leaders need to be held accountable, says journalist Heather Brooke. And she should know: Brooke uncovered the British Parliamentary financial expenses that led to a major political scandal in 2009. She urges us to ask our leaders questions through platforms like Freedom of Information requests -- and to finally get some answers. Videos on the web should work like the web itself: dynamic, full of links, maps and information that can be edited and updated live, says Ryan Merkley. On the TED stage he demos Mozilla's Popcorn Maker, a web-based tool for easy video remixing. It may seem that we're living in a borderless world where ideas, goods and people flow freely from nation to nation. We're not even close, says Pankaj Ghemawat. With great data (and an eye-opening survey), he argues that there's a delta between perception and reality in a world that's maybe not so hyperconnected after all. What does a disgusting image have to do with how you vote? Equipped with surveys and experiments, psychologist David Pizarro demonstrates a correlation between your sensitivity to disgusting cues -- a photo of feces, an unpleasant odor -- and your own moral or political conservatism. Literature has long been fascinated with fostered, adopted and orphaned children, from Moses to Cinderella to Oliver Twist to Harry Potter. So why do many parentless children feel compelled to hide their pasts? Poet and playwright Lemn Sissay tells his own moving story. Modern buildings with floor-to-ceiling windows give spectacular views, but they require a lot of energy to cool. Doris Kim Sung works with the thermo-bimetals, smart materials that act more like human skin, dynamically and responsively, and can shade a room from sun and self-ventilate. The suits, numbers and colors in a deck of cards correspond to the seasons, moon cycles and calendar. Marco Tempest straps on augmented reality goggles and does a card trick like you've never seen before, weaving a lyrical tale as he deals. (This version fixes a glitch in the original performance, but is otherwise exactly as seen live by the TEDGlobal audience, including the dazzling augmented reality effects.) The public is losing faith in democracy, says British MP Rory Stewart. Iraq and Afghanistan's new democracies are deeply corrupt; meanwhile, 84 percent of people in Britain say politics is broken. In this important talk, Stewart sounds a call to action to rebuild democracy, starting with recognizing why democracy is important -- not as a tool, but as an ideal. How do we make sure that development and aid money actually goes to the people who most need it? Sanjay Pradhan of the World Bank Institute lays out three guidelines to help relief efforts make the most impact -- while curbing corruption. One key: connecting the players who are working to change broken systems with the data they need. In Western society, bats are often characterized as creepy, even evil. Zoologist Emma Teeling encourages us to rethink common attitudes toward bats, whose unique and fascinating biology gives us insight into our own genetic makeup. Adam Garone has an impressive moustache, and it's for a good cause. A co-founder of Movember, Garone's initiative to raise awareness for men's health -- by having men grow out their moustaches every November -- began as a dare in a bar in 2003. Now, it's a worldwide movement that raised \$126 million for prostate cancer research last year. Faith Jegede tells the moving and funny story of growing up with her two brothers, both autistic -- and both extraordinary. In this talk from the TED Talent Search, she reminds us to pursue a life beyond what is normal. When are humans most happy? To gather data on this question, Matt Killingsworth built an app, Track Your Happiness, that let people report their feelings in real time. Among the surprising results: We're often happiest when we're lost in the moment. And the flip side: The more our mind wanders, the less happy we can be. After fighting overseas, 92 percent of American veterans say they want to continue their service. Meanwhile, one after another, natural disasters continue to wreak

havoc worldwide. What do these two challenges have in common? In telling the story of his friend Clay Hunt, Jake Wood from TeamRubicon reveals how veterans can contribute to disaster response -- and regain their sense of purpose, community and self-worth. When photographed under a 3D microscope, grains of sand appear like colorful pieces of candy and the stamens in a flower become like fantastical spires at an amusement park. Gary Greenberg reveals the thrilling details of the micro world. Orphanages are costly and can cause irreparable damage both mentally and physically for its charges -- so why are they still so ubiquitous? Georgette Mulheir gravely describes the tragedy of orphanages and urges us to end our reliance on them, by finding alternate ways of supporting children in need.

Who hasn't sent a text message saying "I'm on my way" when it wasn't true or fudged the truth a touch in their online dating profile? But Jeff Hancock doesn't believe that the anonymity of the internet encourages dishonesty. In fact, he says the searchability and permanence of information online may even keep us honest. Radio host Julie Stein talks with creative people for a living -- and shares four lessons about how to create in the face of challenge, self-doubt and loss. Hear insights from filmmaker Mira Nair, writer Richard Ford, sculptor Richard Serra and photographer Joel Meyerowitz. When he realized his wife had to choose between buying family meals and buying her monthly "supplies," Arunachalam Muruganantham vowed to help her solve the problem of the sanitary pad. His research got very very personal -- and led him to a powerful business model. (Filmed in Bangalore as part of the TED Global Talent Search.) Hannah Brencher's mother always wrote her letters. So when she felt herself bottom into depression after college, she did what felt natural -- she wrote love letters and left them for strangers to find.

The act has become a global initiative, The World Needs More Love Letters, which rushes handwritten letters to those in need of a boost. Designing electronics is generally cumbersome and expensive -- or was, until Leah Buechley and her team at MIT developed tools to treat electronics just like paper and pen. In this talk from TEDYouth 2011, Buechley shows some of her charming designs, like a paper piano you can sketch and then play. David Binder is a major Broadway producer, but last summer he found himself in a small Australian neighborhood, watching locals dance and perform on their lawns -- and loving it.

He shows us the new face of arts festivals, which break the boundary between audience and performer and help cities express themselves. How do fast-paced video games affect the brain? Step into the lab with cognitive researcher Daphne Bavelier to hear surprising news about how video games, even action-packed shooter games, can help us learn, focus and, fascinatingly, multitask. How do you build a wheelchair ready to blaze through mud and sand, all for under \$200? MIT engineer Amos Winter guides us through the mechanics of an all-terrain wheelchair that's cheap and easy to build -- for true accessibility -- and gives us some lessons he learned along the road. Brothers Jonny, Robbie and Tommy Mizzone are The Sleepy Man Banjo Boys, a trio of virtuoso bluegrass musicians who play with dazzling vivacity. Did we mention they're all under 16? Nature's beauty can be fleeting -- but not through Louie Schwartzberg's lens. His stunning time-lapse photography, accompanied by powerful words from Benedictine monk Brother David Steindl-Rast, serves as a meditation on being grateful for every day. In her New Orleans neighborhood, artist and TED Fellow Candy Chang turned an abandoned house into a giant chalkboard asking a fill-in-the-blank question: "Before I die I want to \_\_\_\_." Her neighbors' answers -- surprising, poignant, funny -- became an unexpected mirror for the community. (What's your answer?)

When most well-intentioned aid workers hear of a problem they think they can fix, they go to work. This, Ernesto Sirolli suggests, is naïve. In this funny and impassioned talk, he proposes that the first step is to listen to the people you're trying to help, and tap into their own entrepreneurial spirit. His advice on what works will help any entrepreneur. It's an unfortunate reality in nearly every major city--road congestion, especially during rush hours. Jonas Eliasson reveals how subtly nudging just a small percentage of drivers to stay off major roads can make traffic jams a thing of the past. Cross-country skier Janine Shepherd hoped for an Olympic medal -- until she was hit by a truck during a training bike ride. She shares a powerful story about the human potential for recovery. Her message: you are not your body, and giving up old dreams can allow new ones to soar. As natural garbage collectors, vultures are vital to our ecosystem -- so why all the bad press? Why are so many in danger of extinction? Raptor biologist Munir Virani says we need to pay more attention to these unique and misunderstood creatures, to change our perception and save the vultures. People don't just cook anymore -- they're cooking, texting, talking on the phone, watching YouTube and uploading photos of the awesome meal they just made. Designer Paolo Cardini questions the efficiency of our multitasking world and makes the case for -- gasp -- "monotasking." Throughout the history of Islam, says journalist Bobby Ghosh, there have been two sides to jihad: one, internal, a personal struggle to be better, the other external. A small minority has appropriated the second meaning, using it as an excuse for deadly global violence against "the West." Ghosh suggests it's time to reclaim the word. If you had to walk a mile for a j

of water every day, as millions of people do, it's unlikely you'd need that precious water to bathe. Young entrepreneur Ludwick Marishane tells the amazing, funny story of how he invented a cheap, clean and convenient solution: DryBath, the world's first bath-substituting lotion. Jeff Smith spent a year in prison. But what he discovered inside wasn't what he expected -- he saw in his fellow inmates boundless ingenuity and business savvy. He asks: Why don't we tap this entrepreneurial potential to help ex-prisoners contribute to society once they're back outside? (From the TED Talent Search event TED@NewYork.) Each of our bodies is utterly unique, which is a lovely thought until it comes to treating an illness -- when every body reacts differently, often unpredictably, to standard treatment. Tissue engineer Nina Tandon talks about a possible solution: Using pluripotent stem cells to make personalized models of organs on which to test new drugs and treatments, and storing them on computer chips. (Call it extremely personalized medicine.) Would you kill for a pair of Air Jordans? Lemon Andersen spins a tale of someone who did, reciting a poem by Reg E. Gaines. These verses taught Lemon that poetry could be about more than self-expression, and could sound like music when given rhythm and infused with the grit of the New York streets around him. Patenting a new drug helps finance its immense cost to develop -- but that same patent can put advanced treatments out of reach for sick people in developing nations, at deadly cost. Ellen 't Hoen talks about an elegant, working solution to the problem: the Medicines Patent Pool. By the end of this talk, there will be 864 more hours of video on YouTube and 2.5 million more photos on Facebook and Instagram. So how do we sort through the deluge? At the TEDSalon in London, Markham Nolan shares the investigative techniques he and his team use to verify information in real-time, to let you know if that Statue of Liberty image has been doctored or if that video leaked from Syria is legitimate. Iranian-American comedian Maz Jobrani takes to the TEDxSummit stage in Doha, Qatar to take on serious issues in the Middle East -- like how many kisses to give when saying "Hi," and what not to say on an American airplane. A dung beetle has a brain the size of a grain of rice, and yet it shows a tremendous amount of intelligence when it comes to rolling its food source -- animal excrement -- home. How? It all comes down to a dance. Explorer Ben Saunders wants you to go outside! Not because it's always pleasant and happy, but because that's where the meat of life is, "the juice that we can suck out of our hours and days." Saunders' next outdoor excursion? To try to be the first in the world to walk from the coast of Antarctica to the South Pole and back again. A decade ago, Robin Chase founded Zipcar in the US, now the largest car-sharing company in the world. Now she's exploring the next level of car-sharing: Buzzcar, a French startup that lets people rent their own cars to others. The details are fascinating (how does insurance work, exactly?), and the larger vision (she calls it Peers, Inc.) points to a new definition of ownership and entrepreneurship. Brands are ubiquitous in modern marketing: Headlines proclaim cheese sandwiches help with decision-making, while a "neuro" drink claims to reduce stress. There's just one problem, says neuroscientist Molly Crockett: The benefits of these "neuro-enhancements" are not proven scientifically. In this to-the-point talk, Crockett explains the limits of interpreting neuroscientific data, and why we should all be aware of them. A long time ago in New York City, Steve Addis stood on a corner holding his 1-year-old daughter in his arms; his wife snapped a photo. The image has inspired an annual father-daughter ritual, where Addis and his daughter pose for the same picture, on the same corner, each year. Addis shares 15 treasured photographs from the series, and explores why this small, repeated ritual means so much. At the end of 2012, the US political system was headed for the "fiscal cliff" -- a budget impasse that could only be solved with bipartisan agreement. Adam Davidson, cohost of "Planet Money," shares surprising data on how bipartisan we truly are -- and hints at the disconnect between representatives and the people they represent. When war between Israel and Iran seemed imminent, Israeli graphic designer Ronny Edry shared a poster on Facebook of himself and his daughter with a bold message: "Iranians ... we [heart] you." Other Israelis quickly created their own posters with the same message -- and Iranians responded in kind. The simple act of communication inspired surprising Facebook communities like "Israel loves Iran," "Iran loves Israel" and even "Palestine loves Israel." Imagine you're a shipwrecked sailor adrift in the enormous Pacific. You can choose one of three directions and save yourself and your shipmates -- but each choice comes with a fearful consequence too. How do you choose? In telling the story of the whaleship Essex, novelist Karen Thompson Walker shows how fear propels imagination, as it forces us to imagine the possible futures and how to cope with them. In a single year, there are 200-300 million cases of malaria and 50-100 million cases of dengue fever worldwide. So: Why haven't we found a way to effectively kill mosquitos yet? Hadyn Parry presents a fascinating solution: genetically engineering male mosquitos to make them sterile, and releasing the insects into the wild, to cut down on disease-carrying species. It's been 110 years since Georges Méliès sent a spaceship slamming into the eye of the man on the moon. So how far have visual effects come since then? Working closely wi

the Academy of Motion Picture Arts and Sciences, Don Levy takes us on a visual journey through special effects, from the fakery of early technology to the seamless marvels of modern filmmaking. If an asteroid were headed for Earth, we'd all band together and figure out how to stop it, just like in the movies, right? And yet, when faced with major, data-supported, end-of-the-world problems in real life, too often we retreat into partisan shouting and stalemate. Jonathan Haidt shows us a few of the very real asteroids headed our way -- some pet causes of the left wing, some of the right -- and suggests how both wings could work together productively to benefit humanity as a whole. When Sue Austin got a power wheelchair, she felt a tremendous sense of freedom -- yet others looked at her as though she had lost something. In her art, she conveys the spirit of wonder she feels wheeling through the world. Includes thrilling footage of an underwater wheelchair that lets her explore ocean beds, drifting through schools of fish, floating free in 360 degrees. This talk paints the funny and touching story of a little boy who pursued a simple passion: to draw and write stories. With the help of a supporting cast of family and teachers, Jarrett J. Krosoczka tells how he grew up to create beloved children's books. A woman in sub-Saharan Africa is part of a cutting-edge HIV clinical trial -- but she can't afford a bus ticket to her health clinic, let alone the life-saving antiretrovirals she'll need. Boghuma Kabisen Titanji asks an important question: How can researchers looking for a cure make sure they're not taking advantage of the people most affected by the pandemic? When is the last time you did absolutely nothing for 10 whole minutes? Not texting, talking or even thinking? Mindfulness expert Andy Puddicombe describes the transformative power of doing just that: Refreshing your mind for 10 minutes a day, simply by being mindful and experiencing the present moment. (No need for incense or sitting in uncomfortable positions.) At Camp Diva, Angela Patton works to help young girls and their fathers stay connected and become part of each others' lives. But what about girls whose fathers can't be there -- because they're in jail? Patton tells the story of a very special father-daughter dance. We have personal computing -- why not personal biotech? That's the question biologist Ellen Jorgensen and her colleagues asked themselves before opening Genspace, a nonprofit DIY bio lab in Brooklyn devoted to citizen science, where amateurs can go and tinker with biotechnology. Far from being a sinister Frankenstein's lab (as some imagined it), Genspace offers a long list of fun, creative and practical uses for DIY bio. Cameron Russell admits she won "a genetic lottery": she's tall, pretty and an underwear model. But don't judge her by her looks. In this fearless talk, she takes a wry look at the industry that had her looking highly seductive at barely 16 years old. Our bodies get Vitamin D from the sun, but as dermatologist Richard Weller suggests, sunlight may confer another surprising benefit too. New research by his team shows that nitric oxide, a chemical transmitter stored in huge reserves in the skin, can be released by UV light, to great benefit for blood pressure and the cardiovascular system. What does it mean? Well, it might begin to explain why Scots get sick more than Australians ... When Colin Stokes' 3-year-old son caught a glimpse of "Star Wars," he was instantly obsessed. But what messages did he absorb from the sci-fi classic? Stokes asks for more movies that send positive messages to boys: that cooperation is heroic, and respecting women is as manly as defeating the villain. Reporter Janine di Giovanni has been to the worst places on Earth to bring back stories from Bosnia, Sierra Leone and most recently Syria. She tells stories of human moments within large conflicts -- and explores that shocking transition when a familiar city street becomes a bombed-out battleground. How can you help kids get a good start? In this heartfelt and personal talk, Colin Powell, the former U.S. Secretary of State, asks parents, friends and relatives to support children, starting before they even get to primary school, through community and a strong sense of responsibility. Laparoscopic surgery uses minimally invasive incisions -- which means less pain and shorter recovery times for patients. But Steven Schwartzberg has run into two problems teaching these techniques to surgeons around the world: language and distance. He shares how a new technology, which combines videoconferencing and a real-time universal translator, could help. Leslie Morgan Steiner was in "crazy love" -- that is, madly in love with a man who routinely abused her and threatened her life. Steiner tells the story of her relationship, correcting misconceptions many people hold about victims of domestic violence, and explaining how we can all help break the silence. Plenty of people need jobs with very flexible hours -- but it's difficult for those people to connect with the employers who need them. Wingham Rowan is working on that. He explains how the same technology that powers modern financial markets can help employers book workers for slivers of time. Coding isn't just for computer whizzes, says Mitch Resnick of MIT Media Lab -- it's for everyone. In a fun, demo-filled talk Resnick outlines the benefits of teaching kids to code, so they can do more than just use new tech toys but also create them. iO Tillett Wright has photographed 2,000 people who consider themselves somewhere on the LGBTQ spectrum -- and asked many of them: Can you assign a percentage to how gay or straight you are? Most people, it turns out, consider the



mselves to exist in the gray areas of sexuality, not 100% gay or straight. While present is a real problem when it comes to discrimination: Where do you draw the line? Imagine a country with abundant power -- oil and gas, sunshine, wind (and money) -- but missing one key essential for life: water. Infrastructure engineer Fahad Al-Attiya talks about the unexpected ways that the small Middle Eastern nation of Qatar creates its water supply. Kid President commands you to wake up, listen to the beating of your heart and create something that will make the world awesome. This video from SoulPancake delivers a soul-stirring dose of inspiration that only a 9-year-old can give. In Libya, Zahra Langhi was part of the "days of rage" movement that helped topple the dictator Gaddafi. But -- then what? In their first elections, Libyans tried an innovative slate of candidates, the "zipper ballot," that ensured equal representation from men and women of both sides.

Yet the same gridlocked politics of dominance and exclusion won out. What Libya needs now, Langhi suggests, is collaboration, not competition; compassion, not rage. High school science teacher Tyler DeWitt was ecstatic about his new lesson plan on bacteria (how cool!) -- and devastated when his students hated it. The problem was the textbook: it was impossible to understand. He delivers a rousing call for science teachers to ditch the jargon and extreme precision, and instead make science sing through stories and demonstrations. There are so many tiny, beautiful, funny, tragic moments in your life -- how are you going to remember them all? Director Cesar Kuriyama shoots one second of video every day as part of an ongoing project to collect all the special bits of his life. Chemist Lee Cronin is working on a 3D printer that, instead of objects, is able to print molecules. An exciting potential long-term application: printing your own medicine using chemical inks. Make a city beautiful, curb corruption. Edi Rama took this deceptively simple path as mayor of Tirana, Albania, where he instilled pride in his citizens by transforming public spaces with colorful designs. Imagine a country where girls must sneak out to go to school, with deadly consequences if they get caught learning. This was Afghanistan under the Taliban, and traces of that danger remain today. 22-year-old Shabana Basij-Rasikh runs a school for girls in Afghanistan. She celebrates the power of a family's decision to believe in their daughters -- and tells the story of one brave father who stood up to local threats. Paved roads are nice to look at, but they're easily damaged and costly to repair. Erik Schlangen demos a new type of porous asphalt made of simple materials with an astonishing feature: When cracked, it can be "healed" by induction heating. James Glattfelder studies complexity: how an interconnected system -- say, a swarm of birds -- is more than the sum of its parts. And complexity theory, it turns out, can reveal a lot about how the world economy works. Glattfelder shares a groundbreaking study of how control flows through the global economy, and how concentration of power in the hands of a shockingly small number leaves us all vulnerable. In long-term relationships, we often expect our beloved to be both best friend and erotic partner. But as Esther Perel argues, good and committed sex draws on two conflicting needs: our need for security and our need for surprise. So how do you sustain desire? With wit and eloquence, Perel lets us in on the mystery of erotic intelligence. Why do we ever stop playing and creating? With charm and humor, celebrated Korean author Young-ha Kim invokes the world's greatest artists to urge you to unleash your inner child -- the artist who wanted to play forever. Can we use our brains to directly control machines? Miguel Nicolelis suggests yes, showing how a clever monkey in the US learned to control a robot arm in Japan purely with its thoughts. The research has big implications for quadriplegic people -- and in fact, it powered the exoskeleton that kicked off the 2014 World Cup. What can economists learn from linguists? Behavioral economist Keith Chen introduces a fascinating pattern from his research: that languages without a concept for the future -- "It rains tomorrow," instead of "It will rain tomorrow" -- correlate strongly with high savings rates.

Trinidad and Tobago amassed great wealth in the 1970s thanks to oil -- but 2 out of every 3 dollars earmarked for development ended up wasted or stolen. This fact has haunted Afra Raymond for 30 years. Shining a flashlight on a continued history of government corruption, Raymond gives us a reframing of financial crime. How can we measure what makes a school system work? Andreas Schleicher walks us through the PISA test, a global measurement that ranks countries against one another -- then uses that same data to help schools improve. Watch to find out where your country stacks up, and learn the single factor that makes some systems outperform others. An insect's ability to fly is one of the greatest feats of evolution. Michael Dickinson looks at how a fruit fly takes flight with such delicate wings, thanks to a clever flapping motion and flight muscles that are both powerful and nimble. But the secret ingredient: the incredible fly brain. Bruce Feiler has a radical idea: To deal with the stress of modern family life, go agile. Inspired by agile software programming, Feiler introduces family practices which encourage flexibility, bottom-up idea flow, constant feedback and accountability. One surprising feature: Kids pick their own punishments. There's a place in France where the robots do a dance. And that place is TEDxConcorde, where Bruno Maisonnier of Aldebaran Robotics choreographs

On stage at TED2013, Sugata Mitra makes his bold TED Prize wish: Help me design the School in the Cloud, a learning lab in India, where children can explore and learn from each other -- using resources and mentoring from the cloud. Hear his inspiring vision for Self Organized Learning Environments. Kicking off the TED2013 conference, Jennifer Granholm asks a very American question with worldwide implications: How do we make more jobs? Her big idea: Invest in new alternative energy sources. And her big challenge: Can it be done with or without our broken Congress? Don't make people pay for music, says Amanda Palmer: Let them. In a passionate talk that begins in her days as a street performer (drop a dollar in the hat for the Eight-Foot Bride!), she examines the new relationship between artist and fan. "Desertification is a fancy word for land that is turning to desert," begins Allan Savory in this quietly powerful talk. And it's happening to about two-thirds of the world's grasslands, accelerating climate change and causing traditional grazing societies to descend into social chaos. Savory has devoted his life to stopping it. He now believes -- and his work may show -- that a surprising factor can protect grasslands and even reclaim degraded land that was once desert. Statements in this talk have been challenged by other scientists working in this field. Humankind has been looking for the giant squid (Architeuthis) since we first started taking pictures underwater. But the elusive deep-sea predator could never be caught on film. Oceanographer and inventor Edith Widder shares the key insight -- and the teamwork -- that helped to capture the squid on film for the first time. Ron Finley plants vegetable gardens in South Central LA -- in abandoned lots, traffic medians, along the curbs. Why? For fun, for defiance, for beauty and to offer some alternative to fast food in a community where "the drive-thrus are killing more people than the drive-bys." Kakenya Ntaiya made a deal with her father: She would undergo a traditional Maasai rite of passage, female circumcision, if he would let her go to high school. Ntaiya tells the fearless story of continuing on to college, and of working with her village elders to build a school for girls in her community, changing the destiny of 125 young women. By turn hilarious and haunting, poet Shane Koyczan puts his finger on the pulse of what it's like to be young and ... different. "To This Day," his spoken-word poem about bullying, captivated millions as a viral video (created, crowd-source style, by 80 animators). Here, he gives a glorious, live reprise with backstory and violin accompaniment by Hannah Epperson. Activist and fundraiser Dan Pallotta calls out the double standard that drives our broken relationship to charities. Too many nonprofits, he says, are rewarded for how little they spend -- not for what they get done. Instead of equating frugality with morality, he asks us to start rewarding charities for their big goals and big accomplishments (even if that comes with big expenses). In this bold talk, he says: Let's change the way we think about changing the world. Modern psychiatric drugs treat the chemistry of the whole brain, but neurobiologist David Anderson has a more nuanced view of how the brain functions. He shares new research that could lead to targeted psychiatric medications -- that work better and avoid side effects. How's he doing it? For a start, by making a bunch of fruit flies angry. Throughout humankind's history, we've driven species after species extinct: the passenger pigeon, the Eastern cougar, the dodo ... But now, says Stewart Brand, we have the technology (and the biology) to bring back species that humanity wiped out. So -- should we? Which ones? He asks a big question whose answer is closer than you may think. Human beings have been campaigning against inequality and poverty for 3,000 years. But this journey is accelerating. Bono "embraces his inner nerd" and shares inspiring data that shows the end of poverty is in sight ... if we can harness the momentum. Ink that conducts electricity; a window that turns from clear to opaque at the flip of a switch; a jelly that makes music. All this stuff exists, and Catarina Mota says: It's time to play with it. Mota leads us on a tour of surprising and cool new materials, and suggests that the way we'll figure out what they're good for is to experiment, tinker and have fun. The Internet connects billions of people and machines; it's the backbone of modern life. But tech pioneer Danny Hillis thinks the Internet just wasn't designed to grow this big -- and he fears that one big cyber-attack or glitch could shut it down and take civilization with it. To head off a digital dark age, he sounds a clarion call to develop a Plan B: a parallel system to fall back on if -- or when -- the Internet crashes. Entrepreneur Elon Musk is a man with many plans. The founder of PayPal, Tesla Motors and SpaceX sits down with TED curator Chris Anderson to share details about his visionary projects, which include a mass-marketed electric car, a solar energy leasing company and a fully reusable rocket. As a child growing up in North Korea, Hyeonseo Lee thought her country was "the best on the planet." It wasn't until the famine of the 90s that she began to wonder. She escaped the country at 14, to begin a life in hiding, as a refugee in China. Hers is a harrowing, personal tale of survival and hope -- and a powerful reminder of those who face constant danger, even when the border is far behind. Today we know the molecular cause of 4,000 diseases, but treatments are available for only 250 of them. So what's

taking so long? Geneticist and physician Francis Collins explains why drug discovery is imperative, even for rare and complex diseases, and offers a few solutions - like teaching old drugs new tricks. Composer and conductor Eric Whitacre has inspired millions by bringing together "virtual choirs," singers from many countries spliced together on video. Now, for the first time ever, he creates the experience in real time, as 32 singers from around the world Skype in to join an onstage choir (assembled from three local colleges) for an epic performance of Whitacre's "Cloudburst," based on a poem by Octavio Paz. Our bodies and homes are covered in microbes -- some good for us, some bad for us. As we learn more about the germs and microbes who share our living spaces, TED Fellow Jessica Green asks: Can we design buildings that encourage happy, healthy microbial environments? Mark Shaw demos Ultra-Ever Dry, a liquid-repellent coating that acts as an astonishingly powerful shield against water and water-based materials. At the nano level, the spray covers a surface with an umbrella of air so that water bounces right off. Watch for an exciting two-minute kicker. In the Maasai community where Richard Turer lives with his family, cattle are all-important. But lion attacks were growing more frequent. In this short, inspiring talk, the young inventor shares the solar-powered solution he designed to safely scare the lions away. When two people are trying to make a deal -- whether they're competing or cooperating -- what's really going on inside their brains? Behavioral economist Colin Camerer shows research that reveals how badly we predict what others are thinking. Bonus: He presents an unexpected study that shows chimpanzees might just be better at it. As we move through the world, we have an innate sense of how things feel -- the sensations they produce on our skin and how our bodies orient to them. Can technology leverage this? In this fun, fascinating TED-Ed lesson, learn about the field of haptics, and how it could change everything from the way we shop online to how dentists learn the telltale feel of a cavity. One afternoon, Kees Moeliker got a research opportunity few ornithologists would wish for: A flying duck slammed into his glass office building, died, and then ... what happened next would change his life. [Note: Contains graphic images and descriptions of sexual behavior in animals.] Imagine an electric vehicle that can get you to work -- or anywhere in a six-mile radius -- quickly, without traffic frustrations or gasoline. Now imagine you can pick it up and carry it with you. Yes, this souped-up skateboard could change the face of morning commutes. There is a corruption at the heart of American politics, caused by the dependence of Congressional candidates on funding from the tiniest percentage of citizens. That's the argument at the core of this blistering talk by legal scholar Lawrence Lessig. With rapid-fire visuals, he shows how the funding process weakens the Republic in the most fundamental way, and issues a rallying bipartisan cry that will resonate with many in the U.S. and beyond. 3D printing has grown in sophistication since the late 1970s; TED Fellow Skylar Tibbitts is shaping the next development, which he calls 4D printing, where the fourth dimension is time. This emerging technology will allow us to print objects that then reshape themselves or self-assemble over time. Think: a printed cube that folds before your eyes, or a printed pipe able to sense the need to expand or contract. Trivia whiz Ken Jennings has made a career as a keeper of facts; he holds the longest winning streak in history on the US quiz show Jeopardy. But in 2011, he played a challenge match against IBM's supercomputer Watson -- and lost. With humor and humility, Jennings tells us how it felt to have a computer literally beat him at his own game, and makes the case for good old-fashioned human knowledge. At age 12, Freeman Hrabowski marched with Martin Luther King. Now he's president of the University of Maryland, Baltimore County (UMBC), where he works to create an environment that helps under-represented students -- specifically African-American, Latino and low-income learners -- get degrees in math and science. He shares the four pillars of UMBC's approach. Your smartphone may feel like a friend -- but a true friend would give you a smile once in a while. At TED2013, Keller Rinaudo demos Romo, the smartphone-powered mini robot who can motor along with you on a walk, slide you a cup of coffee across the table, and react to you with programmable expressions. What motivates us to work? Contrary to conventional wisdom, it isn't just money. But it's not exactly joy either. It seems that most of us thrive by making constant progress and feeling a sense of purpose. Behavioral economist Dan Ariely presents two eye-opening experiments that reveal our unexpected and nuanced attitudes toward meaning in our work. When Eric Dishman was in college, doctors told him he had 2 to 3 years to live. That was a long time ago. Now, Dishman puts his experience and his expertise as a medical tech specialist together to suggest a bold idea for reinventing health care -- by putting the patient at the center of a treatment team. In 1812, four men at Cambridge University met for breakfast. What began as an impassioned meal grew into a new scientific revolution, in which these men -- who called themselves "natural philosophers" until they later coined "scientist" -- introduced four major principles into scientific inquiry. Historian and philosopher Laura Snyder tells their intriguing story. It's 2013, yet 2.5 billion people in the world have no access to a basic sanitary toilet. And when there's no l

oo, where do you poo? In the street, probably near your water and food sources -- causing untold death and disease from contamination. Get ready for a blunt, funny, powerful talk from journalist Rose George about a once-unmentionable problem. Today, thanks to better early detection, there are 63% fewer deaths from heart disease than there were just a few decades ago. Thomas Insel, the director of the National Institute of Mental Health, wonders: Could we do the same for depression and schizophrenia? The first step in this new avenue of research, he says, is a crucial reframing: for us to stop thinking about "mental disorders" and start understanding them as "brain disorders." When Joshua Prager was 19, a devastating bus accident left him a hemiplegic. He returned to Israel twenty years later to find the driver who turned his world upside down. In this mesmerizing tale of their meeting, Prager probes deep questions of nature, nurture, self-deception and identity. Deep brain stimulation is becoming very precise. This technique allows surgeons to place electrodes in almost any area of the brain, and turn them up or down -- like a radio dial or thermostat -- to correct dysfunction. Andres Lozano offers a dramatic look at emerging techniques, in which a woman with Parkinson's instantly stops shaking and brain areas eroded by Alzheimer's are brought back to life. Remember the days you struggled just to make a yo-yo spin, and if you were really fancy, to "walk the dog"? You ain't seen nothin' yet. Japanese yo-yo world champion BLACK tells the inspiring story of finding his life's passion, and gives an awesome performance that will make you want to pull your yo-yo back out of the closet. Does texting mean the death of good writing skills? John McWhorter posits that there's much more to texting -- linguistically, culturally -- than it seems, and it's all good news. The US economy has been expanding wildly for two centuries. Are we witnessing the end of growth? Economist Robert Gordon lays out 4 reasons US growth may be slowing, detailing factors like epidemic debt and growing inequality, which could move the US into a period of stasis we can't innovate our way out of. Be sure to watch the opposing viewpoint from Erik Brynjolfsson. As machines take on more jobs, many find themselves out of work or with raises indefinitely postponed. Is this the end of growth? No, says Erik Brynjolfsson -- it's simply the growing pains of a radically reorganized economy. A riveting case for why big innovations are ahead of us ... if we think of computers as our teammates. Be sure to watch the opposing viewpoint from Robert Gordon. What color is a mirror? How much does a video weigh? Michael Stevens, creator of the popular educational YouTube channel Vsauce, spends his day asking quirky questions like these. In this talk he shows how asking the right -- seemingly silly -- questions can make incredibly effective lessons. When we drive, we get into a glass bubble, lock the doors and press the accelerator, relying on our eyes to guide us -- even though we can only see the few cars ahead of and behind us. But what if cars could share data with each other about their position and velocity, and use predictive models to calculate the safest routes for everyone on the road? Jennifer Healey imagines a world without car accidents. Tech columnist David Pogue shares 10 simple, clever tips for computer, web, smartphone and camera users. And yes, you may know a few of these already -- but there's probably at least one you don't. Nilofer Merchant suggests a small idea that just might have a big impact on your life and health: Next time you have a one-on-one meeting, make it into a "walking meeting" -- and let ideas flow while you walk and talk. Taylor Wilson was 14 when he built a nuclear fusion reactor in his parents' garage. Now 19, he returns to the TED stage to present a new take on an old topic: fission. Wilson, who has won backing to create a company to realize his vision, explains why he's so excited about his innovative design for small modular fission reactors -- and why it could be the next big step in solving the global energy crisis. Economics PhD Sebastião Salgado only took up photography in his 30s, but the discipline became an obsession. His years-long projects beautifully capture the human side of a global story that all too often involves death, destruction or decay. Here, he tells a deeply personal story of the craft that nearly killed him, and shows breathtaking images from his latest work, Genesis, which documents the world's forgotten people and places. What if Andy Warhol had it wrong, and instead of being famous for 15 minutes, we're only anonymous for that long? In this short talk, Juan Enriquez looks at the surprisingly permanent effects of digital sharing on our personal privacy. He shares insight from the ancient Greeks to help us deal with our new "digital tattoos." Rita Pierson, a teacher for 40 years, once heard a colleague say, "They don't pay me to like the kids." Her response: "Kids don't learn from people they don't like." A rousing call to educators to believe in their students and actually connect with them on a real, human, personal level. In this well-argued talk, Timothy Bartik makes the macro-economic case for preschool education -- and explains why you should be happy to invest in it, even if you don't have kids that age (or kids at all). The economic benefits of well-educated kids, it turns out, go well beyond the altruistic. For foreigners, learning to speak Chinese is a hard task. But learning to read the beautiful, often complex characters of the Chinese written language may be less difficult. ShaoLan walks through a simple lesson in recognizing the ideas behind the c

characters and their meaning -- building from a few simple forms to more complex concepts. Call it Chineasy. Until recently, many teachers only got one word of feedback a year: "satisfactory." And with no feedback, no coaching, there's just no way to improve. Bill Gates suggests that even great teachers can get better with smart feedback -- and lays out a program from his foundation to bring it to every classroom. It took a life-threatening condition to jolt chemistry teacher Ramsey Musallam out of ten years of "pseudo-teaching" to understand the true role of the educator: to cultivate curiosity. In a fun and personal talk, Musallam gives 3 rules to spark imagination and learning, and get students excited about how the world works. Pearl Arredondo grew up in East Los Angeles, the daughter of a high-ranking gang member who was in and out of jail. Many teachers wrote her off as having a problem with authority. Now a teacher herself, she's creating a different kind of school and telling students her story so that they know it's okay if sometimes homework isn't the first thing on their minds. Young poet, educator and activist Malcolm London performs his stirring poem about life on the front lines of high school. He tells of the "oceans of adolescence" who come to school "but never learn to swim," of "masculinity mimicked by men who grew up with no fathers." Beautiful, lyrical, chilling. Why, why, why does our education system look so similar to the way it did 50 years ago? Millions of students were failing then, as they are now -- and it's because we're clinging to a business model that clearly doesn't work. Education advocate Geoffrey Canada dares the system to look at the data, think about the customers and make systematic shifts in order to help greater numbers of kids excel. Leaving a high-flying job in consulting, Angela Lee Duckworth took a job teaching math to seventh graders in a New York public school. She quickly realized that IQ wasn't the only thing separating the successful students from those who struggled. Here, she explains her theory of "grit" as a predictor of success. Sir Ken Robinson outlines 3 principles crucial for the human mind to flourish -- and how current education culture works against them. In a funny, stirring talk he tells us how to get out of the educational "death valley" we now face, and how to nurture our youngest generations with a climate of possibility. Clinical psychologist Meg Jay has a bold message for twentysomethings: Contrary to popular belief, your 20s are not a throwaway decade. In this provocative talk, Jay says that just because marriage, work and kids are happening later in life, doesn't mean you can't start planning now. She gives 3 pieces of advice for how twentysomethings can re-claim adulthood in the defining decade of their lives. In our digital world, social relations have become mediated by data. Without even realizing it, we're barricading ourselves against strangeness -- people and ideas that don't fit the patterns of who we already know, what we already like and where we've already been. Maria Bezaitis makes a bold call for technology to deliver us to what and who we need, even if it's unfamiliar and strange. Can a person disappear in plain sight? That's the question Liu Bolin's remarkable work seems to ask. The Beijing-based artist is sometimes called "The Invisible Man" because in nearly all his art, Bolin is front and center -- and completely unseen. He aims to draw attention to social and political issues by dissolving into the background. Why can't two slices of pizza be used as a slide clicker? Why shouldn't you make music with ketchup? In this charming talk, inventor Jay Silver talks about the urge to play with the world around you. He shares some of his messiest inventions, and demos MaKey MaKey, a kit for hacking everyday objects. It's not a demo, more of a philosophical argument: Why did Sergey Brin and his team at Google want to build an eye-mounted camera/computer, codenamed Glass? Onstage at TED2013, Brin calls for a new way of seeing our relationship with our mobile computers -- not hunched over a screen but meeting the world heads-up. If you're lucky enough to live without want, it's a natural impulse to be altruistic to others. But, asks philosopher Peter Singer, what's the most effective way to give? He talks through some surprising thought experiments to help you balance emotion and practicality -- and make the biggest impact with whatever you can share. NOTE: Starting at 0:30, this talk contains 30 seconds of graphic footage. In art school, Phil Hansen developed an unruly tremor in his hand that kept him from creating the pointillist drawings he loved. Hansen was devastated, floating without a sense of purpose. Until a neurologist made a simple suggestion: embrace this limitation ... and transcend it. Thinking about death is frightening, but planning ahead is practical and leaves more room for peace of mind in our final days. In a solemn, thoughtful talk, Judy MacDonald Johnston shares 5 practices for planning for a good end of life. Designer Alastair Parvin presents a simple but provocative idea: what if, instead of architects creating buildings for those who can afford to commission them, regular citizens could design and build their own houses? The concept is at the heart of WikiHouse, an open source construction kit that means just about anyone can build a house, anywhere. In her quest to become a world-famous violinist, Ji-Hae Park fell into a severe depression. Only music was able to lift her out again -- showing her that her goal needn't be to play lofty concert halls, but instead to bring the wonder of the instrument to as many people as possible. When the Museum of Modern Art's se

nior curator of architecture and design announced the acquisition of 14 video games in 2012, "all hell broke loose." In this far-ranging, entertaining, and deeply insightful talk, Paola Antonelli explains why she's delighted to challenge preconceived ideas about art and galleries, and describes her burning wish to help establish a broader understanding of design. Domestic violence and sexual abuse are often called "women's issues." But in this bold, blunt talk, Jackson Katz points out that these are intrinsically men's issues -- and shows how these violent behaviors are tied to definitions of manhood. A clarion call for us all -- women and men -- to call out unacceptable behavior and be leaders of change. It's the dream of kids all around the world to see giant beasts walk the Earth again. Could -- and should -- that dream be realized? Hendrik Poinar talks about the next big thing: the quest to engineer a creature that looks very much like our furry friend, the woolly mammoth. The first step, to sequence the woolly genome, is nearly complete. And it's huge. What happens when a dream you've held since childhood ... doesn't come true? As Lisa Bu adjusted to a new life in the United States, she turned to books to expand her mind and create a new path for herself. She shares her unique approach to reading in this lovely, personal talk about the magic of books. What is it like to raise a child who's different from you in some fundamental way (like a prodigy, or a differently abled kid, or a criminal)? In this quietly moving talk, writer Andrew Solomon shares what he learned from talking to dozens of parents -- asking them: What's the line between unconditional love and unconditional acceptance? What's a proven way to lower your energy costs? Would you believe: learning what your neighbor pays. Alex Laskey shows how a quirk of human behavior can make us all better, wiser energy users, with lower bills to prove it. Journalist Anas Aremeyaw Anas has broken dozens of stories of corruption and organized crime all over Ghana -- without ever revealing his identity. In this talk (in which his face remains hidden) Anas shows grisly footage from some of his investigations and demonstrates the importance of facing injustice. For 28 years, Denise Herzing has spent five months each summer living with a pod of Atlantic spotted dolphins, following three generations of family relationships and behaviors. It's clear they are communicating with one another -- but is it language? Could humans use it too? She shares a fascinating new experiment to test this idea. Canadian filmmaker Martin Villeneuve talks about "Mars et Avril," the sci-fi spectacular he made with virtually no money over a seven-year stretch. In this charming talk, he explains the various ways he overcame financial and logistical constraints to produce his unique and inventive vision of the future. Economist Andrew McAfee suggests that, yes, probably, droids will take our jobs -- or at least the kinds of jobs we know now. In this far-seeing talk, he thinks through what future jobs might look like, and how to educate coming generations to hold them. In a robot lab at TEDGlobal, Raffaello D'Andrea demos his flying quadcopters: robots that think like athletes, solving physical problems with algorithms that help them learn. In a series of nifty demos, D'Andrea shows drones that play catch, balance and make decisions together -- and watch out for an I-want-this-now demo of Kinect-controlled quads. Greece has been the poster child for European economic crisis, but former Prime Minister George Papandreou wonders if it's just a preview of what's to come. "Our democracies," he says, "are trapped by systems that are too big to fail, or more accurately, too big to control" -- while "politicians like me have lost the trust of their peoples." How to solve it? Have citizens re-engage more directly in a new democratic bargain. As a novelist, Daniel Suarez spins dystopian tales of the future. But on the TEDGlobal stage, he takes us through a real-life scenario we all need to know more about: the rise of autonomous robotic weapons of war. Advanced drones, automated weapons and AI-powered intelligence-gathering tools, he suggests, could take the decision to make war out of the hands of humans. There's no actual law against women driving in Saudi Arabia. But it's forbidden. Two years ago, Manal al-Sharif decided to encourage women to drive by doing so -- and filming herself for YouTube. Hear her story of what happened next. The 2007-2008 financial crisis, you might think, was an unpredictable one-time crash. But Didier Sornette and his Financial Crisis Observatory have plotted a set of early warning signs for unstable, growing systems, tracking the moment when any bubble is about to pop. (And he's seeing it happen again, right now.) Tech communities are booming all over Africa, says Nairobi-based Juliana Rotich, cofounder of the open-source software Ushahidi. But it remains challenging to get and stay connected in a region with frequent blackouts and spotty Internet hookups. So Rotich and friends developed BRCK, offering resilient connectivity for the developing world.

A refugee now living in the US, Joseph Kim tells the story of his life in North Korea during the famine years. He's begun to create a new life -- but he still searches for the family he lost. In 1985, architect Paul Pholeros was challenged to "stop people getting sick" in a small indigenous community in south Australia. And it meant thinking way beyond medicine. In this sparky, interactive talk, Pholeros shares his work with Healthabitat, which works to reduce poverty through practical design fixes -- in Australia and beyond. Photographer Camille Seaman has been chasing storms f

or 5 years. In this talk, she shows stunning, surreal photos of the heavens in tumult. When Lesley Hazleton was writing a biography of Muhammad, she was struck by something: The night he received the revelation of the Koran, according to early accounts, his first reaction was doubt, awe, even fear. And yet this experience became the bedrock of his belief. Hazleton calls for a new appreciation of doubt and questioning as the foundation of faith -- and an end to fundamentalism of all kinds. As a young surgeon, Peter Attia felt contempt for a patient with diabetes. She was overweight, he thought, and thus responsible for the fact that she needed a foot amputation. But years later, Attia received an unpleasant medical surprise that led him to wonder: is our understanding of diabetes right? Could the precursors to diabetes cause obesity, and not the other way around? A look at how assumptions may be leading us to wage the wrong medical war. The New Yorker receives around 1,000 cartoons each week; it only publishes about 17 of them. In this hilarious, fast-paced, and insightful talk, the magazine's longstanding cartoon editor and self-proclaimed "humor analyst" Bob Mankoff dissects the comedy within just some of the "idea drawings" featured in the magazine, explaining what works, what doesn't, and why. The gastric brooding frog lays its eggs just like any other frog -- then swallows the whole to incubate. That is, it did until it went extinct 30 years ago. Paleontologist Michael Archer makes a case to bring back the gastric brooding frog and the thylacine, commonly known as the Tasmanian tiger. Scaremongers play on the idea that robots will simply replace people on the job. In fact, they can become our essential collaborators, freeing us up to spend time on less mundane and mechanical challenges. Rodney Brooks points out how valuable this could be as the number of working-age adults drops and the number of retirees swells. He introduces us to Baxter, the robot with eyes that move and arms that react to touch, which could work alongside an aging population -- and learn to help them at home, too. It's a standard assumption in the West: As a society progresses, it eventually becomes a capitalist, multi-party democracy. Right? Eric X. Li, a Chinese investor and political scientist, begs to differ. In this provocative, boundary-pushing talk, he asks his audience to consider that there's more than one way to run a successful modern nation. Collecting global health data is an imperfect science: Workers tramp through villages to knock on doors and ask questions, write the answers on paper forms, then input the data -- and from this messy, gappy information, countries and NGOs need to make huge decisions. Data geek Joel Selanikio talks through the sea change in collecting health data in the past decade -- starting with the PalmPilot and Hotmail, and now moving into the cloud. The border between our physical world and the digital information surrounding us has been getting thinner and thinner. Designer and engineer Jinha Lee wants to dissolve it altogether. As he demonstrates in this short, gasp-inducing talk, his ideas include a pen that penetrates into a screen to draw 3D models and SpaceTop, a computer desktop prototype that lets you reach through the screen to manipulate digital objects. All under the age of 16, brothers Jonny, Robbie and Tommy Mizzone are from New Jersey, a US state that's better known for the rock of Bruce Springsteen than the bluegrass of Earl Scruggs. Nonetheless, the siblings began performing bluegrass covers, as well as their own compositions, at a young age. Here, they play three dazzling songs in three different keys, passing the lead back and forth from fiddle to banjo to guitar. When the son of the president of a desperately poor country starts buying mansions and sports cars on an official monthly salary of \$7,000, Charmian Gooch suggests, corruption is probably somewhere in the picture. In a blistering, eye-opening talk (with several specific examples), she details how global corruption trackers follow the money -- to some surprisingly familiar faces. Building a skyscraper? Forget about steel and concrete, says architect Michael Green, and build it out of ... wood. As he details in this intriguing talk, it's not only possible to build safe wooden structures up to 30 stories tall (and, he hopes, higher), it's necessary. Apes, dolphins and elephants are animals with remarkable communication skills. Could the internet be expanded to include sentient species like them? A new and developing idea from a panel of four great thinkers -- dolphin researcher Diana Reiss, musician Peter Gabriel, internet of things visionary Neil Gershenfeld and Vint Cerf, one of the fathers of the internet. Over 85 percent of all pancreatic cancers are diagnosed late, when someone has less than two percent chance of survival. How could this be? Jack Andraka talks about how he developed a promising early detection test for pancreatic cancer that's super cheap, effective and non-invasive -- all before his 16th birthday. For some reason, says educator Al Vernacchio, the metaphors for talking about sex in the US all come from baseball -- scoring, getting to first base, etc. The problem is, this frames sex as a competition, with a winner and a loser. Instead, he suggests a new metaphor, one that's more about shared pleasure, discussion and agreement, fulfillment and enjoyment. Let's talk about ... pizza. Bernie Krause has been recording wild soundscapes -- the wind in the trees, the chirping of birds, the subtle sounds of insect larvae -- for 45 years. In that time, he has seen many environments radically altered by humans, sometimes even by practices thought to be environmentally safe. A surpr

ing look at what we can learn from nature\'s symphonies, from the grunting of a sea anemone to the sad calls of a beaver in mourning. You don\'t need to plan an exotic trip to find creative inspiration. Just look up, says Gavin Pretor-Pinney, founder of the Cloud Appreciation Society. As he shares charming photos of nature\'s finest aerial architecture, Pretor-Pinney calls for us all to take a step off the digital treadmill, lie back and admire the beauty in the sky above. More and more people worldwide are living in countries not considered their own. Writer Pico Iyer -- who himself has three or four "origins" -- meditates on the meaning of home, the joy of traveling and the serenity of standing still. Once it\'s created, plastic (almost) never dies. While in 12th grade Miranda Wang and Jeanny Yao went in search of a new bacteria to biodegrade plastic -- specifically by breaking down phthalates, a harmful plasticizer. They found an answer surprisingly close to home. In a highly entertaining performance, beatboxer Tom Thum slings beats, comedy and a mouthful of instrumental impersonations into 11 minutes of creativity and fun that will make you smile. Philosopher John Searle lays out the case for studying human consciousness -- and systematically shoots down some of the common objections to taking it seriously. As we learn more about the brain processes that cause awareness, accepting that consciousness is a biological phenomenon is an important first step. And no, he says, consciousness is not a massive computer simulation. "I love paper, and I love technology," says physicist and former sheep herder Kate Stone, who\'s spent the past decade working to unite the two. Her experiments combine regular paper with conductive inks and tiny circuit boards to offer a unique, magical experience. To date, applications include a newspaper embedded with audio and video, posters that display energy usage in real time, and the extremely nifty paper drumkit and set of DJ decks she demonstrates onstage. Roberto D\'Angelo and Francesca Fedeli thought their baby boy Mario was healthy -- until at 10 days old, they discovered he\'d had a perinatal stroke. With Mario unable to control the left side of his body, they grappled with tough questions: Would he be "normal?" Could he live a full life? The poignant story of parents facing their fears -- and how they turned them around. Currency -- the bills and coins you carry in your wallet and in your bank account -- is founded on marketing, on the belief that banks and governments are trustworthy. Now, Paul Kemp-Robertson walks us through a new generation of currency, supported by that same marketing ... but on behalf of a private brand. From Nike Sweat Points to bottles of Tide (which are finding an unexpected use in illegal markets), meet the non-bank future of currencies. As a young child, Tania Luna left her home in post-Chernobyl Ukraine to take asylum in the US. And one day, on the floor of the New York homeless shelter where she and her family lived, she found a penny. She has never again felt so rich. A meditation on the bittersweet joys of childhood -- and how to hold them in mind. Designer Bastian Schaefer shows off a speculative design for the future of jet planes, with a skeleton inspired by strong, flexible, natural forms and by the needs of the world\'s, ahem, growing population. Imagine an airplane that\'s full of light and space -- and built up from generative parts in a 3D printer. As a young EMT on a Jerusalem ambulance, Eli Beer realized that, stuck in brutal urban traffic, they often arrived too late to help. So he organized a group of volunteer EMTs -- many on foot -- ready to drop everything and dash to save lives in their neighborhood. Today, United Hatzalah uses a smartphone app and a fleet of "ambucycles" to help nearby patients until an ambulance arrives. With an average response time of 3 minutes, last year, they treated 207,000 people in Israel. And the idea is going global. Showing spectacular clips from productions such as Frida, The Tempest and The Lion King, director Julie Taymor describes a life spent immersed in theater and the movies. Filmed right as controversy over her Broadway production of Spider-Man: Turn Off the Dark was at its peak, she candidly describes the tensions inherent within her creative process, as she strives both to capture the essence of a story--and produce images and experiences unlike anything else. During a Formula 1 race, a car sends hundreds of millions of data points to its garage for real-time analysis and feedback. So why not use this detailed and rigorous data system elsewhere, like at children\'s hospitals? Peter van Manen tells us more. Frustrated by not being able to sing two notes at the same time, musical inventor Beardyman built a machine to allow him to create loops and layers from just the sounds he makes with his voice. Given that he can effortlessly conjure the sound of everything from crying babies to buzzing flies, not to mention mimic pretty much any musical instrument imaginable, that\'s a lot of different sounds. Sit back and let the wall of sound of this dazzling performance wash over you. Why do we argue? To out-reason our opponents, prove them wrong, and, most of all, to win! Right? Philosopher Daniel H. Cohen shows how our most common form of argument -- a war in which one person must win and the other must lose -- misses out on the real benefits of engaging in active disagreement. Good design looks great, yes -- but why shouldn\'t it also feel great, smell great and sound great? Designer Jinsop Lee (a TED Talent Search winner) shares his theory of 5-sense design, with a handy graph and a few examples. His hope: to inspire you to notice great multisensory experiences. From



m simple alphabets to secret languages, graphic designer Saki Mafundikwa celebrates the many forms of written communication across the continent of Africa. He highlights the history and legacy that are embodied in written words and symbols, and urges African designers to draw on these graphic forms for fresh inspiration. It's summed up in his favorite Ghanaian glyph, Sankofa, which means "return and get it" -- or "learn from the past." To all appearances, Eleanor Longden was just like every other student, heading to college full of promise and without a care in the world. That was until the voices in her head started talking. Initially innocuous, these internal narrators became increasingly antagonistic and dictatorial, turning her life into a living nightmare. Diagnosed with schizophrenia, hospitalized, drugged, Longden was discarded by a system that didn't know how to help her. Longden tells the moving tale of her years-long journey back to mental health, and makes the case that it was through learning to listen to her voices that she was able to survive. Born three and a half months prematurely, Derek Paravicini is blind and has severe autism. But with perfect pitch, innate talent and a lot of practice, he became a concert pianist by the age of 10. Here, his longtime piano teacher, Adam Ockelford, explains his student's unique relationship to music, while Paravicini shows how he has ripped up the "Chopsticks" rulebook. Gayla Benefield was just doing her job -- until she uncovered an awful secret about her hometown that meant its mortality rate was 80 times higher than anywhere else in the US. But when she tried to tell people about it, she learned an even more shocking truth: People didn't want to know. In a talk that's part history lesson, part call-to-action, Margaret Heffernan demonstrates the danger of willful blindness, and praises ordinary people like Benefield who are willing to speak up. Long before sustainability was a buzzword, architect Shigeru Ban was using ecologically sound building materials such as cardboard tubes. He uses them to build remarkable temporary structures for disaster-struck nations such as Haiti, Rwanda and Japan. Yet often, these buildings remain a beloved part of the landscape long after they have served their intended purpose. Russell Foster is a circadian neuroscientist: He studies the sleep cycles of the brain. And he asks: What do we know about sleep? Not a lot, it turns out, for something we do with one-third of our lives. In this talk, Foster shares three popular theories about why we sleep, busts some myths about how much sleep we need at different ages -- and hints at some bold new uses of sleep as a predictor of mental health. Can we edit the content of our memories? It's a sci-fi-tinged question that Steve Ramirez and Xu Liu are asking in their lab at MIT. Essentially, the pair shoot a laser beam into the brain of a living mouse to activate and manipulate its memory. In this unexpectedly amusing talk they share not only how, but -- more important -- why they do this. In Lebanon there is one gunshot a year that isn't part of a scene of routine violence: The opening sound of the Beirut International Marathon. In a moving talk, marathon founder May El-Khalil explains why she believed a 26.2-mile running event could bring together a country divided for decades by politics and religion, even if for one day a year. They're millions of digits long, and it takes an army of mathematicians and machines to hunt them down -- what's not to love about monster primes? Adam Spencer, comedian and lifelong math geek, shares his passion for these odd numbers, and for the mysterious magic of math. Stress. It makes your heart pound, your breathing quicken and your forehead sweat. But while stress has been made into a public health enemy, new research suggests that stress may only be bad for you if you believe that to be the case. Psychologist Kelly McGonigal urges us to see stress as a positive, and introduces us to an unsung mechanism for stress reduction: reaching out to others. Technology is advancing in leaps and bounds -- and so is economic inequality, says writer Chrystia Freeland. In an impassioned talk, she charts the rise of a new class of plutocrats (those who are extremely powerful because they are extremely wealthy), and suggests that globalization and new technology are actually fueling, rather than closing, the global income gap. Freeland lays out three problems with plutocracy ... and one glimmer of hope. Alexa Meade takes an innovative approach to art. Not for her a life of sketching and stretching canvases. Instead, she selects a topic and then paints it--literally. She covers everything in a scene--people, chairs, food, you name it--in a mask of paint that mimics what's below it. In this eye-opening talk Meade shows off photographs of some of the more outlandish results, and shares a new project involving people, paint and milk. Wolves were once native to the US's Yellowstone National Park -- until hunting wiped them out. But when, in 1995, the wolves began to come back (thanks to an aggressive management program), something interesting happened: the rest of the park began to find a new, more healthful balance. In a bold thought experiment, George Monbiot imagines a wilder world in which humans work to restore the complex, lost natural food chains that once surrounded us. A third of the world watched live as the World Trade Center collapsed on September 11, 2001; a third more heard about it within 24 hours. (Do you remember where you were?) So exhibits at the soon-to-open 9/11 Memorial Museum will reflect the diversity of the world's experiences of that day. In a moving talk, designer Jake Barton gives a peek at some of those insta-

participations, as well as several other projects that aim to make the observer an active participant in the exhibit. Months after he was born, in 1948, Ron McCallum became blind. In this charming, moving talk, he shows how he reads -- and celebrates the progression of clever tools and adaptive computer technologies that make it possible. With their help, and the help of volunteers, he's become a lawyer, an academic, and, most of all, a voracious reader. Welcome to the blind reading revolution. We've known how to cure malaria since the 1600s, so why does the disease still kill hundreds of thousands every year? It's more than just a problem of medicine, says journalist Sonia Shah. A look into the history of malaria reveals three big-picture challenges to its eradication. Photos: Adam Nadel. Hailed as the greatest pickpocket in the world, Apollo Robbins studies the quirks of human behavior as he steals your watch. In a hilarious demonstration, Robbins samples the buffet of the TEDGlobal 2013 audience, showing how the flaws in our perception make it possible to swipe a wallet and leave it on its owner's shoulder while they remain clueless. How do you pick up a malicious online virus, the kind of malware that snoops on your data and taps your bank account? Often, it's through simple things you do each day without thinking twice. James Lyne reminds us that it's not only the NSA that's watching us, but ever-more-sophisticated cybercriminals, who exploit both weak code and trusting human nature. Honeybees have thrived for 50 million years, each colony 40 to 50,000 individuals coordinated in amazing harmony. So why, seven years ago, did colonies start dying en masse? Marla Spivak reveals four reasons which are interacting with tragic consequences. This is not simply a problem because bees pollinate a third of the world's crops. Could this incredible species be holding up a mirror for us? What do 24,000 ideas look like? Ecologist Eric Berlow and physicist Sean Gourley apply algorithms to the entire archive of TEDx Talks, taking us on a stimulating visual tour to show how ideas connect globally. By 2050, it will take 100 billion land animals to provide the world's population with meat, dairy, eggs and leather goods. Maintaining this herd will take a huge, potentially unsustainable toll on the planet. What if there were a different way? In this eye-opening talk, tissue engineering advocate Andras Forgacs argues that biofabricating meat and leather is a civilized way to move past killing animals for hamburgers and handbags. It often seems like federal-level politicians care more about creating gridlock than solving the world's problems. So who's actually getting bold things done? City mayors. So, political theorist Benjamin Barber suggests: Let's give them more control over global policy. Barber shows how these "urban homeboys" are solving pressing problems on their own turf -- and maybe in the world. Psychologist Elizabeth Loftus studies memories. More precisely, she studies false memories, when people either remember things that didn't happen or remember them differently from the way they really were. It's more common than you might think, and Loftus shares some startling stories and statistics -- and raises some important ethical questions. What does real scientific work look like? As neuroscientist Stuart Firestein jokes: It looks a lot less like the scientific method and a lot more like "farting around ... in the dark." In this witty talk, Firestein gets to the heart of science as it is really practiced and suggests that we should value what we don't know -- or "high-quality ignorance" -- just as much as what we know. Trust is on the decline, and we need to rebuild it. That's a commonly heard suggestion for making a better world ... but, says philosopher Onora O'Neill, we don't really understand what we're suggesting. She flips the question, showing us that our three most common ideas about trust are actually misdirected. It's called the "Flynn effect" -- the fact that each generation scores higher on an IQ test than the generation before it. Are we actually getting smarter, or just thinking differently? In this fast-paced spin through the cognitive history of the 20th century, moral philosopher James Flynn suggests that changes in the way we think have had surprising (and not always positive) consequences. Kevin Breel didn't look like a depressed kid: team captain, at every party, funny and confident. But he tells the story of the night he realized that -- to save his own life -- he needed to say four simple words. It's a classic underdog tale: David, a young shepherd armed only with a sling, beats Goliath, the mighty warrior. The story has transcended its biblical origins to become a common shorthand for unlikely victory. But, asks Malcolm Gladwell, is that really what the David and Goliath story is about? In Tana Toraja, weddings and births aren't the social gatherings that knit society together. In this part of Indonesia, big, raucous funerals are at the center of social life. Anthropologist Kelli Swazey takes a look at this culture, in which the bodies of dead relatives are cared for years after they have passed away -- because relationships with loved ones don't simply end when breathing does. Amy Webb was having no luck with online dating. The dates she liked didn't write her back, and her own profile attracted crickets (and worse). So, as any fan of data would do: she started making a spreadsheet. Hear the story of how she went on to hack her online dating life -- with frustrating, funny and life-changing results. Swiss artist and photographer Fabian Oefner is on a mission to make eye-catching art from everyday science. In this charming talk, he shows off some recent psy

edidic images, including photographs of crystals as they interact with soundwaves. And, in a live demo, he shows what really happens when you mix paint with magnetic liquid--or when you set fire to whiskey. In 1969, Buzz Aldrin's historical step onto the moon leapt mankind into an era of technological possibility. The awesome power of technology was to be used to solve all of our big problems. Fast forward to present day, and what's happened? Are mobile apps all we have to show for ourselves? Journalist Jason Pontin looks closely at the challenges we face to using technology effectively ... for problems that really matter. Why do we turn to nonprofits, NGOs and governments to solve society's biggest problems? Michael Porter admits he's biased, as a business school professor, but he wants you to hear his case for letting business try to solve massive problems like climate change and access to water. Why? Because when business solves a problem, it makes a profit -- which lets that solution grow. In the past three decades, says Michael Sandel, the US has drifted from a market economy to a market society; it's fair to say that an American's experience of shared civic life depends on how much money they have. (Three key examples: access to education, access to justice, political influence.) In a talk and audience discussion, Sandel asks us to think honestly on this question: In our current democracy, is too much for sale? In this funny and thought-provoking talk, Janette Sadik-Khan, transportation commissioner of New York City, shares projects that have reshaped street life in the 5 boroughs, including pedestrian zones in Times Square, high-performance buses and a 6,000-cycle-strong bike share. Her mantra: Do bold experiments that are cheap to try out. Iran and Israel: two nations with tense relations that seem existentially at odds. But for all their antagonistic rhetoric, there is a recent hidden history of collaboration, even friendship. In an informative talk, Trita Parsi shows how an unlikely strategic alliance in the past could mean peace in the future for these two feuding countries. Dr. Gary Slutkin spent a decade fighting tuberculosis, cholera and AIDS epidemics in Africa. When he returned to the US, he thought he'd escape brutal epidemic deaths. But he began to look more carefully at gun violence -- whose spread follows the same pattern as an infectious disease. His conclusion: We've reversed the impact of so many diseases, says Slutkin, and we can do the same with violence. A mind-flipping look at a problem that too many communities have accepted as a given. In the 1930s, broadcast radio introduced an entirely new form of storytelling; today, micro-blogging platforms like Twitter are changing the scene again. Andrew Fitzgerald takes a look at the (aptly) short but fascinating history of new forms of creative experimentation in fiction and storytelling. How do we solve the problem of the suburbs? Urbanist Jeff Speck shows how we can free ourselves from dependence on the car -- which he calls "a gas-belching, time-wasting, life-threatening prosthetic device" -- by making our cities more walkable and more pleasant for more people. Amanda Bennett and her husband were passionate and full of life all throughout their lives together -- and up until the final days, too. Bennett gives a sweet yet powerful talk on why, for the loved ones of the dying, having hope for a happy ending shouldn't warrant a diagnosis of "denial." She calls for a more heroic narrative for death -- to match the ones we have in life. In the center of Caracas, Venezuela, stands the 45-story "Tower of David," an unfinished, abandoned skyscraper. But about eight years ago, people started moving in. Photographer Iwan Baan shows how people build homes in unlikely places, touring us through the family apartments of Torre David, a city on the water in Nigeria, and an underground village in China. Glorious images celebrate humanity's ability to survive and make a home -- anywhere. The line between public and private has blurred in the past decade, both online and in real life, and Alessandro Acquisti is here to explain what this means and why it matters. In this thought-provoking, slightly chilling talk, he shares details of recent and ongoing research -- including a project that shows how easy it is to match a photograph of a stranger with their sensitive personal information. How do we decide who we are? Heta Patel's surprising performance plays with identity, language and accent -- and challenges you to think deeper than surface appearances. A delightful meditation on self, with performer Yuyu Rau, and inspired by Bruce Lee. The big blue buildings of Ikea have sprouted solar panels and wind turbines; inside, shelves are stocked with LED lighting and recycled cotton. Why? Because as Steve Howard puts it: "Sustainability has gone from a nice-to-do to a must-do." Howard, the chief sustainability officer at the furniture megastore, talks about his quest to sell eco-friendly materials and practices -- both internally and to worldwide customers -- and lays a challenge for other global giants. The past decade has seen slow and steady economic growth across the continent of Africa. But economist Charles Robertson has a bold thesis: Africa's about to boom. He talks through a few of the indicators -- from rising education levels to expanded global investment (and not just from China) -- that lead him to predict rapid growth for a billion people, sooner than you may think. What is jealousy? What drives it, and why do we secretly love it? No study has ever been able to capture its "loneliness, longevity, grim thrill" -- that is, says Parul Sehgal, except for fiction. In an eloquent meditation she scours pages from

literature to show jealousy is not how different from a quest for knowledge. The biggest surprise of discovering the Higgs boson? That there were no surprises. Gian Giudice talks us through a problem in theoretical physics: what if the Higgs field exists in an ultra-dense state that could mean the collapse of all atomic matter? With wit and charm, Giudice outlines a grim fate -- and why we shouldn't start worrying just yet. When TED Fellow Xavier Vilalta was commissioned to create a multistory shopping mall in Addis Ababa, he panicked. Other centers represented everything he hated about contemporary architecture: wasteful, glass towers requiring tons of energy whose design had absolutely nothing to do with Africa. In this charming talk, Vilalta shows how he champions an alternative approach: to harness nature, reference design tradition and create beautiful, modern, iconic buildings fit for a community. Why doesn't the government just get out of the way and let the private sector -- the "real revolutionaries" -- innovate? It's rhetoric you hear everywhere, and Mariana Mazzucato wants to dispel it. In an energetic talk, she shows how the state -- which many see as a slow, hunkering behemoth -- is really one of our most exciting risk-takers and market-shapers. There's a farming crisis no one is talking about: The world is running out of phosphorus, an essential element that's a key component of DNA and the basis of cellular communication. As biologist Mohamed Hijri shows, all roads of this crisis lead back to how we farm -- with chemical fertilizers chock-full of the element, which plants are not efficient at absorbing. One solution? A microscopic mushroom ... One year ago, Abha Dawesar was living in blacked-out Manhattan post-Sandy, scrounging for power to connect. As a novelist, she was struck by this metaphor: Have our lives now become fixated on the drive to digitally connect, while we miss out on what's real? Chernobyl was the site of the world's worst nuclear accident and, for the past 27 years, the area around the plant has been known as the Exclusion Zone. And yet, a community of about 200 people live there -- almost all of them elderly women. These proud grandmas defied orders to relocate because their connection to their homeland and to their community are "forces that rival even radiation." Dong Woo Jang has an unusual after school hobby. Jang, who was 15 when he gave the talk, tells the story of how living in the concrete jungle of Seoul inspired him to build the perfect bow. Watch him demo one of his beautiful hand-crafted archer's bows. Up to 100,000 people died in drug-related violence in Mexico in the last 6 years. We might think this has nothing to do with us, but in fact we are all complicit, says Yale professor Rodrigo Canales in this unflinching talk that turns conventional wisdom about drug cartels on its head. The carnage is not about faceless, ignorant goons mindlessly killing each other but is rather the result of some seriously sophisticated brand management. New York City residents produce 11,000 tons of garbage every day. Every day! This astonishing statistic is just one of the reasons Robin Nagle started a research project with the city's Department of Sanitation. She walked the routes, operated mechanical brooms, even drove a garbage truck herself--all so she could answer a simple-sounding but complicated question: who cleans up after us? A spinal cord injury can sever the communication between your brain and your body, leading to paralysis. Fresh from his lab, Grégoire Courtine shows a new method -- combining drugs, electrical stimulation and a robot -- that could re-awaken the neural pathways and help the body learn again to move on its own. See how it works, as a paralyzed rat becomes able to run and navigate stairs. Recent events have highlighted, underlined and bolded the fact that the United States is performing blanket surveillance on any foreigner whose data passes through an American entity -- whether they are suspected of wrongdoing or not. This means that, essentially, every international user of the internet is being watched, says Mikko Hypponen. An important rant, wrapped with a plea: to find alternative solutions to using American companies for the world's information needs. Math is logical, functional and just ... awesome. Mathemagician Arthur Benjamin explores hidden properties of that weird and wonderful set of numbers, the Fibonacci series. (And reminds you that mathematics can be inspiring, too!) The developed world holds up the ideals of capitalism, democracy and political rights for all. Those in emerging markets often don't have that luxury. In this powerful talk, economist Dambisa Moyo makes the case that the west can't afford to rest on its laurels and imagine others will blindly follow. Instead, a different model, embodied by China, is increasingly appealing. A call for open-minded political and economic cooperation in the name of transforming the world. What would a city designed for the blind be like? Chris Downey is an architect who went suddenly blind in 2008; he contrasts life in his beloved San Francisco before and after -- and shows how the thoughtful designs that enhance his life now might actually make everyone's life better, sighted or not. For the young and unemployed in the world's big cities, dreams of opportunity and wealth do come true -- but too often because they're heavily recruited by terrorist groups and other violent organizations. Human rights advocate Mohamed Ali draws on stories from his native Mogadishu to make a powerful case for innovation incubators for our cities' young and ambitious. Different hospitals produce different results on different procedures. Only, patients don't know that data,

making a game, guessing a stage game. Stefan Larsson looks at what happens when doctors measure and share their outcomes on hip replacement surgery, for example, to see which techniques are proving the most effective. Could health care get better -- and cheaper -- if doctors learn from each other in a continuous feedback loop? What happens when you get an entire audience to stand up and connect with one another? Chaos, that's what. At least, that's what happened when Jane McGonigal tried to teach TED to play her favorite game. Then again, when the game is "massively multiplayer thumb-wrestling," what else would you expect? Ecologist Lian Pin Koh makes a persuasive case for using drones to protect the world's forests and wildlife. These lightweight autonomous flying vehicles can track animals in their natural habitat, monitor the health of rainforests, even combat crime by detecting poachers via thermal imaging. Added bonus? They're also entirely affordable. What are our forests really made of? From the air, ecologist Greg Asner uses a spectrometer and high-powered lasers to map nature in meticulous kaleidoscopic 3D detail -- what he calls "a very high-tech accounting system" of carbon.

In this fascinating talk, Asner gives a clear message: To save our ecosystems, we need more data, gathered in new ways. Paralyzed by a stroke, Henry Evans uses a telepresence robot to take the stage and show how new robotics, tweaked and personalized by a group called Robots for Humanity, help him live his life to the full. He shows off a nimble little quadrotor drone, created by a team led by Chad Jenkins, that gives him the ability to once again stroll a garden, visit a campus or give a TEDx Talk. A billion people in the world lack access to all-season roads. Could the structure of the internet provide a model for how to reach them? Andreas Raptopoulos of Matternet thinks so. He introduces a new type of transportation system that uses electric autonomous flying machines to deliver medicine, food, goods and supplies wherever they are needed. "Life comes at us very quickly, and what we need to do is take that amorphous flow of experience and somehow extract meaning from it." In this funny, enlightening talk, educational psychologist Peter Doolittle details the importance -- and limitations -- of your "working memory," that part of the brain that allows us to make sense of what's happening right now. There's an irony behind the latest efforts to extend human life: It's no picnic to be an old person in a youth-oriented society. Older people can become isolated, lacking meaningful work and low on funds. In this intriguing talk, Jared Diamond looks at how many different societies treat their elders -- some better, some worse -- and suggests we all take advantage of experience. The human brain is puzzling -- it is curiously large given the size of our bodies, uses a tremendous amount of energy for its weight and has a bizarrely dense cerebral cortex. But: why? Neuroscientist Suzana Herculano-Houzel puts on her detective's cap and leads us through this mystery. By making "brain soup," she arrives at a startling conclusion.

The one thing all humans have in common is that each of us wants to be happy, says Brother David Steindl-Rast, a monk and interfaith scholar. And happiness, he suggests, is born from gratitude. An inspiring lesson in slowing down, looking where you're going, and above all, being grateful. Here's a stat worth knowing: In the UK, 63% of men who finish short-term prison sentences are back inside within a year for another crime. Helping them stay outside involves job training, classes, therapy.

And it would pay off handsomely -- but the government can't find the funds. Toby Eccles shares an imaginative idea for how to change that: the Social Impact Bond. It's an unusual bond that helps fund initiatives with a social goal through private money -- with the government paying back the investors (with interest) if the initiatives work. It's relatively easy to imagine a new medicine -- the hard part is testing it, and that can delay promising new cures for years. In this well-explained talk, Geraldine Hamilton shows how her lab creates organs and body parts on a chip, simple structures with all the pieces essential to testing new medications -- perhaps even custom cures made for one specific person. It's time for liberals and conservatives to transcend their political differences and really listen to each other, says political pundit Sally Kohn. In this optimistic talk, Kohn shares what she learned as a progressive lesbian talking head on Fox News. It's not about political correctness, she says, but rather, emotional correctness. (Contains profanity.) David Lang is a maker who taught himself to become an amateur oceanographer -- or, he taught a robot to be one for him. In a charming talk Lang, a TED Fellow, shows how he and a network of ocean lovers teamed up to build open-sourced, low-cost underwater explorers. "An advanced city is not one where even the poor use cars, but rather one where even the rich use public transport," argues Enrique Peñalosa. In this spirited talk, the mayor of Bogotá shares some of the tactics he used to change the transportation dynamic in the Colombian capital... and suggests ways to think about building smart cities of the future. "In the cathedral of the wild, we get to see the best parts of ourselves reflected back to us." Boyd Varty, a wildlife activist, shares stories of animals, humans and their interrelatedness, or "ubuntu" -- defined as, "I am, because of you." And he dedicates the talk to South African leader Nelson Mandela, the human embodiment of that same great-hearted, generous spirit. Diébédo Francis Kéré knew exact

ly what he wanted to do when he got his degree in architecture... he wanted to go home to Gando in Burkina Faso, to help his neighbors reap the benefit of his education. In this charming talk, Kéré shows off some of the beautiful structures he's helped to build in his small village in the years since then, including an award-winning primary school made from clay by the entire community. Snow Dragon. Pure Imagination. Frozen Minotaur. These are the names Eddy Cartaya and his climbing partner Brent McGregor gave three glacier caves that they were the first to explore. As the Sandy Glacier slowly slides down Mount Hood in Oregon, the caves and tunnels inside it morph annually thanks to warm water from above and warm air from below. At TEDYouth, Cartaya takes us inside these magical spaces where the ice glows in bright blues and greens, and where artifacts rain from the ceiling. Philosopher Stephen Cave begins with a dark but compelling question: When did you first realize you were going to die? And even more interesting: Why do we humans so often resist the inevitability of death? Cave explores four narratives -- common across civilizations -- that we tell ourselves "in order to help us manage the terror of death." Almost everything we own and use, at some point, travels to us by container ship, through a vast network of ocean routes and ports that most of us know almost nothing about. Journalist Rose George tours us through the world of shipping, the underpinning of consumer civilization. Once the powerhouse of America's industrial might, Detroit is more recently known in the popular imagination as a fabulous ruin, crumbling and bankrupt. But city planner Toni Griffin asks us to look again -- and to imagine an entrepreneurial future for the city's 700,000 residents. Everyone's talking about the "Internet of Things," but what exactly does that mean for our future? In this thoughtful talk, economist Marco Annunziata looks at how technology is transforming the industrial sector, creating machines that can see, feel, sense and react -- so they can be operated far more efficiently. Think: airplane parts that send an alert when they need to be serviced, or wind turbines that communicate with one another to generate more electricity. It's a future with exciting implications for us all. "The opposite of depression is not happiness, but vitality, and it was vitality that seemed to seep away from me in that moment." In a talk equal parts eloquent and devastating, writer Andrew Solomon takes you to the darkest corners of his mind during the years he battled depression. That led him to an eye-opening journey across the world to interview others with depression -- only to discover that, to his surprise, the more he talked, the more people wanted to tell their own stories. We've made incredible advances in technology in recent years, but too often it seems only certain fortunate people can benefit. Engineer Krista Donaldson introduces the ReMotion knee, a prosthetic device for above-knee amputees, many of whom earn less than \$4 a day. The design contains best-in-class technology and yet is far cheaper than other prosthetics on the market. It's amazing what a rigged game of Monopoly can reveal. In this entertaining but sobering talk, social psychologist Paul Piff shares his research into how people behave when they feel wealthy. (Hint: badly.) But while the problem of inequality is a complex and daunting challenge, there's good news too. In the pitch-black night, stung by jellyfish, choking on salt water, singing to herself, hallucinating ... Diana Nyad just kept on swimming. And that's how she finally achieved her lifetime goal as an athlete: an extreme 100-mile swim from Cuba to Florida -- at age 64. Hear her story. Oklahoma City is a midsized town that had a big problem: It was among the most obese towns in America. Mayor Mick Cornett realized that, to make his city a great place to work and live, it had to become healthier too. In this charming talk, he walks us through the interlocking changes that helped OKC drop a collective million pounds (450,000 kilos). "I have cerebral palsy. I shake all the time," Maysoon Zayid announces at the beginning of this exhilarating, hilarious talk. (Really, it's hilarious.) "I'm like Shakira meets Muhammad Ali." With grace and wit, the Arab-American comedian takes us on a whistle-stop tour of her adventures as an actress, stand-up comic, philanthropist and advocate for the disabled. More and more, English is a global language; speaking it is perceived as a sign of being modern. But -- what do we lose when we leave behind our mother tongues? Suzanne Talhouk makes an impassioned case to love your own language, and to cherish what it can express that no other language can. In Arabic with subtitles. Believe it or not, about 20 years' worth of potentially life-saving drugs are sitting in labs right now, untested. Why? Because they can't get the funding to go to trials; the financial risk is too high. Roger Stein is a finance guy, and he thinks deeply about mitigating risk. He and some colleagues at MIT came up with a promising new financial model that could move hundreds of drugs into the testing pipeline. In the US, 80% of girls have been on a diet by the time they're 10 years old. In this honest, raw talk, neuroscientist Sandra Aamodt uses her personal story to frame an important lesson about how our brains manage our bodies, as she explores the science behind why dieting not only doesn't work, but is likely to do more harm than good. She suggests ideas for how to live a less diet-obsessed life, intuitively. Imagine if you could surf Facebook ... from the Middle Ages. Well, it may not be as far off as it sounds. In a fun and interesting talk, Frederic Kapla

shows off the Venice Time Machine, an project to digitize 80 kilometers of books to create a historical and geographical simulation of Venice across 1,000 years. In this lovely talk, TED Fellow Ryan Holladay shares his experiment with "location-aware music." This programming and musical feat involves hundreds of geotagged segments of sounds that only play when a listener is physically nearby, creating a magical sense of presence. You might not expect the chief operating officer of a major global corporation to look too far beyond either the balance sheet or the bottom line. But Harish Manwani, COO of Unilever, makes a passionate argument that doing so to include value, purpose and sustainability in top-level decision-making is not just savvy, it's the only way to run a 21st century business responsibly. One hundred sixty years after the invention of the needle and syringe, we're still using them to deliver vaccines; it's time to evolve. Biomedical engineer Mark Kendall demos the Nanopatch, a one-centimeter-by-one-centimeter square vaccine that can be applied painlessly to the skin. He shows how this tiny piece of silicon can overcome four major shortcomings of the modern needle and syringe, at a fraction of the cost. Sheryl Sandberg admits she was terrified to step onto the TED stage in 2010 -- because she was going to talk, for the first time, about the lonely experience of being a woman in the top tiers of business. Millions of views (and a best-selling book) later, the Facebook COO talks with the woman who pushed her to give that first talk, Pat Mitchell. Sandberg opens up about the reaction to her idea, and explores the ways that women still struggle with success. Luke Syson was a curator of Renaissance art, of transcendent paintings of saints and solemn Italian ladies -- Very Serious Art. And then he changed jobs, and inherited the Met's collection of ceramics -- pretty, frilly, "useless" candlesticks and vases. He didn't like it. He didn't get it. Until one day ... What kind of robots does an animator / jazz musician / roboticist make? Playful, reactive, curious ones. Guy Hoffman shows demo film of his family of unusual robots -- including two musical bots that like to jam with humans. "If you really want to know a people, start by looking inside their bedrooms," says Shereen El Feki, who traveled through the Middle East for five years, talking to people about sex. While those conversations reflected rigid norms and deep repression, El Feki also discovered that sexual conservatism in the Arab world is a relatively new thing. She wonders: could a re-emergence of public dialogue lead to more satisfying, and safer, sex lives? Every cell in the human body has a sex, which means that men and women are different right down to the cellular level. Yet too often, research and medicine ignore this insight -- and the often startlingly different ways in which the two sexes respond to disease or treatment. As pioneering doctor Paula Johnson describes in this thought-provoking talk, lumping everyone in together means we essentially leave women's health to chance. It's time to rethink. Why do people feel so miserable and disengaged at work? Because today's businesses are increasingly and dizzyingly complex -- and traditional pillars of management are obsolete, says Yves Morieux. So, he says, it falls to individual employees to navigate the rabbit's warren of interdependencies. In this energetic talk, Morieux offers six rules for "smart simplicity." (Rule One: Understand what your colleagues actually *do*.) Humanity's fine-tuned sense of fear served us well as a young species, giving us laser focus to avoid being eaten by competing beasts. But it's less wonderful when that same visceral, body-hijacking sense of fear kicks in in front of 20 folk-music fans at a Tuesday night open-mic. Palms sweat, hands shake, vision blurs, and the brain says RUN: it's stage fright. In this charming, tuneful little talk, Joe Kowan talks about how he conquered it. 2013 was a year of hype for MOOCs (massive open online courses). Great big numbers and great big hopes were followed by some disappointing first results. But the head of edX, Anant Agarwal, makes the case that MOOCs still matter -- as a way to share high-level learning widely and supplement (but perhaps not replace) traditional classrooms. Agarwal shares his vision of blended learning, where teachers create the ideal learning experience for 21st century students. When she became the attorney general of New Jersey in 2007, Anne Milgram quickly discovered a few startling facts: not only did her team not really know who they were putting in jail, but they had no way of understanding if their decisions were actually making the public safer. And so began her ongoing, inspirational quest to bring data analytics and statistical analysis to the US criminal justice system. McKenna Pope's younger brother loved to cook, but he worried about using an Easy-Bake Oven -- because it was a toy for girls. So at age 13, Pope started an online petition for the American toy company Hasbro to change the pink-and-purple color scheme on the classic toy and incorporate boys into its TV marketing. In a heartening talk, Pope makes the case for gender-neutral toys and gives a rousing call to action to all kids who feel powerless. Animal behavior isn't complicated, but it is complex. Nicolas Perony studies how individual animals -- be they Scottish Terriers, bats or meerkats -- follow simple rules that, collectively, create larger patterns of behavior. And how this complexity born of simplicity can help them adapt to new circumstances, as they arise. Maya Penn started her first company when she was 8 years old, and thinks deeply about how to be responsible both to

her customers and to the planet. She shares her story -- and some animations, and some designs, and some infectious energy -- in this charming talk. When Esta Soler lobbied for a bill outlawing domestic violence in 1984, one politician called it the "Take the Fun Out of Marriage Act." "If only I had Twitter then," she mused. In this sweeping, optimistic talk, Soler charts 30 years of tactics and technologies -- from the Polaroid camera to social media -- that led to a 64% drop in domestic violence in the U.S. We're all familiar with satellite imagery, but what we might not know is that much of it is out of date. That's because satellites are big and expensive, so there aren't that many of them up in space. As he explains in this fascinating talk, Dan Berkenstock and his team came up with a different solution, designing a cheap, lightweight satellite with a radically new approach to photographing what's going on on Earth. As the world's cities undergo explosive growth, inequality is intensifying. Wealthy neighborhoods and impoverished slums grow side by side, the gap between them widening. In this eye-opening talk, architect Teddy Cruz asks us to rethink urban development from the bottom up. Sharing lessons from the slums of Tijuana, Cruz explores the creative intelligence of the city's residents and offers a fresh perspective on what we can learn from places of scarcity. Is there an equation for intelligence? Yes. It's  $F = T \nabla S$ . In a fascinating and informative talk, physicist and computer scientist Alex Wissner-Gross explains what in the world that means. In this charming talk, artist Aparna Rao shows us her latest work: cool, cartoony sculptures (with neat robotic tricks underneath them) that play with your perception -- and crave your attention. Take a few minutes to simply be delighted. In this thoughtful talk, David Puttnam asks a big question about the media: Does it have a moral imperative to create informed citizens, to support democracy? His solution for ensuring media responsibility is bold, and you might not agree. But it's certainly a question worth asking. Most of us want to do the right thing when it comes to the environment. But things aren't as simple as opting for the paper bag, says sustainability strategist Leyla Acaroglu. A bold call for us to let go of tightly-held green myths and think bigger in order to create systems and products that ease strain on the planet.

Sustainability is pretty clearly one of the world's most important goals; but what groups can really make environmental progress in leaps and bounds? Chris McKnett makes the case that it's large institutional investors. He shows how strong financial data isn't enough, and reveals why investors need to look at a company's environmental, social and governance structures, too. Many of those with severe speech disorders use a computerized device to communicate. Yet they choose between only a few voice options. That's why Stephen Hawking has an American accent, and why many people end up with the same voice, often to incongruous effect. Speech scientist Rupal Patel wanted to do something about this, and in this wonderful talk she shares her work to engineer unique voices for the voiceless. In this delightful talk, philosopher Yann Dall'Aglia explores the universal search for tenderness and connection in a world that's ever more focused on the individual. As it turns out, it's easier than you think. A wise and witty reflection on the state of love in the modern age. In French with subtitles. What does it take to regrow bone in mass quantities? Typical bone regeneration -- wherein bone is taken from a patient's hip and grafted onto damaged bone elsewhere in the body -- is limited and can cause great pain just a few years after operation. In an informative talk, Molly Stevens introduces a new stem cell application that harnesses bone's innate ability to regenerate and produces vast quantities of bone tissue painlessly. The world is full of leadership programs, but the best way to learn how to lead might be right under your nose. In this clear, candid talk, Roselinde Torres describes 25 years observing truly great leaders at work, and shares the three simple but crucial questions would-be company chiefs need to ask to thrive in the future. An idea permeates our modern view of relationships: that men and women have always paired off in sexually exclusive relationships. But before the dawn of agriculture, humans may actually have been quite promiscuous. Author Christopher Ryan walks us through the controversial evidence that human beings are sexual omnivores by nature, in hopes that a more nuanced understanding may put an end to discrimination, shame and the kind of unrealistic expectations that kill relationships. In this touching talk, Ash Beckham offers a fresh approach to empathy and openness. It starts with understanding that everyone, at some point in their life, has experienced hardship. The only way out, says Beckham, is to open the door and step out of your closet. After a traumatic brain injury, it sometimes happens that the brain can repair itself, building new brain cells to replace damaged ones. But the repair doesn't happen quickly enough to allow recovery from degenerative conditions like motor neuron disease (also known as Lou Gehrig's disease or ALS). Siddharthan Chandran walks through some new techniques using special stem cells that could allow the damaged brain to rebuild faster. Hacking is about more than mischief-making or political subversion. As Catherine Bracy describes in this spirited talk, it can be just as much a force for good as it is for evil. She spins through some inspiring civically-minded projects in Honolulu, Oakland and Mexico City -- and makes a compelling case



that we all have taken to get involved, during the financial crisis, the central banks of the United States, United Kingdom and Japan created \$3.7 trillion in order to buy assets and encourage investors to do the same. Michael Metcalfe offers a shocking idea: could these same central banks print money to ensure they stay on track with their goals for global aid? Without risking inflation? In a fun, exciting talk, teenager Henry Lin looks at something unexpected in the sky: distant galaxy clusters. By studying the properties of the universe's largest pieces, says the Intel Science Fair award winner, we can learn quite a lot about scientific mysteries in our own world and galaxy. The way we rate national economies is all wrong, says rating agency reformer Annette Heuser. With mysterious and obscure methods, three private US-based credit rating agencies wield immense power over national economies across the globe, and the outcomes can be catastrophic. But what if there was another way? In this bold talk, Heuser shares her vision for a nonprofit agency that would bring more equality and justice into the mix. As an expert on cutting-edge digital displays, Mary Lou Jepsen studies how to show our most creative ideas on screens. And as a brain surgery patient herself, she is driven to know more about the neural activity that underlies invention, creativity, thought. She meshes these two passions in a rather mind-blowing talk on two cutting-edge brain studies that might point to a new frontier in understanding how (and what) we think. What does the future of business look like? In an informative talk, Philip Evans gives a quick primer on two long-standing theories in strategy -- and explains why he thinks they are essentially invalid. Privacy researcher Christopher Soghoian sees the landscape of government surveillance shifting beneath our feet, as an industry grows to support monitoring programs. Through private companies, he says, governments are buying technology with the capacity to break into computers, steal documents and monitor activity -- without detection. This TED Fellow gives an unsettling look at what's to come. Vending machines generally offer up sodas, candy bars and chips. Not so for the one created by TED Fellow Gabe Barcia-Colombo. This artist has dreamed up a DNA Vending Machine, which dispenses extracted human DNA, packaged in a vial along with a collectible photo of the person who gave it. It's charming and quirky, but points out larger ethical issues that will arise as access to biotechnology increases. Perhaps you've punched out a paper doll or folded an origami swan? TED Fellow Manu Prakash and his team have created a microscope made of paper that's just as easy to fold and use. A sparkling demo that shows how this invention could revolutionize healthcare in developing countries ... and turn almost anything into a fun, hands-on science experiment. While working with kids who have trouble speaking, Ajit Narayanan sketched out a way to think about language in pictures, to relate words and concepts in "maps." The idea now powers the FreeSpeech app, which can help nonverbal people communicate. Public policy expert Anne-Marie Slaughter made waves with her 2012 article, "Why women still can't have it all." But really, is this only a question for women? Here Slaughter expands her ideas and explains why shifts in work culture, public policy and social mores can lead to more equality -- for men, women, all of us. Are the simplest phones the smartest? While the rest of the world is updating statuses and playing games on smartphones, Africa is developing useful SMS-based solutions to everyday needs, says journalist Toby Shapshak. In this eye-opening talk, Shapshak explores the frontiers of mobile invention in Africa as he asks us to reconsider our preconceived notions of innovation. Think you know a thing or two about sex? Think again. In this fascinating talk, biologist Carin Bondar lays out the surprising science behind how animals get it on. (This talk describes explicit and aggressive sexual content.) Here's a TED first: an animated Socratic dialog! In a time when irrationality seems to rule both politics and culture, has reasoned thinking finally lost its power? Watch as psychologist Steven Pinker is gradually, brilliantly persuaded by philosopher Rebecca Newberger Goldstein that reason is actually the key driver of human moral progress, even if its effect sometimes takes generations to unfold. The dialog was recorded live at TED, and animated, in incredible, often hilarious, detail by Cognitive. Daniel Reisel studies the brains of criminal psychopaths (and mice). And he asks a big question: Instead of warehousing these criminals, shouldn't we be using what we know about the brain to help them rehabilitate? Put another way: If the brain can grow new neural pathways after an injury ... could we help the brain re-grow morality? Appearing by telepresence robot, Edward Snowden speaks at TED 2014 about surveillance and Internet freedom. The right to data privacy, he suggests, is not a partisan issue, but requires a fundamental rethink of the role of the internet in our lives -- and the laws that protect it. "Your rights matter," he says, "because you never know when you're going to need them." Chris Anderson interviews, with special guest Tim Berners-Lee. There's an astronaut saying: In space, "there is no problem so bad that you can't make it worse." So how do you deal with the complexity, the sheer pressure, of dealing with dangerous and scary situations? Retired colonel Chris Hadfield paints a vivid portrait of how to be prepared for the worst in space (and life) -- and it starts with walking into a spider's web. Watch for a special space-y performance. Anonymous

companies that corrupt individuals from notorious drug cartel leaders to nefarious arms dealers – behind a shroud of mystery that makes it almost impossible to find and hold them responsible. But anti-corruption activist Charmian Gooch hopes to change all that. At TED2014, she shares her brave TED Prize wish: to know who owns and controls companies, to change the law, and to launch a new era of openness in business. After a surprise appearance by Edward Snowden at TED2014, Chris Anderson said: "If the NSA wants to respond, please do." And yes, they did. Appearing by video, NSA deputy director Richard Ledgett answers Anderson's questions about the balance between security and protecting privacy. Onstage at TED2014, Charlie Rose interviews Google CEO Larry Page about his far-off vision for the company. It includes aerial bikeways and internet balloons ... and then it gets even more interesting, as Page talks through the company's recent acquisition of Deep Mind, an AI that is learning some surprising things. Pakistani educator Ziauddin Yousafzai reminds the world of a simple truth that many don't want to hear: Women and men deserve equal opportunities for education, autonomy, an independent identity. He tells stories from his own life and the life of his daughter, Malala, who was shot by the Taliban in 2012 simply for daring to go to school. "Why is my daughter so strong?" Yousafzai asks. "Because I didn't clip her wings." When Bran Ferren was just 9, his parents took him to see the Pantheon in Rome – and it changed everything. In that moment, he began to understand how the tools of science and engineering become more powerful when combined with art, with design and beauty. Ever since, he's been searching for a convincing modern-day equivalent to Rome's masterpiece. Stay tuned to the end of the talk for his unexpected suggestion. In this fascinating, hilarious and ever-so-slightly creepy talk, science writer Ed Yong tells the story of his favorite parasites -- animals and organisms that live on the bodies (and brains!) of other organisms, causing them to do their bidding. Do humans have them too? Maybe ... Del Harvey heads up Twitter's Trust and Safety Team, and she thinks all day about how to prevent worst-case scenarios -- abuse, trolling, stalking -- while giving voice to people around the globe. With deadpan humor, she offers a window into how she works to keep 240 million users safe. Hugh Herr is building the next generation of bionic limbs, robotic prosthetics inspired by nature's own designs. Herr lost both legs in a climbing accident 30 years ago; now, as the head of the MIT Media Lab's Biomechatronics group, he shows his incredible technology in a talk that's both technical and deeply personal – with the help of ballroom dancer Adrianne Haslet-Davis, who lost her left leg in the 2013 Boston Marathon bombing, and performs again for the first time on the TED stage. When fashion model Geena Rocero first saw a photo of herself in a bikini, "I thought ... you have arrived!" As she reveals, that's because she was born with the gender assignment "boy." In this moving talk, Rocero tells the story of becoming who she always knew she was. Do you have a TED Talk inside, just bursting to come out? Take this tongue-in-cheek musical journey to "Give Your Talk." A musical love letter to our speakers -- written, directed and performed by the TED staff. On March 17, 2014, a group of physicists announced a thrilling discovery: the "smoking gun" data for the idea of an inflationary universe, a clue to the Big Bang. For non-physicists, what does it mean? TED asked Allan Adams to briefly explain the results, in this improvised talk illustrated by Randall Munroe of xkcd. In 1993, Bill and Melinda Gates took a walk on the beach and made a big decision: to give their Microsoft wealth back to society. In conversation with Chris Anderson, the couple talks about their work at the Bill & Melinda Gates Foundation, as well as their marriage, their children, their failures and the satisfaction of giving most of their money away. Do you like curly fries? Have you Liked them on Facebook? Watch this talk to find out the surprising things Facebook (and others) can guess about you from your random Likes and Shares. Computer scientist Jennifer Golbeck explains how this came about, how some applications of the technology are not so cute -- and why she thinks we should return the control of information to its rightful owners. Seven years ago, Internet activist Aaron Swartz convinced Lawrence Lessig to take up the fight for political reform. A year after Swartz's tragic death, Lessig continues his campaign to free US politics from the stranglehold of corruption. In this fiery, deeply personal talk, he calls for all citizens to engage, and offers a heartfelt reminder to never give up hope. More than 8 million people are crowded together to live in New York City. What makes it possible? In part, it's the city's great public spaces – from tiny pocket parks to long waterfront promenades – where people can stroll and play. Amanda Burden helped plan some of the city's newest public spaces, drawing on her experience as, surprisingly, an animal behaviorist. She shares the unexpected challenges of planning parks people love -- and why it's important. What do rap shows, barbershop bunter and Sunday services have in common? As Christopher Emdin says, they all hold the secret magic to enthrall and teach at the same time – and it's a skill we often don't teach to educators. A longtime teacher himself, now a science advocate and cofounder of ScienceGenius B.A.T.T.L.E.S. with the GZA of the Wu-Tang Clan, Emdin offers a vision to make the classroom come alive. We live in a world of unseeable beauty, so subtle and deli

light, filmmaker Louie Schwartzberg bends the boundaries of time and space with high-speed cameras, time lapses and microscopes. At TED2014, he shares highlights from his latest project, a 3D film titled "Mysteries of the Unseen World," which slows down, speeds up, and magnifies the astonishing wonders of nature. What drove David Senge to create a more comfortable prosthetic limb? He grew up in Sierra Leone, and too many of the people he loves are missing limbs after the brutal civil war there. When he noticed that people who had prosthetics weren't actually wearing them, the TED Fellow set out to discover why -- and to solve the problem with his team from the MIT Media Lab. On January 8, 2011, Congresswoman Gabby Giffords was shot in the head while meeting constituents in her hometown of Tucson, Arizona. Her husband, the astronaut Mark Kelly, immediately flew to be by her side. In this emotional conversation with Pat Mitchell, the pair describe their lives both before and after the accident -- and describe their views on responsible gun ownership. Within each of us are two selves, suggests David Brooks in this meditative short talk: the self who craves success, who builds a résumé, and the self who seeks connection, community, love -- the values that make for a great eulogy. (Joseph Soloveitchik has called these selves "Adam I" and "Adam II.") Brooks asks: Can we balance these two selves? The parenting section of the bookstore is overwhelming--it's "a giant, candy-colored monument to our collective panic," as writer Jennifer Senior puts it. Why is parenthood filled with so much anxiety? Because the goal of modern, middle-class parents--to raise happy children--is so elusive. In this honest talk, she offers some kinder and more achievable aims. Puberty is an awkward time for just about everybody, but for transgender teens it can be a nightmare, as they grow overnight into bodies they aren't comfortable with. In a heartfelt talk, Norman Spack tells a personal story of how he became one of the few doctors in the US to treat minors with hormone replacement therapy. By staving off the effects of puberty, Spack gives trans teens the time they need. Astronomers believe that every star in the galaxy has a planet, one fifth of which might harbor life. Only we haven't seen any of them -- yet. Jeremy Kasdin and his team are looking to change that with the design and engineering of an extraordinary piece of equipment: a flower petal-shaped "starshade" positioned 50,000 km from a telescope to enable imaging of planets about distant stars. It is, he says, the "coolest possible science." Pick up a book, magazine or screen, and more than likely you'll come across some typography designed by Matthew Carter. In this charming talk, the man behind typefaces such as Verdana, Georgia and Bell Centennial (designed just for phone books -- remember them?), takes us on a spin through a career focused on the very last pixel of each letter of a font. At her first museum job, art historian Sarah Lewis noticed something important about an artist she was studying: Not every artwork was a total masterpiece. She asks us to consider the role of the almost-failure, the near win, in our own lives. In our pursuit of success and mastery, is it actually our near wins that push us forward? Our energy future depends on nuclear fusion, says Michel Laberge. The plasma physicist runs a small company with a big idea for a new type of nuclear reactor that could produce clean, cheap energy. His secret recipe? High speeds, scorching temperatures and crushing pressure. In this hopeful talk, he explains how nuclear fusion might be just around the corner. Hamish Jolly, an ocean swimmer in Australia, wanted a wetsuit that would deter a curious shark from mistaking him for a potential source of nourishment. (Which, statistically, is rare, but certainly a fate worth avoiding.) Working with a team of scientists, he and his friends came up with a fresh approach -- not a shark cage, not a suit of chain-mail, but a sleek suit that taps our growing understanding of shark vision. "The computer is an incredibly powerful means of creative expression," says designer and TED Fellow James Patten. But right now, we interact with computers, mainly, by typing and tapping. In this nifty talk and demo, Patten imagines a more visceral, physical way to bring your thoughts and ideas to life in the digital world, taking the computer interface off the screen and putting it into your hands. Elizabeth Gilbert was once an "unpublished diner waitress," devastated by rejection letters. And yet, in the wake of the success of "Eat, Pray, Love," she found herself identifying strongly with her former self. With beautiful insight, Gilbert reflects on why success can be as disorienting as failure and offers a simple -- though hard -- way to carry on, regardless of outcomes. In this factual talk, geneticist Wendy Chung shares what we know about autism spectrum disorder -- for example, that autism has multiple, perhaps interlocking, causes. Looking beyond the worry and concern that can surround a diagnosis, Chung and her team look at what we've learned through studies, treatments and careful listening. When you look at sporting achievements over the last decades, it seems like humans have gotten faster, better and stronger in nearly every way. Yet as David Epstein points out in this delightfully counter-intuitive talk, we might want to lay off the self-congratulation. Many factors are at play in shattering athletic records, and the development of our natural talents is just one of them. Thirty-nine million people in the world are blind, and the majority lost their sight due to curable

and preventable diseases. But how do you test and treat people who live in remote areas, where expensive, bulky eye equipment is hard to come by? TED Fellow Andrew Bastawros demos a smartphone app and cheap hardware that might help. You can't understand climate change in pieces, says climate scientist Gavin Schmidt. It's the whole, or it's nothing. In this illuminating talk, he explains how he studies the big picture of climate change with mesmerizing models that illustrate the endlessly complex interactions of small-scale environmental events. Sarah Jones changes personas with the simplest of wardrobe swaps. In a laugh-out-loud improvisation, she invites 11 "friends" from the future on stage—from a fast-talking Latina to an outspoken police officer—to ask them questions supplied by the TED2014 audience.

The subject of race can be very touchy. As finance executive Mellody Hobson says, it's a "conversational third rail." But, she says, that's exactly why we need to start talking about it. In this engaging, persuasive talk, Hobson makes the case that speaking openly about race — and particularly about diversity in hiring -- makes for better businesses and a better society. Marco Tempest uses charming stagecraft to demo EDI, the multi-purpose robot designed to work very closely with humans. Less a magic trick than an intricately choreographed performance, Tempest shows off the robot's sensing technology, safety features and strength, and makes the case for a closer human-robot relationship. (Okay, there's a little magic, too.)

When General Stanley McChrystal started fighting al Qaeda in 2003, information and secrets were the lifeblood of his operations. But as the unconventional battle waged on, he began to think that the culture of keeping important information classified was misguided and actually counterproductive. In a short but powerful talk McChrystal makes the case for actively sharing knowledge. Web cartoonist Randall Munroe answers simple what-if questions ("what if you hit a baseball moving at the speed of light?") using math, physics, logic and deadpan humor. In this charming talk, a reader's question about Google's data warehouse leads Munroe down a circuitous path to a hilariously over-detailed answer — in which, shhh, you might actually learn something. Sampling isn't about "hijacking nostalgia wholesale," says Mark Ronson. It's about inserting yourself into the narrative of a song while also pushing that story forward. In this mind-blowingly original talk, watch the DJ scramble 15 TED Talks into an audio-visual omelette, and trace the evolution of "La Di Da Di," Doug E. Fresh and Slick Rick's 1984 hit that has been reimagined for every generation since. William Black is a former bank regulator who's seen firsthand how banking systems can be used to commit fraud — and how "liar's loans" and other tricky tactics led to the 2008 US banking crisis that threatened the international economy. In this engaging talk, Black, now an academic, reveals the best way to rob a bank — from the inside. Ecologist Deborah Gordon studies ants wherever she can find them -- in the desert, in the tropics, in her kitchen ... In this fascinating talk, she explains her obsession with insects most of us would happily swat away without a second thought. She argues that ant life provides a useful model for learning about many other topics, including disease, technology and the human brain. For many years Sergeant Kevin Briggs had a dark, unusual, at times strangely rewarding job: He patrolled the southern end of San Francisco's Golden Gate Bridge, a popular site for suicide attempts. In a sobering, deeply personal talk Briggs shares stories from those he's spoken — and listened — to standing on the edge of life. He gives a powerful piece of advice to those with loved ones who might be contemplating suicide. Do our smells make us sexy? Popular science suggests yes — pheromones send chemical signals about sex and attraction from our armpits to potential mates. But, despite what you might have heard, there is no conclusive research confirming that humans have these smell molecules. In this eye-opening talk, zoologist Tristram Wyatt explains the fundamental flaws in current pheromone research, and shares his hope for a future that unlocks the fascinating, potentially life-saving knowledge tied up in our scent. Beware: Rives has a contagious obsession with 4 a.m. At TED2007, the poet shared what was then a minor fixation with a time that kept popping up everywhere. After the talk, emails starting pouring in with an avalanche of hilarious references—from the cover of "Crockett Today!" magazine to the opening scene of "The Metamorphosis." A lyrical peek into his Museum of Four in the Morning, which overflows with treasures. What makes a great leader? Management theorist Simon Sinek suggests, it's someone who makes their employees feel secure, who draws staffers into a circle of trust. But creating trust and safety — especially in an uneven economy — means taking on big responsibility. What's a marine biologist doing talking about world hunger? Well, says Jackie Savitz, fixing the world's oceans might just help to feed the planet's billion hungriest people. In an eye-opening talk, Savitz tells us what's really going on in our global fisheries right now — it's not good — and offers smart suggestions of how we can help them heal, while making more food for all. Writer Andrew Solomon has spent his career telling stories of the hardships of others. Now he turns inward, bringing us into a childhood of adversity, while also spinning tales of the courageous people he's met in the years since. In a moving, heartfelt and at times downright funny talk, Solomon gives a powerful call to action to forge me

from struggling to look to the future of sports and think about how technology will help not just players and coaches, but fans. Here the former NFL punter envisions a future in which augmented reality will help people experience sports as if they are directly on the field -- and maybe even help them see others in a new light, too. Wes Moore joined the US Army to pay for college, but the experience became core to who he is. In this heartfelt talk, the paratrooper and captain—who went on to write "The Other Wes Moore"—explains the shock of returning home from Afghanistan. He shares the single phrase he heard from civilians on repeat, and shows why it's just not sufficient. It's a call for all of us to ask veterans to tell their stories -- and listen. Civilians don't miss war. But soldiers often do. Journalist Sebastian Junger shares his experience embedded with American soldiers at Restrepo, an outpost in Afghanistan's Korengal Valley that saw heavy combat. Giving a look at the "altered state of mind" that comes with war, he shows how combat gives soldiers an intense experience of connection. In the end, could it actually be "the opposite of war" that soldiers miss?

In 1902, President Theodore Roosevelt legendarily spared the life of a black bear -- and prompted a plush toy craze for so-called "teddy bears." Writer Jon Mooallem digs into this toy story and asks us to consider how the tales we tell about wild animals have real consequences for a species' chance of survival -- and the natural world at large. As a young girl, photojournalist and TED Fellow Kitra Cahana dreamed about running away from home to live freely on the road. Now as an adult and self-proclaimed vagabond, she follows modern nomads into their homes -- boxcars, bus stops, parking lots, rest stop bathrooms -- giving a glimpse into a culture on the margins. What can we learn from people with the genetics to get sick -- who don't? With most inherited diseases, only some family members will develop the disease, while others who carry the same genetic risks dodge it. Stephen Friend suggests we start studying those family members who stay healthy.

Hear about the Resilience Project, a massive effort to collect genetic materials that may help decode inherited disorders. Sting's early life was dominated by a shipyard--and he dreamed of nothing more than escaping the industrial drudgery. But after a nasty bout of writer's block that stretched on for years, Sting found himself channeling the stories of the shipyard workers he knew in his youth for song material. In a lyrical, confessional talk, Sting treats us to songs from his upcoming musical, and to an encore of "Message in a Bottle." Two hundred million years ago, our mammal ancestors developed a new brain feature: the neocortex. This stamp-sized piece of tissue (wrapped around a brain the size of a walnut) is the key to what humanity has become. Now, futurist Ray Kurzweil suggests, we should get ready for the next big leap in brain power, as we tap into the computing power in the cloud. "Human beings are works in progress that mistakenly think they're finished." Dan Gilbert shares recent research on a phenomenon he calls the "end of history illusion," where we somehow imagine that the person we are right now is the person we'll be for the rest of time. Hint: that's not the case. "We're all going to die -- and poems can help us live with that." In a charming and funny talk, literary critic Stephen Burt takes us on a lyrical journey with some of his favorite poets, all the way down to a line break and back up to the human urge to imagine. How can robots learn to stabilize on rough terrain, walk upside down, do gymnastic maneuvers in air and run into walls without harming themselves? Robert Full takes a look at the incredible body of the cockroach to show what it can teach robotics engineers. As a member of both the African American and LGBT communities, filmmaker Yoruba Richen is fascinated with the overlaps and tensions between the gay rights and the civil rights movements. She explores how the two struggles intertwine and propel each other forward -- and, in an unmissable argument, she dispels a myth about their points of conflict. A powerful reminder that we all have a stake in equality. Stella Young is a comedian and journalist who happens to go about her day in a wheelchair -- a fact that doesn't, she'd like to make clear, automatically turn her into a noble inspiration to all humanity. In this very funny talk, Young breaks down society's habit of turning disabled people into "inspiration porn." The beauty of hackers, says cybersecurity expert Keren Elazari, is that they force us to evolve and improve. Yes, some hackers are bad guys, but many are working to fight government corruption and advocate for our rights. By exposing vulnerabilities, they push the Internet to become stronger and healthier, wielding their power to create a better world. In 2002, investigative journalist and TED Fellow Will Potter took a break from his regular beat, writing about shootings and murders for the Chicago Tribune. He went to help a local group campaigning against animal testing: "I thought it would be a safe way to do something positive," he says. Instead, he was arrested, and so began his ongoing journey into a world in which peaceful protest is branded as terrorism. While studying for his PhD in physics, Uri Alon thought he was a failure because all his research paths led to dead ends. But, with the help of improv theater, he came to realize that there could be joy in getting lost. A call for scientists to stop thinking of research as a direct line from question to answer, but as something more creative. It's a message that will resonate

ne, no matter what you may not know it yet, but AJ Jacobs is probably your cousin (many, many times removed). Using genealogy websites, he's been following the unexpected links that make us all, however distantly, related. His goal: to throw the world's largest family reunion. See you there? Plenty of good things are done in the name of religion, and plenty of bad things too. But what is religion, exactly — is it good or bad, in and of itself? Philosopher Kwame Anthony Appiah offers a generous, surprising view. One could argue that slang words like 'hangry,' 'defriend' and 'adorkable' fill crucial meaning gaps in the English language, even if they don't appear in the dictionary. After all, who actually decides which words make it into those pages? Language historian

Anne Curzan gives a charming look at the humans behind dictionaries, and the choices they make. Here's a talk that could literally change your life. Which career should I pursue? Should I break up -- or get married?! Where should I live? Big decisions like these can be agonizingly difficult. But that's because we think about them the wrong way, says philosopher Ruth Chang. She offers a powerful new framework for shaping who we truly are. Jamila Lyiscott is a "tri-tongued orator;" in her powerful spoken-word essay "Broken English," she celebrates — and challenges — the three distinct flavors of English she speaks with her friends, in the classroom and with her parents. As she explores the complicated history and present-day identity that each language represents, she unpacks what it means to be "articulate." What must our dogs be thinking when they look at us? Poet

Billy Collins imagines the inner lives of two very different companions. It's a charming short talk, perfect for taking a break and dreaming ... In 1991, Shaka Senghor shot and killed a man. He was, he says, "a drug dealer with a quick temper and a semi-automatic pistol." Jailed for second degree murder, that could very well have been the end of the story. But it wasn't. Instead, it was the beginning of a years-long journey to redemption, one with humbling and sobering lessons for us all. Lorrie Faith Cranor studied thousands of real passwords to figure out the surprising, very common mistakes that users -- and secured sites -- make to compromise security. And how, you may ask, did she study thousands of real passwords without compromising the security of any users? That's a story in itself. It's secret data worth knowing, especially if your password is 123456 ...

Many of the world's biggest problems require asking questions of scientists -- but why should we believe what they say? Historian of science Naomi Oreskes thinks deeply about our relationship to belief and draws out three problems with common attitudes toward scientific inquiry -- and gives her own reasoning for why we ought to trust science. George Wang makes computer music, but it isn't all about coded bleeps and blips. With the Stanford Laptop Orchestra, he creates new instruments out of unexpected materials—like an Ikea bowl—that allow musicians to play music that's both beautiful and expressive. Have you ever felt like you're talking, but nobody is listening? Here's Julian Treasure to help. In this useful talk, the sound expert demonstrates the how-to's of powerful speaking — from some handy vocal exercises to tips on how to speak with empathy. A talk that might help the world sound more beautiful. Chris Domas is a cybersecurity researcher, operating on what's become a new front of war, "cyber." In this engaging talk, he shows how researchers use pattern recognition and reverse engineering (and pull a few all-nighters) to understand a chunk of binary code whose purpose and contents they don't know. Biologist Sara Lewis has spent the past 20 years getting to the bottom of the magic and wonder of fireflies. In this charming talk, she tells us how and why the beetles produce their silent sparks, what happens when two fireflies have sex, and why one group of females is known as the firefly vampire. (It's not pretty.) Find out more astonishing facts about fireflies in Lewis' footnotes, below. It's an unexpected side effect of globalization: problems that once would have stayed local—say, a bank lending out too much money—now have consequences worldwide. But still, countries operate independently, as if alone on the planet. Policy advisor Simon Anholt has dreamed up an unusual scale to get governments thinking outwardly: The Good Country Index. In a riveting and funny talk, he answers the question, "Which country does the most good?" The answer may surprise you (especially if you live in the US or China).

We often think of bias and prejudice as rooted in ignorance. But as psychologist Paul Bloom seeks to show, prejudice is often natural, rational ... even moral. The key, says Bloom, is to understand how our own biases work -- so we can take control when they go wrong. When he was a child, George Takei and his family were forced into an internment camp for Japanese-Americans, as a "security" measure during World War II. 70 years later, Takei looks back at how the camp shaped his surprising, personal definition of patriotism and democracy. "Remember before the internet?" asks Joi Ito. "Remember when people used to try to predict the future?" In this engaging talk, the head of the MIT Media Lab skips the future predictions and instead shares a new approach to creating in the moment: building quickly and improving constantly, without waiting for permission or for proof that you have the right idea. This kind of bottom-up innovation is seen in the most fascinating, futuristic projects emerging today, and it starts, he says, with being open and alert to what's going on around you right now.

Don't be a futurist, be a now-ist. MIT Media Lab founder Nicholas Negroponte takes you on a journey through the last 30 years of tech. The consummate predictor highlights interfaces and innovations he foresaw in the 1970s and 1980s that were scoffed at then but are ubiquitous today. And he leaves you with one last (absurd? brilliant?) prediction for the coming 30 years. We face an endless string of choices, which lead us to feel anxiety, guilt and pangs of inadequacy that we are perhaps making the wrong ones. But philosopher Renata Salecl asks: Could individual choices be distracting us from something bigger—our power as social thinkers? A bold call for us to stop taking personal choice so seriously and focus on the choices we're making collectively. Karima Benounne shares four powerful stories of real people fighting against fundamentalism in their own communities — refusing to allow the faith they love to become a tool for crime, attacks and murder. These personal stories humanize one of the most overlooked human-rights struggles in the world. David Kwong is a magician who makes crossword puzzles -- in other words, a pretty nerdy guy. And for his next trick ... Our consciousness is a fundamental aspect of our existence, says philosopher David Chalmers: "There's nothing we know about more directly... but at the same time it's the most mysterious phenomenon in the universe." He shares some ways to think about the movie playing in our heads. Surgeons are required every day to puncture human skin before procedures — with the risk of damaging what's on the other side. In a fascinating talk, find out how mechanical engineer Nikolai Begg is using physics to update an important medical device, called the trocar, and improve one of the most dangerous moments in many common surgeries. When he was young, artist Shih Chieh Huang loved taking toys apart and perusing the aisles of night markets in Taiwan for unexpected objects. Today, this TED Fellow creates madcap sculptures that seem to have a life of their own—with eyes that blink, tentacles that unfurl and parts that light up like bioluminescent sea creatures. Inspired by biological design and self-organizing systems, artist Heather Barnett co-creates with *Physarum polycephalum*, a eukaryotic microorganism that lives in cool, moist areas. What can people learn from the semi-intelligent slime mold? Watch this talk to find out. Have you ever wondered: Am I a human being? Ze Frank suggests a series of simple questions that will determine this. Please relax and follow the prompts. Let's begin ... At the online University of the People, anyone with a high school diploma can take classes toward a degree in business administration or computer science — without standard tuition fees (though exams cost money). Founder Shai Reshef hopes that higher education is changing "from being a privilege for the few to a basic right, affordable and accessible for all." Facebook's "like" and "share" buttons are seen 22 billion times a day, making them some of the most-viewed design elements ever created. Margaret Gould Stewart, Facebook's director of product design, outlines three rules for design at such a massive scale—one so big that the tiniest of tweaks can cause global outrage, but also so large that the subtlest of improvements can positively impact the lives of many. Tour the deep dark world of the East German state security agency known as Stasi. Uniquely powerful at spying on its citizens, until the fall of the Berlin Wall in 1989 the Stasi masterminded a system of surveillance and psychological pressure that kept the country under control for decades. Hubertus Knabe studies the Stasi — and was spied on by them. He shares stunning details from the fall of a surveillance state, and shows how easy it was for neighbor to turn on neighbor. 3D animation can bring scientific hypotheses to life. Molecular biologist (and TED Fellow) Janet Iwasa introduces a new open-source animation software designed just for scientists. Megan Washington is one of Australia's premier singer/songwriters. And, since childhood, she has had a stutter. In this bold and personal talk, she reveals how she copes with this speech impediment—from avoiding the letter combination "st" to tricking her brain by changing her words at the last minute to, yes, singing the things she has to say rather than speaking them.

The new breed of high-tech self-monitors (measuring heart rate, sleep, steps per day) might seem targeted at competitive athletes. But Talithia Williams, a statistician, makes a compelling case that all of us should be measuring and recording simple data about our bodies every day — because our own data can reveal much more than even our doctors may know. Nick Hanauer is a rich guy, an unrepentant capitalist — and he has something to say to his fellow plutocrats: Wake up! Growing inequality is about to push our societies into conditions resembling pre-revolutionary France. Hear his argument about why a dramatic increase in minimum wage could grow the middle class, deliver economic prosperity ... and prevent a revolution. In the United States, the agencies that govern prisons are often called 'Department of Corrections.' And yet, their focus is on containing and controlling inmates. Dan Pacholke, Deputy Secretary for the Washington State Department of Corrections, shares a different vision: of prisons that provide humane living conditions as well as opportunities for meaningful work and learning. Far too many Americans are illiterate in power — what it is, how it operates and why some people have it. As a result, those few who do understand power wield disproportionate influence over everyone else. "We need to make civics sexy again," says civics educator Eric

Liu. "As sexy as it was during the American Revolution or the Civil Rights Movement."

"We spend so much time listening to the things people are saying that we rarely pay attention to the things they don't," says poet and teacher Clint Smith. A short, powerful piece from the heart, about finding the courage to speak up against ignorance and injustice. Sir Tim Berners-Lee invented the World Wide Web 25 years ago. So it's worth a listen when he warns us: There's a battle ahead. Eroding net neutrality, filter bubbles and centralizing corporate control all threaten the web's wide-open spaces. It's up to users to fight for the right to access and openness. The question is, What kind of Internet do we want? The Fez River winds through the medina of Fez, Morocco—a mazelike medieval city that's a World Heritage site. Once considered the "soul" of this celebrated city, the river succumbed to sewage and pollution, and in the 1950s was covered over bit by bit until nothing remained. TED Fellow Aziza Chaoui recounts her 20 year effort to restore this river to its former glory, and to transform her city in the process. Children's book author Jarrett Krosoczka shares the origins of the Lunch Lady graphic novel series, in which undercover school heroes serve lunch...and justice! His new project, School Lunch Hero Day, reveals how cafeteria lunch staff provide more than food, and illustrates how powerful a thank you can be. Behind those funny animal videos, sometimes, are oddly human-like problems. Laurel Braitman studies non-human animals who exhibit signs of mental health issues -- from compulsive bears to self-destructive rats to monkeys with unlikely friends. Braitman asks what we as humans can learn from watching animals cope with depression, sadness and other all-too-human problems. Ziyah Gafic photographs everyday objects—watches, shoes, glasses. But these images are deceptively simple; the items in them have been exhumed from the mass graves of the Bosnian War. Gafic, a TED Fellow and Sarajevo native, is photographing every item from these graves in order to create a living archive of the identities of those lost. A post-apocalyptic Earth, emptied of humans, seems like the stuff of science fiction TV and movies. But in this short, surprising talk, Lord Martin Rees asks us to think about our real existential risks — natural and human-made threats that could wipe out humanity. As a concerned member of the human race, he asks: What's the worst thing that could possibly happen? Across sub-Saharan Africa, small farmers are the bedrock of national and regional economies—unless the weather proves unpredictable and their crops fail. The solution is insurance, at a vast, continental scale, and at a very low, affordable cost. Rose Goslinga and the Syngenta Foundation for Sustainable Agriculture pioneered an unconventional way to give farmers whose crops fail early a second chance at a growing season. This talk begins with a personal story of sexual violence that may be difficult to listen to. But that's the point, says citizen journalist Meera Vijayann: Speaking out on tough, taboo topics is the spark for change. Vijayann uses digital media to speak honestly about her experience of gender violence in her home country of India -- and calls on others to speak out too. Doesn't it seem like a lot of online news sites have moved beyond reporting the news to openly inciting your outrage (and your page views)? News analyst Sally Kohn suggests — don't engage with news that looks like it just wants to make you mad. Instead, give your precious clicks to the news sites you truly trust. Which of the following is awesome: your lunch or the Great Pyramid of Giza? Comedian Jill Shargaa sounds a hilarious call for us to save the word "awesome" for things that truly inspire awe. Why is there something instead of nothing? In other words: Why does the universe exist (and why are we in it)? Philosopher and writer Jim Holt follows this question toward three possible answers. Or four. Or none. Author Isabel Allende is 71. Yes, she has a few wrinkles—but she has incredible perspective too. In this candid talk, meant for viewers of all ages, she talks about her fears as she gets older and shares how she plans to keep on living passionately. A forest planted by humans, then left to nature's own devices, typically takes at least 100 years to mature. But what if we could make the process happen ten times faster? In this short talk, eco-entrepreneur (and TED Fellow) Shubendu Sharma explains how to create a mini-forest ecosystem anywhere. Colin Grant has spent a lifetime navigating the emotional landscape between his father's world and his own. Born in England to Jamaican parents, Grant draws on stories of shared experience within his immigrant community -- and reflects on how he found forgiveness for a father who rejected him. If you're raised on dogma and hate, can you choose a different path? Zak Ebrahim was just seven years old when his father helped plan the 1993 World Trade Center bombing. His story is shocking, powerful and, ultimately, inspiring. Dan Barasch and James Ramsey have a crazy plan — to create a park, filled with greenery, underneath New York City. The two are developing the Lowline, an underground greenspace the size of a football field. They're building it in a trolley terminal abandoned in 1948, using technology that harvests sunlight above-ground and directs it down below. It's a park that can thrive, even in winter. How much do you know about the world? Hans Rosling, with his famous charts of global population, health and income data (and an extra-extra-long pointer), demonstrates that you have a high statistical chance of being quite wrong about what you think you know.



now. Play along with his audience quiz—then, son Orla, learn 8 ways to quickly get less ignorant. Artist Uldus Bakhtiozina uses photographs to poke fun at societal norms in her native Russia. A glimpse into Russian youth culture and a short, fun reminder not to take ourselves too seriously. Rishi Manchanda has worked as a doctor in South Central Los Angeles for a decade, where he's come to realize: His job isn't just about treating a patient's symptoms, but about getting to the root cause of what is making them ill—the "upstream" factors like a poor diet, a stressful job, a lack of fresh air. It's a powerful call for doctors to pay attention to a patient's life outside the exam room. Big Data is everywhere — even the skies. In an informative talk, astronomer Andrew Connolly shows how large amounts of data are being collected about our universe, recording it in its ever-changing moods. Just how do scientists capture so many images at scale? It starts with a giant telescope ... Childhood is surreal. Why shouldn't children's books be? In this whimsical talk, award-winning author Mac Barnett speaks about writing that escapes the page, art as a doorway to wonder -- and what real kids say to a fictional whale. Just like his beloved grandfather, Avi Reichental is a maker of things. The difference is, now he can use 3D printers to make almost anything, out of almost any material. Reichental tours us through the possibilities of 3D printing, for everything from printed candy to highly custom sneakers. The Amazon River is like a heart, pumping water from the seas through it, and up into the atmosphere through 600 billion trees, which act like lungs. Clouds form, rain falls and the forest thrives. In a lyrical talk, Antonio Donato Nobre talks us through the interconnected systems of this region, and how they provide environmental services to the entire world. A parable for the extraordinary symphony that is nature. How can we begin to address the global, insidious problem of climate change — a problem that's too big for any one country to solve? Economist Nicholas Stern lays out a plan, presented to the UN's Climate Summit in 2014, showing how the world's countries can work together on climate. It's a big vision for cooperation, with a payoff that goes far beyond averting disaster. He asks: How can we use this crisis to spur better lives for all? Self-driving cars were just the start. What's the future of big data-driven technology and design? In a thrilling science talk, Kenneth Cukier looks at what's next for machine learning -- and human knowledge. Eman Mohammed is one of the few female photojournalists in the Gaza Strip. Though openly shunned by many of her male colleagues, she is given unprecedented access to areas denied to men. In this short, visual talk, the TED Fellow critiques gender norms in her community by bringing light to hidden stories. Matthew O'Reilly is a veteran emergency medical technician on Long Island, New York. In this talk, O'Reilly describes what happens next when a gravely hurt patient asks him: "Am I going to die?" In 1967, Moshe Safdie reimaged the monolithic apartment building, creating "Habitat '67," which gave each unit an unprecedented sense of openness. Nearly 50 years later, he believes the need for this type of building is greater than ever. In this short talk, Safdie surveys a range of projects that do a way with the high-rise and let light permeate into densely-packed cities. Warning: This talk might contain much more than you'd ever want to know about the way the world poops. But as sanitation activist (and TED Fellow) Francis de los Reyes asks — doesn't everyone deserve a safe place to go? You're doing everything right at work, taking all the right advice, but you're just not moving up. Why? Susan Colantuono shares a simple, surprising piece of advice you might not have heard before quite so plainly. This talk, while aimed at an audience of women, has universal takeaways -- for men and women, new grads and midcareer workers. Big problems need big solutions, sparked by big ideas, imagination and audacity. In this talk, journalist Gail Reed profiles one big solution worth noting: Havana's Latin American Medical School, which trains global physicians to serve the local communities that need them most. Brain imaging pioneer Nancy Kanwisher, who uses fMRI scans to see activity in brain regions (often her own), shares what she and her colleagues have learned: The brain is made up of both highly specialized components and general-purpose "machinery." Another surprise: There's so much left to learn. Pianist Daria van den Bercken fell in love with the baroque keyboard music of George Frideric Handel. Now, she aims to ignite this passion in others. In this talk, she plays us through the emotional roller coaster of his music — while sailing with her piano through the air, driving it down the street, and of course playing on the stage. French economist Thomas Piketty caused a sensation in early 2014 with his book on a simple, brutal formula explaining economic inequality:  $r > g$  (meaning that return on capital is generally higher than economic growth). Here, he talks through the massive data set that led him to conclude: Economic inequality is not new, but it is getting worse, with radical possible impacts. About 10,000 people a month Google the phrase, "Am I ugly?" Meaghan Ramsey of the Dove Self-Esteem Project has a feeling that many of them are young girls. In a deeply unsettling talk, she walks us through the surprising impacts of low body and image confidence—from lower grade point averages to greater risk-taking with drugs and alcohol. And then shares the key things all of us can do to disrupt this reality. Pia Mancini and her co

leagues want to upgrade democracy in Argentina and beyond. Through their open-source mobile platform they want to bring citizens inside the legislative process, and run candidates who will listen to what they say. In 2013, international migrants sent \$413 billion home to families and friends – three times more than the total of global foreign aid (about \$135 billion). This money, known as remittances, makes a significant difference in the lives of those receiving it and plays a major role in the economies of many countries. Economist Dilip Ratha describes the promise of these “dollars wrapped with love” and analyzes how they are stifled by practical and regulatory obstacles. Glenn Greenwald was one of the first reporters to see -- and write about -- the Edward Snowden files, with their revelations about the United States’ extensive surveillance of private citizens. In this searing talk, Greenwald makes the case for why you need to care about privacy, even if you’re “not doing anything you need to hide.” The brain uses a quarter of the body’s entire energy supply, yet only accounts for about two percent of the body’s mass. So how does this unique organ receive and, perhaps more importantly, rid itself of vital nutrients? New research suggests it has to do with sleep. Myriam Sidibe is a warrior in the fight against childhood disease. Her weapon of choice? A bar of soap. For cost-effective prevention against sickness, it’s hard to beat soapy hand-washing, which cuts down risk of pneumonia, diarrhea, cholera and worse. Sidibe, a public-health expert, makes a smart case for public-private partnerships to promote clean hands – and local, sustainable entrepreneurship. Along with a crew of technologists and scientists, Jorge Soto is developing a simple, noninvasive, open-source test that looks for early signs of multiple forms of cancer. Onstage at TEDGlobal 2014, he demonstrates a working prototype of the mobile platform for the first time. Today’s refugee crisis is the biggest since World War II, and it’s growing. When this talk was given, 50 million people had been forcibly displaced from their homes by conflict and war; now the number is 65.3 million. There were 3 million Syrian refugees in 2014; now there are 4.9 million. Inside this overwhelming crisis are the individual human stories -- of care, growth and family, in the face of lost education, lost home, lost future. Melissa Fleming of the UN’s refugee agency tells the refugees’ stories -- and asks us to help them rebuild their world. In 2011 Ronnie Cahana suffered a severe stroke that left him with locked-in syndrome: completely paralyzed except for his eyes. While this might shatter a normal person’s mental state, Cahana found peace in “dimming down the external chatter,” and “fell in love with life and body anew.” In a somber, emotional talk, his daughter Kitra shares how she documented her father’s spiritual experience, as he helped guide others even in a state of seeming helplessness. Does a set of data make you feel more comfortable? More successful? Then your interpretation of it is likely wrong. In a surprisingly moving talk, Susan Etlinger explains why, as we receive more and more data, we need to deepen our critical thinking skills. Because it’s hard to move beyond counting things to really understanding them. Before he hit eighteen, Fred Swaniker had lived in Ghana, Gambia, Botswana and Zimbabwe. What he learned from a childhood across Africa was that while good leaders can’t make much of a difference in societies with strong institutions, in countries with weak structures, leaders could make or break a country. In a passionate talk the entrepreneur and TED Fellow looks at different generations of African leaders and imagines how to develop the leadership of the future. Technology allows us to give cash directly to the poorest people on the planet. Should we do it? In this thought-provoking talk, veteran aid worker Joy Sun explores two ways to help the poor. In 1963, Jacques Cousteau lived for 30 days in an underwater laboratory positioned on the floor of the Red Sea, and set a world record in the process. This summer, his grandson Fabien Cousteau broke that record. Cousteau the younger lived for 31 days aboard the Aquarius, an underwater research laboratory nine miles off the coast of Florida. In a charming talk he brings his wondrous adventure to life. As founder of the Ig Nobel awards, Marc Abrahams explores the world’s most improbable research. In this thought-provoking (and occasionally side-splitting) talk, he tells stories of truly weird science -- and makes the case that silliness is critical to boosting public interest in science. Every human deserves protection under their country’s laws – even when that law is forgotten or ignored. Sharing three cases from her international legal practice, Kimberley Motley, an American litigator practicing in Afghanistan and elsewhere, shows how a country’s own laws can bring both justice and “justice”: using the law for its intended purpose, to protect. Let’s admit it: aerial photo drones and UAVs are a little creepy, and they come with big regulatory and safety problems. But aerial photos can be a powerful way of telling the truth about the world: the size of a protest, the spread of an oil spill, the wildlife hidden in a delta. Sergei Lupashin demos Fotokite, a nifty new way to see the world from on high, safely and under control. Nature photographer Frans Lanting uses vibrant images to take us deep into the animal world. In this short, visual talk he calls for us to reconnect with other earthly creatures, and to shed the metaphorical skins that separate us from each other. Debra Jarvis had worked as a hospital chaplain for nearly 30 years when she was diagnosed with

h cancer. And she learned quite a bit about a patient. In a witty, daring talk, she explains how the identity of "cancer survivor" can feel static. She asks us all to claim our hardest experiences, while giving ourselves room to grow and evolve. We can see the power of distributed, crowd-sourced business models every day – witness Uber, Kickstarter, Airbnb. But veteran online activist Jeremy Heimans asks: When does that kind of "new power" start to work in politics? His surprising answer: Sooner than you think. It's a bold argument about the future of politics and power; watch and see if you agree. Too often, people feel checked out of politics – even at the level of their own city. But urban activist Alessandra Orofino thinks that can change, using a mix of tech and old-fashioned human connection. Sharing examples from her hometown of Rio, she says: "It is up to us to decide whether we want schools or parking lots, recycling projects or construction sites, cars or buses, loneliness or solidarity." In this intriguing talk, biologist Ameenah Gurib-Fakim introduces us to rare plant species from isolated islands and regions of Africa. Meet the shape-shifting benjoin; the baume de l'île plate, which might offer a new treatment for asthma; and the iconic baobab tree, which could hold the key to the future of food. Plus: monkey apples. We all want to use our talents to create something meaningful with our lives. But how to get started? (And ... what if you're shy?) Writer Kare Anderson shares her own story of chronic shyness, and how she opened up her world by helping other people use their own talents and passions. When asked to build housing for 100 families in Chile ten years ago, Alejandro Aravena looked to an unusual inspiration: the wisdom of favelas and slums. Rather than building a large building with small units, he built flexible half-homes that each family could expand on. It was a complex problem, but with a simple solution – one that he arrived at by working with the families themselves. With a chalkboard and beautiful images of his designs, Aravena walks us through three projects where clever rethinking led to beautiful design with great benefit. Artists Jeroen Koolhaas and Dre Urhahn create community art by painting entire neighborhoods, and involving those who live there -- from the favelas of Rio to the streets of North Philadelphia. What's made their projects succeed? In this funny and inspiring talk, the artists explain their art-first approach -- and the importance of a neighborhood barbecue. Antibiotic drugs save lives. But we simply use them too much – and often for non-lifesaving purposes, like treating the flu and even raising cheaper chickens. The result, says researcher Ramanan Laxminarayan, is that the drugs will stop working for everyone, as the bacteria they target grow more and more resistant. He calls on all of us (patients and doctors alike) to think of antibiotics -- and their ongoing effectiveness -- as a finite resource, and to think twice before we tap into it. It's a sobering look at how global medical trends can strike home. The term Gross Domestic Product is often talked about as if it were "handed down from god on tablets of stone." But this concept was invented by an economist in the 1930s. We need a more effective measurement tool to match 21st century needs, says Michael Green: the Social Progress Index. With charm and wit, he shows how this tool measures societies across the three dimensions that actually matter. And reveals the dramatic reordering of nations that occurs when you use it. Is the War on Drugs doing more harm than good? In a bold talk, drug policy reformist Ethan Nadelmann makes an impassioned plea to end the "backward, heartless, disastrous" movement to stamp out the drug trade. He gives two big reasons we should focus on intelligent regulation instead. Wouldn't you want to know if your doctor was a paid spokesman for a drug company? Or held personal beliefs incompatible with the treatment you want? Right now, in the US at least, your doctor simply doesn't have to tell you about that. And when physician Leana Wen asked her fellow doctors to open up, the reaction she got was ... unsettling. Vincent Moon travels the world with a backpack and a camera, filming astonishing music and ritual the world rarely sees -- from a powerful Sufi ritual in Chechnya to an ayahuasca journey in Peru. He hopes his films can help people see their own cultures in a new way, to make young people say: "Whoa, my grandfather is as cool as Beyoncé." Followed by a mesmerizing performance by jazz icon Naná Vasconcelos. An epidemic of bad, inefficient, overcrowded meetings is plaguing the world's businesses – and making workers miserable. David Grady has some ideas on how to stop it. Satellite imaging has revolutionized our knowledge of the Earth, with detailed images of nearly every street corner readily available online. But Planet Labs' Will Marshall says we can do better and go faster -- by getting smaller. He introduces his tiny satellites -- no bigger than 10 by 10 by 30 centimeters -- that, when launched in a cluster, provide high-res images of the entire planet, updated daily. Remember the Ice Bucket Challenge craze this summer? Meet the mom who started it all. When Nancy Frates's son Pete hurt his wrist in a baseball game, he got an unexpected diagnosis: it wasn't a broken bone, it was ALS, and there is no cure. In this inspiring talk, Nancy tells the story of what happened next. Forget stitches -- there's a better way to close wounds. In this talk, TED Fellow Joe Lan dolina talks about his invention -- a medical gel that can instantly stop traumatic bleeding without the need to apply pressure. (Contains medical images.) "People are so afraid

l," says 16-year-old Rosie King, who is bold, brash and autistic. She wants to know: Why is everyone so worried about being normal? She sounds a clarion call for every kid, parent, teacher and person to celebrate uniqueness. It's a soaring testament to the potential of human diversity. "The greatest and most endangered species in the Amazon rainforest is not the jaguar or the harpy eagle," says Mark Plotkin, "It's the isolated and uncontacted tribes." In an energetic and sobering talk, the ethnobotanist brings us into the world of the forest's indigenous tribes and the incredible medicinal plants that their shamans use to heal. He outlines the challenges and perils that are endangering them – and their wisdom – and urges us to protect this irreplaceable repository of knowledge.

Why do some people struggle more than others to keep off the pounds? Social psychologist Emily Balcetis shows research that addresses one of the many factors: our vision. In an informative talk, she shows how when it comes to fitness, some people quite literally see the world differently -- and offers a surprisingly simple solution to overcome these differences. The place that travel writer Pico Iyer would most like to go? Nowhere. In a counterintuitive and lyrical meditation, Iyer takes a look at the incredible insight that comes with taking time for stillness. In our world of constant movement and distraction, he teases out strategies we all can use to take back a few minutes out of every day, or a few days out of every season. It's the talk for anyone who feels overwhelmed by the demands for our world. To see is to believe, says Oren Yakobovich – which is why he helps everyday people use hidden cameras to film dangerous situations of violence, political fraud and abuse. His organization, Videre, uncovers, verifies and publicizes human-rights abuses that the world needs to witness. This year, explorer Ben Saunders attempted his most ambitious trek yet. He set out to complete Captain Robert Falcon Scott's failed 1912 polar expedition – a four-month, 1,800-mile round trip journey from the edge of Antarctica to the South Pole and back. In the first talk given after his adventure, just five weeks after his return, Saunders offers a raw, honest look at this "hubris"-tinged mission that brought him to the most difficult decision of his life. It sounds counterintuitive, but by 2030, many of the world's largest economies will have more jobs than adult citizens to do those jobs. In this data-filled -- and quite charming -- talk, human resources expert Rainer Strack suggests that countries ought to look across borders for mobile and willing job seekers. But to do that, they need to start by changing the culture in their businesses. What do you call a veterinarian who can only take care of one species? A physician. In a fascinating talk, Barbara Natterson-Horowitz shares how a species-spanning approach to health can improve medical care of the human animal -- particularly when it comes to mental health. Choreographer Aakash Odedra is dyslexic and has always felt that his best expression comes through movement. "Murmur" is his ode to that experience, teaming up with co-creators Lewis Major and Ars Electronica Futurelab. Watch him spin his way through the center of a storm, as pages of books take flight all around him. "In my lifetime, I have never lived one day of peace in my country," says Jose Miguel Sokoloff. This ad executive from Colombia saw a chance to help guerrilla fighters choose to come home -- with smart marketing. He shares how some creative, welcoming messages have helped thousands of guerrillas decide to put down their weapons -- and the key insights behind these surprising tactics. "Men fight wars, and women mourn them," says documentary photographer Anastasia Taylor-Lind. With stark, arresting images from the Maidan protests in Ukraine, the TED Fellow shows us intimate faces from the revolution. A grim and beautiful talk. You've heard about slow food. Now here's slow ... TV? In this very funny talk, Norwegian television producer Thomas Hellum shares how he and his team began to broadcast long, boring events, often live -- and found a rapt audience. Shows include a 7-hour train journey, an 18-hour fishing expedition and a 5.5-day ferry voyage along the coast of Norway. The results are both beautiful and fascinating. Really. A very unsexy-sounding piece of technology could mean that the police know where you go, with whom, and when: the automatic license plate reader. These cameras are innocuously placed all across small-town America to catch known criminals, but as lawyer and TED Fellow Catherine Crump shows, the data they collect in aggregate could have disastrous consequences for everyone the world over. Every city has its neighborhoods, cliques and clubs, the hidden lines that join and divide people in the same town. What can we learn about cities by looking at what people share online? Starting with his own home town of Baltimore, Dave Troy has been visualizing what the tweets of city dwellers reveal about who lives there, who they talk to – and who they don't. Our biases can be dangerous, even deadly – as we've seen in the cases of Michael Brown in Ferguson, Missouri, and Eric Garner, in Staten Island, New York. Diversity advocate Vernā Myers looks closely at some of the subconscious attitudes we hold toward out-groups. She makes a plea to all people: Acknowledge your biases. Then move toward, not away from, the groups that make you uncomfortable. In a funny, impassioned, important talk, she shows us how. What happens when we teach a computer how to learn? Technologist Jeremy Howard shares some surprising new developments.

lectments in the fast-moving field of deep learning, a technique that can give computers the ability to learn Chinese, or to recognize objects in photos, or to help think through a medical diagnosis. (One deep learning tool, after watching hours of YouTube, taught itself the concept of "cats.") Get caught up on a field that will change the way the computers around you behave ... sooner than you probably think. Carol Dweck researches "growth mindset" – the idea that we can grow our brain's capacity to learn and to solve problems. In this talk, she describes two ways to think about a problem that's slightly too hard for you to solve. Are you not smart enough to solve it ... or have you just not solved it yet? A great introduction to this influential field. In 2011, journalist Bruno Turra covered a protest in São Paulo which turned ugly. His experience of being teargassed had a profound effect on the way he thought about his work, and he quit his job to focus on broadcasting raw, unedited experiences online. In this fascinating talk, he shares some of the ways in which he's experimented with livestreaming on the web, and how in the process he has helped to create a very modern media network. In Brazil, "catadores" collect junk and recyclables. But while they provide a vital service that benefits all, they are nearly invisible as they roam the streets. Enter graffiti artist Mundano, a TED Fellow. In a spirited talk, he describes his project "Pimp My Carroça," which has transformed these heroic workers' carts into things of beauty and infused them with a sense of humor. It's a movement that is going global. In this fun, short talk from TEDYouth, lexicographer Erin McKean encourages – nay, cheerleads – her audience to create new words when the existing ones won't quite do. She lists out 6 ways to make new words in English, from compounding to "verbing," in order to make language better at expressing what we mean, and to create more ways for us to understand one another. Meet the "motion microscope," a video-processing tool that plays up tiny changes in motion and color impossible to see with the naked eye. Video researcher Michael Rubinstein plays us clip after jaw-dropping clip showing how this tech can track an individual's pulse and heartbeat simply from a piece of footage. Watch him re-create a conversation by amplifying the movements from sound waves bouncing off a bag of chips. The wow-inspiring and sinister applications of this tech you have to see to believe. Whales have a surprising and important job, says marine biologist Asha de Vos: these massive creatures are ecosystem engineers, keeping the oceans healthy and stable by ... well, by pooping, for a start. Learn from de Vos, a TED Fellow, about the undervalued work that whales do to help maintain the stability and health of our seas -- and our planet. Mapping apps help us find the fastest route to where we're going. But what if we'd rather wander? Researcher Daniele Querchia demos "happy maps" that take into account not only the route you want to take, but how you want to feel along the way. Aziz Abu Sarah is a Palestinian activist with an unusual approach to peace-keeping: Be a tourist. The TED Fellow shows how simple interactions with people in different cultures can erode decades of hate. He starts with Palestinians visiting Israelis and moves beyond ... In Guatemala's 36-year conflict, 200,000 civilians were killed – and more than 40,000 were never identified. At the Forensic Anthropology Foundation of Guatemala, Fredy Peccerelli and his team use DNA, archeology and storytelling to help families find the bodies of their loved ones. It's a sobering task, but it can bring peace of mind – and sometimes, justice. (Contains medical imagery.) "Save the rainforest" is an environmental slogan as old as time – but Tasso Azevedo catches us up on how the fight is actually going these days. Spurred by the jaw-dropping losses of the 1990s, new laws (and transparent data) are helping slow the rate of deforestation in Brazil. Is it enough? Not yet. He has five ideas about what we should do next. And he asks if the lessons learned in Brazil could be applied to an even bigger problem: global climate change. Navi Radjou has spent years studying "jugaad," also known as frugal innovation. Pioneered by entrepreneurs in emerging markets who figured out how to get spectacular value from limited resources, the practice has now caught on globally. Pepperin g his talk with a wealth of examples of human ingenuity at work, Radjou also shares three principles for how we can all do more with less. 2041 will be a pivotal year for our planet. That year will mark the end of a 50-year agreement to keep Antarctica, the Earth's last pristine continent, free of exploitation. Explorer Robert Swan – the first person to walk both the North and South Poles – is on a mission to ensure that we extend that treaty. With passion and vigor, he pleads with us to choose the preservation of the Antarctic for our own survival. Worldwide, violence is on the decline, but in the crowded cities of the global south – cities like Aleppo, Bamako and Caracas – violence is actually accelerating, fueled by the drug trade, mass unemployment and civil unrest. Security researcher Robert Muggah turns our attention toward these "fragile cities," super-fast-growing places where infrastructure is weak and government often ineffective. He shows us the four big risks we face, and offers a way to change course. "It's said that to be a poet, you have to go to hell and back." Cristina Domenech teaches writing at an Argentinian prison, and she tells the moving story of helping incarcerated people express themselves, understand themselves – and glory in the freedom of language. Watch for a power

of reading one of her students, an inmate of an audience of 10,000. In Spanish with subtitles. What is altruism? Put simply, it's the wish that other people may be happy. And, says Matthieu Ricard, a happiness researcher and a Buddhist monk, altruism is also a great lens for making decisions, both for the short and long term, in work and in life. By studying the movement and bodies of insects such as ants, Sarah Bergbreiter and her team build incredibly robust, super teeny, mechanical versions of creepy crawlies ... and then they add rockets. See their jaw-dropping developments in micro-robotics, and hear about three ways we might use these little helpers in the future. In rural India, the lack of toilets creates a big, stinking problem. It leads to poor quality water, one of the leading causes of disease in India, and has a disproportionately negative effect on women. Joe Madiath introduces a program to help villagers help themselves, by building clean, protected water and sanitation systems and requiring everyone in the village to collaborate -- with significant benefits that ripple across health, education and even government. Morgana Bailey has been hiding her true self for 16 years. In a brave talk, she utters four words that might not seem like a big deal to some, but to her have been paralyzing. Why speak up? Because she's realized that her silence has personal, professional and societal consequences. In front of an audience of her co-workers, she reflects on what it means to fear the judgment of others, and how it makes us judge ourselves. You may remember neuroscientist Miguel Nicolelis -- he built the brain-controlled exoskeleton that allowed a paralyzed man to kick the first ball of the 2014 World Cup. What's he working on now? Building ways for two minds (rats and monkeys, for now) to send messages brain to brain. Watch to the end for an experiment that, as he says, will go to "the limit of your imagination." Severine Autesserre studies the Democratic Republic of Congo, which is in the middle of the deadliest conflict since World War II; it's been called "the largest ongoing humanitarian crisis in the world." The conflict seems hopelessly, unsolvably large. But her insight from decades of listening and engaging: The conflicts are often locally based. And instead of focusing on solutions that scale to a national level, leaders and aid groups might be better served solving local crises before they ignite. Khadija Gbla grew up caught between two definitions of what it means to be an "empowered woman." While her Sierra Leonean mother thought that circumcizing her -- and thus stifling her sexual urges -- was the ultimate form of empowerment, her culture as a teenager in Australia told her that she deserved pleasure and that what happened to her was called "female genital mutilation." In a candid and funny talk, she shares what it was like to make her way in a "clitoris-centric society," and how she works to make sure other women don't have to figure this out. (Warning: This talk contains hard-to-hear details.) Bassam Tariq is a blogger, a filmmaker, and a halal butcher -- but one thread unites his work: His joy in the diversity, the humanness of our individual experiences. In this charming talk, he shares clips from his film "These Birds Walk" and images from his tour of 30 mosques in 30 days -- and reminds us to consider the beautiful complexity within us all. Today, a single email can launch a worldwide movement. But as sociologist Zeynep Tufekci suggests, even though online activism is easy to grow, it often doesn't last. Why? She compares modern movements -- Gezi, Ukraine, Hong Kong -- to the civil rights movement of the 1960s, and uncovers a surprising benefit of organizing protest movements the way it happened before Twitter. "Ebola threatens everything that makes us human," says Bruce Aylward of the World Health Organization. And when the Ebola epidemic exploded in 2014, it caused a worldwide panic. But humanity can beat Ebola -- and Aylward shows four strategies that show how we are succeeding. The fight against Ebola is not yet won, he says, but it can be. How much of what you think about your brain is actually wrong? In this whistlestop tour of dis-proved science, Ben Ambridge walks through 10 popular ideas about psychology that have been proven wrong -- and uncovers a few surprising truths about how our brains really work. Making toast doesn't sound very complicated -- until someone asks you to draw the process, step by step. Tom Wujec loves asking people and teams to draw how they make toast, because the process reveals unexpected truths about how we can solve our biggest, most complicated problems at work. Learn how to run this exercise yourself, and hear Wujec's surprising insights from watching thousands of people draw toast. What do you do with an outdated encyclopedia in the information age? With X-Acto knives and an eye for a good remix, artist Brian Dettmer makes beautiful, unexpected sculptures that breathe new life into old books. Just like us, the monarch butterfly sometimes gets sick thanks to a nasty parasite. But biologist Jaap de Roode noticed something interesting about the butterflies he was studying -- infected female butterflies would choose to lay their eggs on a specific kind of plant that helped their offspring avoid getting sick. How do they know to choose this plant? Think of it as "the other butterfly effect" -- which could teach us to find new medicines for the treatment of human disease. What if your job didn't control your life? Brazilian CEO Ricardo Semler practices a radical form of corporate democracy, rethinking everything from board meetings to how workers report their vacation days (they don't have to). It's a vision that rewar

ds the wisdom of workers, promotes work-life balance -- and leads to some deep insight on what work, and life, is really all about. Bonus question: What if schools were like this too? 60% of people with dementia wander off, an issue that can prove hugely stressful for both patients and caregivers. In this charming talk, hear how teen inventor Kenneth Shinozuka came up with a novel solution to help his night-wandering grandfather and the aunt who looks after him ... and how he hopes to help others with Alzheimer's. Finding the right mate is no cakewalk -- but is it even mathematically likely? In a charming talk, mathematician Hannah Fry shows patterns in how we look for love, and gives her top three tips (verified by math!) for finding that special someone. We'll go to the doctor when we feel flu-ish or a nagging pain. So why don't we see a health professional when we feel emotional pain: guilt, loss, loneliness? Too many of us deal with common psychological-health issues on our own, says Guy Winch. But we don't have to. He makes a compelling case to practice emotional hygiene -- taking care of our emotions, our minds, with the same diligence we take care of our bodies. Childhood trauma isn't something you just get over as you grow up. Pediatrician Nadine Burke Harris explains that the repeated stress of abuse, neglect and parents struggling with mental health or substance abuse issues has real, tangible effects on the development of the brain. This unfolds across a lifetime, to the point where those who've experienced high levels of trauma are at triple the risk for heart disease and lung cancer. An impassioned plea for pediatric medicine to confront the prevention and treatment of trauma, head-on. In some parts of the world, half of the women lack basic reading and writing skills. The reasons vary, but in many cases, literacy isn't valued by fathers, husbands, even mothers. Photographer and TED Fellow Laura Boushnak traveled to countries including Yemen, Egypt and Tunisia to highlight brave women -- schoolgirls, political activists, 60-year-old moms -- who are fighting the statistics. "We will start inhabiting outer space," says Angelo Vermeulen, crew commander of a NASA-funded Mars simulation. "It might take 50 years or it might take 500 years, but it's going to happen." In this charming talk, the TED Senior Fellow describes some of his official work to make sure humans are prepared for life in deep space ... and shares a fascinating art project in which he challenged people worldwide to design homes we might live in there. Fifty-three years ago, James A. White Sr. joined the US Air Force. But as an African American man, he had to go to shocking lengths to find a place for his young family to live nearby. He tells this powerful story about the lived experience of "everyday racism" -- and how it echoes today in the way he's had to teach his grandchildren to interact with police. Rob Knight is a pioneer in studying human microbes, the community of tiny single-cell organisms living inside our bodies that have a huge -- and largely unexplored -- role in our health. "The three pounds of microbes that you carry around with you might be more important than every single gene you carry around in your genome," he says. Find out why. Nearly 1000 "honor" killings are reported in Pakistan each year, murders by a family member for behavior deemed "shameful," such as a relationship outside of marriage. When Khalida Brohi lost a close friend to the practice, she resolved to campaign against it. Yet she met resistance from an unlikely source: the very community she hoped to protect. In this powerful, honest talk, Brohi shares how she took a hard look at her own process, and offers sharp insights for other passionate activists. How do vaccines prevent disease -- even among people too young to get vaccinated? It's a concept called "herd immunity," and it relies on a critical mass of people getting their shots to break the chain of infection. Health researcher Romina Libster shows how herd immunity contained a deadly outbreak of H1N1 in her hometown. (In Spanish with subtitles.) City agencies have access to a wealth of data and statistics reflecting every part of urban life. But as data analyst Ben Wellington suggests in this entertaining talk, sometimes they just don't know what to do with it. He shows how a combination of unexpected questions and smart data crunching can produce strangely useful insights, and shares tips on how to release large sets of data so that anyone can use them. Small coincidences. They happen all the time and yet, they pass us by because we are not looking for them. In a delightfully subtle trick, magician Helder Guimarães demonstrates with a deck of cards, a dollar bill and a stuffed giraffe. Hooray for technology! It makes everything better for everyone!! Right? Well, no. When a new technology, like ebooks or health trackers, is only available to some people, it has unintended consequences for all of us. Jon Gosier, a TED Fellow and tech investor, calls out the idea of "trickle-down economics," and shares powerful examples of how new tech can make things actually worse if it's not equally distributed. As he says, "the real innovation is in finding ways to include everyone." The sounds of the rainforest include: the chirps of birds, the buzz of cicadas, the banter of gibbons. But in the background is the almost-always present sound of a chainsaw, from illegal loggers. Engineer Topher White shares a simple, scalable way to stop this brutal deforestation -- that starts with your old cell phone. Performance poet (and math student) Harry Baker spins a love poem about his favorite kind of numbers -- the lonely, love-lorn prime. Stay on for two more lively, inspiring poems from t

his charming performer. Sending an email message is like sending a postcard, says scientist Andy Yen in this thought-provoking talk: Anyone can read it. Yet encryption, the technology that protects the privacy of email communication, does exist. It's just that until now it has been difficult to install and a hassle to use. Showing a demo of an email program he designed with colleagues at CERN, Yen argues that encryption can be made simple to the point of becoming the default option, providing true email privacy to all.

Throughout her career in banking Ilona Szabó de Carvalho never imagined she'd someday start a social movement. But living in her native Brazil, which leads the world in homicidal violence, she realized she couldn't just stand by and watch drugs and guns tear her country apart. Szabó de Carvalho reveals four crucial lessons she learned when she left her cushy job and took a fearless stand against the status quo. In this short, provocative talk, financier Sangu Delle questions whether microfinance — small loans to small entrepreneurs -- is the best way to drive growth in developing countries. "We seem to be fixated on this romanticized idea that every poor person in Africa is an entrepreneur," he says. "Yet, my work has taught me that most people want jobs." Delle, a TED Fellow, makes the case for supporting large companies and factories — and clearing away the obstacles to pan-African trade.

"Architecture is not about math or zoning -- it's about visceral emotions," says Marc Kushner. In a sweeping — often funny — talk, he zooms through the past thirty years of architecture to show how the public, once disconnected, have become an essential part of the design process. With the help of social media, feedback reaches architects years before a building is even created. The result? Architecture that will do more for us than ever before.

As a teenager, Ismael Nazario was sent to New York's Rikers Island jail, where he spent 300 days in solitary confinement -- all before he was ever convicted of a crime. Now as a prison reform advocate he works to change the culture of American jails and prisons, where young people are frequently subjected to violence beyond imagination. Nazario tells his chilling story and suggests ways to help, rather than harm, teens in jail.

Shimpei Takahashi always dreamed of designing toys. But when he started work as a toy developer, he found that the pressure to produce squashed his creativity. In this short, funny talk, Takahashi describes how he got his ideas flowing again, and shares a simple word game anyone can play to generate new ideas. (In Japanese with English subtitles.) What's the secret to unlocking the creativity hidden inside your daily work, and giving every great idea a chance? Harvard professor Linda Hill, co-author of "Collective Genius," has studied some of the world's most creative companies to come up with a set of tools and tactics to keep great ideas flowing -- from everyone in the company, not just the designated "creatives."

Vincent Cochetel was held hostage for 317 days in 1998, while working for the UN High Commissioner on Refugees in Chechnya. For the first time, he recounts the experience — from what it was like to live in a dark, underground chamber, chained to his bed, to the unexpected conversations he had with his captors. With lyricism and power, he explains why he continues his work today.

Since 2000, attacks on humanitarian aid workers have tripled — and he wonders what that rise may signal to the world. Everybody knows that most women go a little crazy right before they get their period, that their reproductive hormones cause their emotions to fluctuate wildly. Except: There's very little scientific consensus about premenstrual syndrome. Says psychologist Robyn Stein DeLuca, science doesn't agree on the definition, cause, treatment or even existence of PMS. She explores what we know and don't know about it -- and why the popular myth has persisted. As humans, we can perceive less than a ten-trillionth of all light waves. "Our experience of reality," says neuroscientist David Eagleman, "is constrained by our biology." He wants to change that. His research into our brain processes has led him to create new interfaces -- such as a sensory vest -- to take in previously unseen information about the world around us.

What we think of as 3D printing, says Joseph DeSimone, is really just 2D printing over and over ... slowly. Onstage at TED2015, he unveils a bold new technique -- inspired, yes, by Terminator 2 -- that's 25 to 100 times faster, and creates smooth, strong parts. Could it finally help to fulfill the tremendous promise of 3D printing? "Public shaming as a blood sport has to stop," says Monica Lewinsky. In 1998, she says, "I was Patient Zero of losing a personal reputation on a global scale almost instantaneously." Today, the kind of online public shaming she went through has become constant -- and can turn deadly. In a brave talk, she takes a hard look at our online culture of humiliation, and asks for a different way.

When a very young child looks at a picture, she can identify simple elements: "cat," "book," "chair." Now, computers are getting smart enough to do that too. What's next? In a thrilling talk, computer vision expert Fei-Fei Li describes the state of the art -- including the database of 15 million photos her team built to "teach" a computer to understand pictures -- and the key insights yet to come.

Ten days after 9/11, a shocking attack at a Texas mini-mart shattered the lives of two men: the victim and the attacker. In this stunning talk, Anand Giridharadas, author of "The True American," tells the story of what happened next. It's a parable about the two paths an American life can take, and



a powerful call for reconciliation. Dave Isay opened the first StoryCorps booth in New York's Grand Central Terminal in 2003 with the intention of creating a quiet place where a person could honor someone who mattered to them by listening to their story. Since then, StoryCorps has evolved into the single largest collection of human voices ever recorded. His TED Prize wish: to grow this digital archive of the collective wisdom of humanity. Hear his vision to take StoryCorps global – and how you can be a part of it by interviewing someone with the StoryCorps app. Theaster Gates, a potter by training and a social activist by calling, wanted to do something about the sorry state of his neighborhood on the south side of Chicago. So he did, transforming abandoned buildings to create community hubs that connect and inspire those who still live there (and draw in those who don't). In this passionate talk, Gates describes his efforts to build a "miniature Versailles" in Chicago, and he shares his fervent belief that culture can be a catalyst for social transformation in any city, anywhere. Dame Stephanie Shirley is the most successful tech entrepreneur you never heard of. In the 1960s, she founded a pioneering all-woman software company in the UK, which was ultimately valued at \$3 billion, making millions of 70 of her team members. In this frank and often hilarious talk, she explains why she went by "Steve," how she upended the expectations of the time, and shares some sure-fire ways to identify ambitious women ... In this short, provocative talk, architect Alison Killing looks at buildings where death and dying happen -- cemeteries, hospitals, homes. The way we die is changing, and the way we build for dying ... well, maybe that should too. It's a surprisingly fascinating look at a hidden aspect of our cities, and our lives. Daniel Kish has been blind since he was 13 months old, but has learned to "see" using a form of echolocation. He clicks his tongue and sends out flashes of sound that bounce off surfaces in the environment and return to him, helping him to construct an understanding of the space around him. In a rousing talk, Kish shows how this works -- and asks us all to let go of our fear of the dark unknown. The former prime minister of Australia, Kevin Rudd is also a longtime student of China, with a unique vantage point to watch its power rise in the past few decades. He asks whether the growing ambition of China will inevitably lead to conflict with other major powers -- and suggests another narrative. Photographer Boniface Mwangi wanted to protest against corruption in his home country of Kenya. So he made a plan: He and some friends would stand up and heckle during a public mass meeting. But when the moment came ... he stood alone. What happened next, he says, showed him who he truly was. As he says, "There are two most powerful days in your life. The day you are born, and the day you discover why." Graphic images. In 2014, the world avoided a global outbreak of Ebola, thanks to thousands of selfless health workers -- plus, frankly, some very good luck. In hindsight, we know what we should have done better. So, now's the time, Bill Gates suggests, to put all our good ideas into practice, from scenario planning to vaccine research to health worker training. As he says, "There's no need to panic ... but we need to get going." All of us want to invent that game-changing product, launch that successful company, write that best-selling book. And yet so few of us actually do it. TED Fellow and Brazilian entrepreneur Bel Pesce breaks down five easy-to-believe myths that ensure your dream projects will never come to fruition. With humor and charm, mathematician Eduardo Sáenz de Cabezón answers a question that's wracked the brains of bored students the world over: What is math for? He shows the beauty of math as the backbone of science – and shows that theorems, not diamonds, are forever. In Spanish, with English subtitles. The news of society's growing inequality makes all of us uneasy. But why? Dan Ariely reveals some new, surprising research on what we think is fair, as far as how wealth is distributed over societies ... then shows how it stacks up to the real stats. As manager of the Rosetta mission, Fred Jansen was responsible for the successful 2014 landing of a probe on the comet known as 67P/Cheuryumov-Gerasimenko. In this fascinating and funny talk, Jansen reveals some of the intricate calculations that went into landing the Philae probe on a comet 500 million kilometers from Earth -- and shares some incredible photographs taken along the way. Photojournalist Barat Ali Batoor was living in Afghanistan -- until his risky work forced him to leave the country. But for Batoor, a member of a displaced ethnic group called the Hazara, moving home to Pakistan proved dangerous too. And finding a safer place wasn't as simple as buying a plane ticket. Instead, he was forced to pay a human smuggler, and join the deadly tidal wave of migrants seeking asylum by boat. He documents the harrowing ocean trip with powerful photographs. How did a young man born into a high caste in India come to free 83,000 children from slavery? Nobel Peace Prize Laureate Kailash Satyarthi offers a surprising piece of advice to anyone who wants to change the world for the better: Get angry at injustice. In this powerful talk, he shows how a lifetime of peace-making sprang from a lifetime of outrage. At this school in Tokyo, five-year-olds cause traffic jams and windows are for Santa to climb into. Meet: the world's cutest kindergarten, designed by architect Takaharu Tezuka. In this charming talk, he walks us through a design process that really lets kids be kids. Paul Tudor Jones II loves capitalism. It's

a system that has done the last few decades, the hedge fund manager and philanthropist is concerned that a laser focus on profits is, as he puts it, "threatening the very underpinnings of society." In this thoughtful, passionate talk, he outlines his planned counter-offensive, which centers on the concept of "justness." While we like to imagine little green men, it's far more likely that life on other planets will be microbial. Planetary scientist Nathalie Cabrol takes us inside the search for microbes on Mars, a hunt which counterintuitively leads us to the remote lakes of the Andes mountains. This extreme environment — with its thin atmosphere and scorched land — approximates the surface of Mars about 3.5 billion years ago. How microbes adapt to survive here may just show us where to look on Mars — and could help us understand why some microbial pathways lead to civilization while others are a dead end. Collective compassion has meant an overall decrease in global poverty since the 1980s, says civil rights lawyer Gary Haugen. Yet for all the world's aid money, there's a pervasive hidden problem keeping poverty alive. Haugen reveals the dark underlying cause we must recognize and act on now. Jedidah Isler first fell in love with the night sky as a little girl. Now she's an astrophysicist who studies supermassive hyperactive black holes. In a charming talk, she takes us trillions of kilometers from Earth to introduce us to objects that can be 1 to 10 billion times the mass of the sun — and which shoot powerful jet streams of particles in our direction. Chris Milk uses cutting edge technology to produce astonishing films that delight and enchant. But for Milk, the human story is the driving force behind everything he does. In this short, charming talk, he shows some of his collaborations with musicians including Kanye West and Arcade Fire, and describes his latest, mind-bending experiments with virtual reality. (This talk was part of a session at TED2015 guest-curated by Pop-Up Magazine: [popupmagazine.com](http://popupmagazine.com) or @popupmag on Twitter.) As kids, we all get advice from parents and teachers that seems strange, even confusing. This was crystallized one night for a young Clint Smith, who was playing with water guns in a dark parking lot with his white friends. In a heartfelt piece, the poet paints the scene of his father's furious and fearful response. A 50-foot-long carnivore who hunted its prey in rivers 97 million years ago, the Spinosaurus is a "dragon from deep time." Paleontologist Nizar Ibrahim and his crew found new fossils, hidden in cliffs of the Moroccan Sahara desert, that are helping us learn more about the first swimming dinosaur -- who might also be the largest carnivorous dinosaur of all. Artificial intelligence is getting smarter by leaps and bounds -- within this century, research suggests, a computer AI could be as "smart" as a human being. And then, says Nick Bostrom, it will overtake us: "Machine intelligence is the last invention that humanity will ever need to make." A philosopher and technologist, Bostrom asks us to think hard about the world we're building right now, driven by thinking machines. Will our smart machines help to preserve humanity and our values -- or will they have values of their own? Greg Gage is on a mission to make brain science accessible to all. In this fun, kind of creepy demo, the neuroscientist and TED Senior Fellow uses a simple, inexpensive DIY kit to take away the free will of an audience member. It's not a parlor trick; it actually works. You have to see it to believe it. Did you know that you're 30 times more likely to laugh if you're with somebody else than if you're alone? Cognitive neuroscientist Sophie Scott shares this and other surprising facts about laughter in this fast-paced, action-packed and, yes, hilarious dash through the science of cracking up. In the United States, two institutions guide teenagers on the journey to adulthood: college and prison. Sociologist Alice Goffman spent six years in a troubled Philadelphia neighborhood and saw first-hand how teenagers of African-American and Latino backgrounds are funneled down the path to prison — sometimes starting with relatively minor infractions. In an impassioned talk she asks, "Why are we offering only handcuffs and jail time?" Pamela Ronald studies the genes that make plants more resistant to disease and stress. In an eye-opening talk, she describes her decade-long quest to isolate a gene that allows rice to survive prolonged flooding. She shows how the genetic improvement of seeds saved the Hawaiian papaya crop in the 1990s — and makes the case that modern genetics is sometimes the most effective method to advance sustainable agriculture and enhance food security for our planet's growing population. Subtle motion happens around us all the time, including tiny vibrations caused by sound. New technology shows that we can pick up on these vibrations and actually re-create sound and conversations just from a video of a seemingly still object. But now Abe Davis takes it one step further: Watch him demo software that lets anyone interact with these hidden properties, just from a simple video. Legendary dance choreographer Bill T. Jones and TED Fellows Joshua Roman and Somi didn't know exactly what was going to happen when they took the stage at TED2015. They just knew they wanted to offer the audience an opportunity to witness creative collaboration in action. The result: An improvised piece they call "The Red Circle and the Blue Curtain," so extraordinary it had to be shared... Liver cancer is one of the most difficult cancers to detect, but synthetic biologist Tal Danino had a left-field thought: What if we could create a probiotic, edible

bacteria that was "programmed" to find liver tumors? His insights suggest we're just beginning to understand about bacteria: their power of quorum sensing, or doing something together once they reach critical mass. Danino, a TED Fellow, explains how quorum sensing works -- and how clever bacteria working together could someday change cancer treatment. Singer-songwriter Dawn Landes tells the story of Tori Murden McClure, who dreamed of rowing across the Atlantic in a small boat -- but whose dream was almost capsized by waves the size of a seven-story building. Through video, story and song, Landes imagines the mindset of a woman alone in the midst of the vast ocean. (This talk was part of a session at TED2015 guest-curated by Pop-Up Magazine: [popupmagazine.com](http://popupmagazine.com) or @popupmag on Twitter.) We've heard that bees are disappearing. But what is making bee colonies so vulnerable? Photographer Anand Varma raised bees in his backyard -- in front of a camera -- to get an up close view. This project, for National Geographic, gives a lyrical glimpse into a beehive, and reveals one of the biggest threats to its health, a mite that preys on baby bees in their first 21 days of life. With footage set to music from Rob Moose and the Magik\*Magik Orchestra, Varma shows the problem ... and what's being done to solve it. (This talk was part of a session at TED2015 guest-curated by Pop-Up Magazine: [popupmagazine.com](http://popupmagazine.com) or @popupmag on Twitter.) You've never seen buildings like this. The stunning bamboo homes built by Elora Hardy and her team in Bali twist, curve and surprise at every turn. They defy convention because the bamboo itself is so enigmatic. No two poles of bamboo are alike, so every home, bridge and bathroom is exquisitely unique. In this beautiful, immersive talk, she shares the potential of bamboo, as both a sustainable resource and a spark for the imagination. "We have had to invent our own rules," she says. Roman Mars is obsessed with flags -- and after you watch this talk, you might be, too. These ubiquitous symbols of civic pride are often designed, well, pretty terribly. But they don't have to be. In this surprising and hilarious talk about vexillology -- the study of flags -- Mars reveals the five basic principles of flag design and shows why he believes they can be applied to just about anything. The ten women in this chorus have all been sentenced to life in prison. They share a moving song about their experiences -- one that reveals their hopes, regrets and fears. "I'm not an angel," sings one, "but I'm not the devil." Filmed at an independent TEDx event inside Muncy State Prison, it's a rare and poignant look inside the world of people imprisoned with no hope of parole. (Note: The prison's Office of Victim Advocacy has ensured that victims were treated fairly and respectfully around this TEDx event.) The founder of Sirius XM satellite radio, Martine Rothblatt now heads up a drug company that makes life-saving medicines for rare diseases (including one drug that saved her own daughter's life). Meanwhile she is working to preserve the consciousness of the woman she loves in a digital file ... and a companion robot. In an onstage conversation with TED's Chris Anderson, Rothblatt shares her powerful story of love, identity, creativity, and limitless possibility. You've just been injured, and you're on the way home from an hour of physical therapy. The last thing you want to do on your own is confusing exercises that take too long to show results. TED Fellow Cosmin Mihaiu demos a fun, cheap solution that turns boring physical therapy exercises into a video game with crystal-clear instructions. Chimpanzees are people too, you know. Ok, not exactly. But lawyer Steven Wise has spent the last 30 years working to change these animals' status from "things" to "persons." It's not a matter of legal semantics; as he describes in this fascinating talk, recognizing that animals like chimps have extraordinary cognitive capabilities and rethinking the way we treat them -- legally -- is no less than a moral duty. Infidelity is the ultimate betrayal. But does it have to be? Relationship therapist Esther Perel examines why people cheat, and unpacks why affairs are so traumatic: because they threaten our emotional security. In infidelity, she sees something unexpected -- an expression of longing and loss. A must-watch for anyone who has ever cheated or been cheated on, or who simply wants a new framework for understanding relationships. "Anything that is worth pursuing is going to require us to suffer, just a little bit," says surf photographer Chris Burkard, as he explains his obsession with the coldest, choppiest, most isolated beaches on earth. With jawdropping photos and stories of places few humans have ever seen -- much less surfed -- he draws us into his "personal crusade against the mundane." An architect of the "Boston miracle," Rev. Jeffrey Brown started out as a bewildered young pastor watching his Boston neighborhood fall apart around him, as drugs and gang violence took hold of the kids on the streets. The first step to recovery: Listen to those kids, don't just preach to them, and help them reduce violence in their own neighborhoods. It's a powerful talk about listening to make change. What do you think when you look at this speaker? Well, think again. (And then again.) In this funny, honest, empathetic talk, Yassmin Abdel-Magied challenges us to look beyond our initial perceptions, and to open doors to new ways of supporting others. Every star we see in the sky has at least one planet orbiting it, says astronomer Sara Seager. So what do we know about these exoplanets, and how can we find out more? Seager introduces her favorite set of exoplanets and shows new technolo

guy that can help collect information about them -- and even help us look for exoplanets with life. When Jimmy Nelson traveled to Siberia to photograph the Chukchi people, elders told him: "You cannot photograph us. You have to wait, you have to wait until you get to know us, you have to wait until you understand us." In this gorgeously photo-filled talk, join Nelson's quest to understand -- the world, other people, himself -- by making astonishing portraits of the world's vanishing tribes and cultures. Bill Gross has founded a lot of startups, and incubated many others -- and he got curious about why some succeeded and others failed. So he gathered data from hundreds of companies, his own and other people's, and ranked each company on five key factors. He found one factor that stands out from the others -- and surprised even him. How do babies learn so much from so little so quickly? In a fun, experiment-filled talk, cognitive scientist Laura Schulz shows how our young ones make decisions with a surprisingly strong sense of logic, well before they can talk. As human beings, we get used to "the way things are" really fast. But for designers, the way things are is an opportunity ... Could things be better? How? In this funny, breezy talk, the man behind the iPod and the Nest thermostat shares some of his tips for noticing -- and driving -- change. There's an organization responsible for more terrorism plots in the United States than al-Qaeda, al-Shabaab and ISIS combined: The FBI. How? Why? In an eye-opening talk, investigative journalist Trevor Aaronson reveals a disturbing FBI practice that breeds terrorist plots by exploiting Muslim-Americans with mental health problems. On Linda Cliatt-Wayman's first day as principal at a failing high school in North Philadelphia, she was determined to lay down the law. But she soon realized the job was more complex than she thought. With palpable passion, she shares the three principles that helped her turn around three schools labeled "low-performing and persistently dangerous." Her fearless determination to lead -- and to love the students, no matter what -- is a model for leaders in all fields. For six months, Suk-i Kim worked as an English teacher at an elite school for North Korea's future leaders -- while writing a book on one of the world's most repressive regimes. As she helped her students grapple with concepts like "truth" and "critical thinking," she came to wonder: Was teaching these students to seek the truth putting them in peril? (This talk was part of a session at TED2015 guest-curated by Pop-Up Magazine: [popupmagazine.com](http://popupmagazine.com) or @popupmag on Twitter.) In this performance, Sarah Jones brings you to the front row of a classroom in the future, as a teacher plugs in different personas from the year 2016 to show their varied perspectives on sex work. As she changes props, Jones embodies an elderly homemaker, a "sex work studies" major, an escort, a nun-turned-prostitute and a guy at a strip club for his bachelor party. It's an intriguing look at a taboo topic, that flips cultural norms around sex inside out. Cognitive scientist Donald Hoffman is trying to answer a big question: Do we experience the world as it really is ... or as we need it to be? In this ever so slightly mind-blowing talk, he ponders how our minds construct reality for us. "I was the mystery of an anatomy, a question asked but not answered," says poet Lee Mokobe, a TED Fellow, in this gripping and poetic exploration of identity and transition. It's a thoughtful reflection on bodies, and the meanings poured into them. Our emotions influence every aspect of our lives -- how we learn, how we communicate, how we make decisions. Yet they're absent from our digital lives; the devices and apps we interact with have no way of knowing how we feel. Scientist Rana el Kaliouby aims to change that. She demos a powerful new technology that reads your facial expressions and matches them to corresponding emotions. This "emotion engine" has big implications, she says, and could change not just how we interact with machines -- but with each other. Organizations are often run according to "the superchicken model," where the value is placed on star employees who outperform others. And yet, this isn't what drives the most high-achieving teams. Business leader Margaret Heffernan observes that it is social cohesion -- built every coffee break, every time one team member asks another for help -- that leads over time to great results. It's a radical rethink of what drives us to do our best work, and what it means to be a leader. Because as Heffernan points out: "Companies don't have ideas. Only people do." Decades ago, few pediatricians had heard of autism. In 1975, 1 in 5,000 kids was estimated to have it. Today, 1 in 68 is on the autism spectrum. What caused this steep rise? Steve Silberman points to "a perfect storm of autism awareness" -- a pair of psychologists with an accepting view, an unexpected pop culture moment and a new clinical test. But to really understand, we have to go back further to an Austrian doctor by the name of Hans Asperger, who published a pioneering paper in 1944. Because it was buried in time, autism has been shrouded in misunderstanding ever since. (This talk was part of a TED2015 session curated by Pop-Up Magazine: [popupmagazine.com](http://popupmagazine.com) or @popupmag on Twitter.) For the last 12 years, LaToya Ruby Frazier has photographed friends, neighbors and family in Braddock, Pennsylvania. But though the steel town has lately been hailed as a posterchild of "rustbelt revitalization," Frazier's pictures tell a different story, of the real impact of inequality and environmental toxicity. In this short, powerful talk, the TED Fellow shares a deeply personal glimpse

of an often-unseen world. Raised listening to his dad's old records, Joey Alexander plays a brand of sharp, modern piano jazz that you likely wouldn't expect to hear from a pre-teenager. Listen as the 11-year-old delights the TED crowd with his very special performance of a Thelonious Monk classic. When writer Roxane Gay dubbed herself a "bad feminist," she was making a joke, acknowledging that she couldn't possibly live up to the demands for perfection of the feminist movement. But she's realized that the joke rang hollow. In a thoughtful and provocative talk, she asks us to embrace all flavors of feminism -- and make the small choices that, en masse, might lead to actual change. Book designer Chip Kidd knows all too well how often we judge things by first appearances. In his hilarious, fast-paced talk, he explains the two techniques designers use to communicate instantly -- clarity and mystery -- and when, why and how they work. He celebrates beautiful, useful pieces of design, skewers less successful work, and shares the thinking behind some of his own iconic book covers. Penicillin changed everything. Infections that had previously killed were suddenly quickly curable. Yet as Maryn McKenna shares in his sobering talk, we've squandered the advantages afforded us by that and later antibiotics. Drug-resistant bacteria mean we're entering a post-antibiotic world -- and it won't be pretty. There are, however, things we can do ... if we start right now. Statistically, the least reliable part of the car is ... the driver. In 2015, Chris Urmson was head of Google's driverless car program, one of several efforts to remove humans from the driver's seat. He shares fascinating footage that shows how the car sees the road and makes autonomous decisions about what to do next. What do you learn when you sail around the world on your own? When solo sailor Ellen MacArthur circled the globe - carrying everything she needed with her - she came back with new insight into the way the world works, as a place of interlocking cycles and finite resources, where the decisions we make today affect what's left for tomorrow. She proposes a bold new way to see the world's economic systems: not as linear, but as circular, where everything comes around. With his signature resolve, former US President Jimmy Carter dives into three unexpected reasons why the mistreatment of women and girls continues in so many manifestations in so many parts of the world, both developed and developing. The final reason he gives? "In general, men don't give a damn." For the longest time, doctors basically ignored the most basic and frustrating part of being sick -- pain. In this lyrical, informative talk, Lati F Nasser tells the extraordinary story of wrestler and doctor John J. Bonica, who persuaded the medical profession to take pain seriously -- and transformed the lives of millions. In 2011, the US Armed Forces still had a ban on women in combat -- but in that year, a Special Operations team of women was sent to Afghanistan to serve on the front lines, to build rapport with locals and try to help bring an end to the war. Reporter Gayle Lemmon tells the story of this "band of sisters," an extraordinary group of women warriors who helped break a long-standing barrier to serve. Basketball is a fast-moving game of improvisation, contact and, ahem, spatio-temporal pattern recognition. Rajiv Maheswaran and his colleagues are analyzing the movements behind the key plays of the game, to help coaches and players combine intuition with new data. Bonus: What they're learning could help us understand how humans move everywhere. Memory Banda's life took a divergent path from her sister's. When her sister reached puberty, she was sent to a traditional "initiation camp" that teaches girls "how to sexually please a man." She got pregnant there -- at age 11. Banda, however, refused to go. Instead, she organized others and asked her community's leader to issue a bylaw that no girl should be forced to marry before turning 18. She pushed on to the national level ... with incredible results for girls across Malawi. What really causes addiction -- to everything from cocaine to smart-phones? And how can we overcome it? Johann Hari has seen our current methods fail firsthand, as he has watched loved ones struggle to manage their addictions. He started to wonder why we treat addicts the way we do -- and if there might be a better way. As he shares in this deeply personal talk, his questions took him around the world, and unearthed some surprising and hopeful ways of thinking about an age-old problem. Ash Beckham recently found herself in a situation that made her ask: who am I? She felt pulled between two roles -- as an aunt and as an advocate. Each of us feels this struggle sometimes, she says -- and offers bold suggestions for how to stand up for your moral integrity when it isn't convenient. Behind the everyday bargains we all love -- the \$10 manicure, the unlimited shrimp buffet -- is a hidden world of forced labor to keep those prices at rock bottom. Noy Thirupkaew investigates human trafficking -- which flourishes in the US and Europe, as well as developing countries -- and shows us the human faces behind the exploited labor that feeds global consumers. Abortion is extremely common. In America, for example, one in three women will have an abortion in their lifetime, yet the strong emotions sparked by the topic -- and the highly politicized rhetoric around it -- leave little room for thoughtful, open debate. In this personal, thoughtful talk, Aspen Baker makes the case for being neither "pro-life" nor "pro-choice" but rather "pro-voice" -- and for the roles that listening and storytelling can play when it comes to discussing difficult to

Stacey Baker has always been obsessed with how couples meet. When she asked photographer Alec Soth to help her explore this topic, they found themselves at the world's largest speed-dating event, held in Las Vegas on Valentine's Day, and at the largest retirement community in Nevada — with Soth taking portraits of pairs in each locale. Between these two extremes, they unwound a beautiful through-line of how a couple goes from meeting to creating a life together. (This talk was part of a TED2015 session curated by Pop-Up Magazine: [popupmagazine.com](http://popupmagazine.com) or @popupmag on Twitter.) When artist Salvatore Iaconesi was diagnosed with brain cancer, he refused to be a passive patient -- which, he points out, means "one who waits." So he hacked his brain scans, posted them online, and invited a global community to pitch in on a "cure." This sometimes meant medical advice, and it sometimes meant art, music, emotional support -- from more than half a million people. In this enlightening, funny talk, Marlene Zuk shares just some of the ways that insects are truly astonishing -- and not least for the creative ways they have sex. Twitter gives a voice to the voiceless, a way to speak up and hit back at perceived injustice.

But sometimes, says Jon Ronson, things go too far. In a jaw-dropping story of how one unfunny tweet ruined a woman's life and career, Ronson shows how online commenters can end up behaving like a baying mob -- and says it's time to rethink how we interact online. Strong faith is a core part of Alaa Murabit's identity -- but when she moved from

Canada to Libya as a young woman, she was surprised how the tenets of Islam were used to severely limit women's rights, independence and ability to lead. She wondered: Was this really religious doctrine? With humor, passion and a refreshingly rebellious spirit, she shares how she found examples of female leaders across the history of her faith -- and how she speaks up for women using verses from the Koran. Some of us learn best in the classroom, and some of us ... well, we don't. But we still love to learn -- we just need

to find the way that works for us. In this charming, personal talk, author John Green shares the community of learning that he found in online video. What does this gorgeous street art say? It's Arabic poetry, inspired by bold graffiti and placed where a message of hope and peace can do the most good. In this quietly passionate talk, artist and TED

Fellow eL Seed describes his ambition: to create art so beautiful it needs no translation. Seventy thousand years ago, our human ancestors were insignificant animals, just minding their own business in a corner of Africa with all the other animals. But now, few would disagree that humans dominate planet Earth; we've spread to every continent, and our actions determine the fate of other animals (and possibly Earth itself). How did we get from there to here? Historian Yuval Noah Harari suggests a surprising reason for the rise of humanity. ISIS, Hezbollah, Hamas. These three very different groups are known

for violence -- but that's only a portion of what they do, says policy analyst Benedetta Bertini. They also attempt to win over populations with social work: setting up schools and hospitals, offering safety and security, and filling the gaps left by weak governments. Understanding the broader work of these groups suggests new strategies for ending the violence. As America becomes more and more multicultural, Rich Benjamin noticed a phenomenon: Some communities were actually getting less diverse. So he got out a map, found the whitest towns in the USA -- and moved in. In this funny, honest, human talk, he shares what he learned as a black man in Whitopia. In the fog of war, civilian casualties often go uncounted. Artist Matt Kenyon, whose recent work memorialized the names and stories of US soldiers killed in the Iraq war, decided he should create a companion monument, to the Iraqi civilians caught in the war's crossfire. Learn how he built a secret monument to place these names in the official record. Swallowing pills to get medication is

a quick, painless and often not entirely effective way of treating disease. A potentially better way? Lasers. In this passionate talk, TED Fellow Patience Mthunzi explains her idea to use lasers to deliver drugs directly to cells infected with HIV. It's early days yet, but could a cure be on the horizon? Alix Generous is a young woman with a million and one ideas -- she's done award-winning science, helped develop new technology and tells a darn good joke (you'll see). She has Asperger's, a form of autistic spectrum disorder that can impair the basic social skills required for communication, and she's worked hard for years to learn how to share her thoughts with the world. In this funny, personal talk, she shares her story -- and her vision for tools to help more people communicate their big ideas. How does knowledge grow? Sometimes it begins with one insight and grows into many branches; other times it grows as a complex and interconnected network. Infographics expert Manuel Lima explores the thousand-year history of mapping data -- from languages to dynasties -- using trees and networks of information. It's a fascinating history of visualizations, and a look into humanity's urge to map what we know.

Tony Wyss-Coray studies the impact of aging on the human body and brain. In this eye-opening talk, he shares new research from his Stanford lab and other teams which shows that a solution for some of the less great aspects of old age might actually lie within us all. Who is listening in on your phone calls? On a landline, it could be anyone, says privacy activist Christopher Soghoian, because surveillance backdoors are built into the

phone system by default, to allow governments to listen in. But then again, so could a foreign intelligence service ... or a criminal. Which is why, says Soghoian, some tech companies are resisting governments' call to build the same backdoors into mobile phones and new messaging systems. From this TED Fellow, learn how some tech companies are working to keep your calls and messages private. Dustin Yellin makes mesmerizing artwork that tells complex, myth-inspired stories. How did he develop his style? In this disarmingly talk, he shares the journey of an artist -- starting from age 8 -- and his idiosyncratic way of thinking and seeing. Follow the path that leads him up to his latest major work (or two). How does a robin know to fly south? The answer might be weirder than you think: Quantum physics may be involved. Jim Al-Khalili rounds up the extremely new, extremely strange world of quantum biology, where something Einstein once called "spooky action at a distance" helps birds navigate, and quantum effects might explain the origin of life itself. It seems like we wait for a disastrous disease outbreak before we get serious about making a vaccine for it. Seth Berkley lays out the market realities and unbalanced risks behind why we aren't making vaccines for the world's biggest diseases. When disaster strikes, who's first on the scene? More and more, it's a robot. In her lab, Robin Murphy builds robots that fly, tunnel, swim and crawl through disaster scenes, helping firefighters and rescue workers save more lives safely -- and help communities return to normal up to three years faster. Modern work -- from waiting tables to crunching numbers to designing products -- is about solving brand-new problems every day, flexibly and collaboratively. But as Yves Morieux shows in this insightful talk, too often, an overload of rules, processes and metrics keeps us from doing our best work together. Meet the new frontier of productivity: cooperation. When and how did the universe begin? A global group of astronomers wants to answer that question by peering as far back in time as a large new telescope will let us see. Wendy Freedman headed the creation of the Giant Magellan Telescope, under construction in South America; at TEDGlobal in Rio, she shares a bold vision of the discoveries about our universe that the GMT could make possible. Around the world, women still struggle for equality in basic matters like access to education, equal pay and the right to vote. But how to enlist everyone, men and women, as allies for change? Meet Elizabeth Nyamayaro, head of UN Women's HeForShe initiative, which has created more than 2.4 billion social media conversations about a more equal world. She invites us all to join in as allies in our shared humanity. There's a parallel Internet you may not have run across yet -- accessed by a special browser and home to a free-wheeling collection of sites for everything from anonymous activism to illicit activities.

Jamie Bartlett reports from the dark net. Jim Simons was a mathematician and cryptographer who realized: the complex math he used to break codes could help explain patterns in the world of finance. Billions later, he's working to support the next generation of math teachers and scholars. TED's Chris Anderson sits down with Simons to talk about his extraordinary life in numbers. On October 24, 2014, Alan Eustace donned a custom-built, 235-pound spacesuit, attached himself to a weather balloon, and rose above 135,000 feet, from which point he dove to Earth, breaking both the sound barrier and previous records for high-altitude jumps. Hear his story of how -- and why. What makes work satisfying? Apart from a paycheck, there are intangible values that, Barry Schwartz suggests, our current way of thinking about work simply ignores. It's time to stop thinking of workers as cogs on a wheel. At the end of our lives, what do we most wish for? For many, it's simply comfort, respect, love. BJ Miller is a hospice and palliative medicine physician who thinks deeply about how to create a dignified, graceful end of life for his patients. Take the time to savor this moving talk, which asks big questions about how we think on death and honor life. Tennis legend Billie Jean King isn't just a pioneer of women's tennis -- she's a pioneer for women getting paid. In this free-wheeling conversation, she talks about identity, the role of sports in social justice and the famous Battle of the Sexes match against Bobby Riggs. Does it seem like Washington has no new ideas?

Instead of looking to build the future, it sometimes feels like the US political establishment happily retreats into fear and willful ignorance. Journalist David Rothkopf lays out a few of the major issues that US leadership is failing to address -- from cybercrime to world-shaking new tech to the reality of modern total war -- and calls for a new vision that sets fear aside. As a global community, we all want to end poverty. Mia Birdsong suggests a great place to start: Let's honor the skills, drive and initiative that poor people bring to the struggle every day. She asks us to look again at people in poverty: They may be broke -- but they're not broken. Yes, we all know it's the right thing to do. But Michael Kimmel makes the surprising, funny, practical case for treating men and women equally in the workplace and at home. It's not a zero-sum game, but a win-win that will result in more opportunity and more happiness for everybody. Did you know you can fall in love with anyone just by asking them 36 questions? Mandy Len Catron tried this experiment, it worked, and she wrote a viral article about it (that your mom probably sent you). But ... is that real love? Did it last? And what's the difference between f

ing love in love and staying in love. Scott Dinsmore quit a job that made him miserable, and spent the next four years wondering how to find work that was joyful and meaningful.

He shares what he learned in this deceptively simple talk about finding out what matters to you – and then getting started doing it. When the Taliban closed all the girls' schools in Afghanistan, Sakena Yacoobi set up new schools, in secret, educating thousands of women and men. In this fierce, funny talk, she tells the jaw-dropping story of two times when she was threatened to stop teaching -- and shares her vision for rebuilding her beloved country. In a disturbing – but fascinating – walk through history, Frances Larson examines humanity's strange relationship with public executions ... and specifically

beheadings. As she shows us, they have always drawn a crowd, first in the public square and now on YouTube. What makes them horrific and compelling in equal measure? Climate change is unfair. While rich countries can fight against rising oceans and dying farmlands, poor people around the world are already having their lives upended -- and their human rights threatened -- by killer storms, starvation and the loss of their own lands. Mary Robinson asks us to join the movement for worldwide climate justice. When poet Robin

Morgan found herself facing Parkinson's disease, she distilled her experiences into these four quietly powerful poems – meditating on age, loss, and the simple power of noticing. More than 40 million people worldwide suffer from Alzheimer's disease, and that number is expected to increase drastically in the coming years. But no real progress has been made in the fight against the disease since its classification more than 100 years ago. Scientist Samuel Cohen shares a new breakthrough in Alzheimer's research from his lab as well as a message of hope. "Alzheimer's is a disease," Cohen says, "and we can cure it."

When someone asks you where you're from ... do you sometimes not know how to answer? Writer Taiye Selasi speaks on behalf of "multi-local" people, who feel at home in the town where they grew up, the city they live now and maybe another place or two. "How can I come from a country?" she asks. "How can a human being come from a concept?" For centuries, people have viewed swamps and wetlands as obstacles to avoid. But for photographer Mac Stone, who documents the stories of wildlife in Florida's Everglades, the swamp isn't a hindrance – it's a national treasure. Through his stunning photographs, Stone shines a new light on a neglected, ancient and important wilderness. His message: get out and experience it for yourself. "Just do it – put your feet in the water," he says.

"The swamp will change you, I promise." Imagine being unable to say, "I am hungry," "I am in pain," "thank you," or "I love you," -- losing your ability to communicate, being trapped inside your body, surrounded by people yet utterly alone. For 13 long years, that was Martin Pistorius's reality. After contracting a brain infection at the age of twelve, Pistorius lost his ability to control his movements and to speak, and eventually he failed every test for mental awareness. He had become a ghost. But then a strange thing started to happen -- his mind began to knit itself back together. In this moving talk,

Pistorius tells how he freed himself from a life locked inside his own body. What do you want to be when you grow up? Well, if you're not sure you want to do just one thing for the rest of your life, you're not alone. In this illuminating talk, writer and artist Emilie Wapnick describes the kind of people she calls "multipotentialites" -- who have a range of interests and jobs over one lifetime. Are you one? Imagine the hottest day you've ever experienced. Now imagine it's six, 10 or 12 degrees hotter. According to climate researcher Alice Bows-Larkin, that's the type of future in store for us if we don't significantly cut our greenhouse gas emissions now. She suggests that it's time we

do things differently—a whole system change, in fact—and seriously consider trading economic growth for climate stability. Current medical treatment boils down to six words: Have disease, take pill, kill something. But physician Siddhartha Mukherjee points to a future of medicine that will transform the way we heal. Designer and architect Neri Oxman is leading the search for ways in which digital fabrication technologies can interact with the biological world. Working at the intersection of computational design, additive manufacturing, materials engineering and synthetic biology, her lab is pioneering a new age of symbiosis between microorganisms, our bodies, our products and even our buildings.

Can we, as adults, grow new neurons? Neuroscientist Sandrine Thuret says that we can, and she offers research and practical advice on how we can help our brains better perform neurogenesis—improving mood, increasing memory formation and preventing the decline associated with aging along the way. For musician Teitur, singing is about giving away a piece of yourself to others. "If your intentions are to impress people or to get the big applause at the end," he says, "then you are taking, not giving." Listen as he plays on stage at TED2015, offering two songs about love, distance and home. Can we end hunger and poverty, halt climate change and achieve gender equality in the next 15 years? The governments of the world think we can. Meeting at the UN in September 2015, they agreed to a new set of Global Goals for the development of the world to 2030. Social progress expert Michael Green invites us to imagine how these goals and their vision for a better world can be achieved. At his lab at the University of Pennsylvania, Vijay Kumar and h



... team have created autonomous aerial robots inspired by honeybees. Their latest breakthrough: Precision Farming, in which swarms of robots map, reconstruct and analyze every plant and piece of fruit in an orchard, providing vital information to farmers that can help improve yields and make water management smarter. You might not know this: Many of the medicines we take -- common drugs like Ambien and everyday aspirin -- were only ever tested on men. And the unknown side effects for women can be dangerous, even deadly. Alyson McGregor studies the differences between male and female patients; in this fascinating talk she explains how the male model became our framework for medical research ...

... and what women and men need to ask their doctors to get the right care for their bodies. When two bodies wearing identical wetsuits washed ashore in Norway and the Netherlands, journalist Anders Fjellberg and photographer Torm Christensen started a search to answer the question: who were these people? What they found and reported in Norway's "Dagbladet" is that everybody has a name, everybody has a story and everybody is someone. Using examples from birdsong, the natural lilt of emphatic language and even a cooking pan lid, singer-songwriter and TED Fellow Meklit Hadero shows how the everyday soundscape, even silence, makes music. "The world is alive with musical expression," she says. "We are already immersed." Investigative journalist Will Potter is the only reporter who has been inside a Communications Management Unit, or CMU, within a US prison. These units were opened secretly, and radically alter how prisoners are treated -- even preventing them from hugging their children. Potter, a TED Fellow, shows us who is imprisoned here, and how the government is trying to keep them hidden. "The message was clear," he says. "Don't talk about this place." Find sources for this talk at [willpotter.com/cmu](http://willpotter.com/cmu) Geneticist Jennifer Doudna co-invented a groundbreaking new technology for editing genes, called CRISPR-Cas9. The tool allows scientists to make precise edits to DNA strands, which could lead to treatments for genetic diseases ... but could also be used to create so-called "designer babies." Doudna reviews how CRISPR-Cas9 works -- and asks the scientific community to pause and discuss the ethics of this new tool. Designer Tea Uglow is creating a future in which humanity's love for natural solutions and simple tools can coexist with our need for information and the devices that provide us with it. "Reality is richer than screens," she says. "We can have a happy place filled with the information we love that feels as natural as switching on lightbulb." Cave explorer and geologist Francesco Sauro travels to the hidden continent under our feet, surveying deep, dark places inside the earth that humans have never been able to reach before. In the spectacular tepuis of South America, he finds new minerals and insects that have evolved in isolation, and he uses his knowledge of these alien worlds to train astronauts. When a family falls into crisis -- and it sometimes happens, thanks to unemployment, drugs, bad relationships and bad luck -- the social services system is supposed to step in and help them get back on track. As Hilary Cottam shows, in the UK a typical family in crisis can be eligible for services from more than 70 different agencies, but it's unlikely that any one of them can really make a difference. Cottam, a social entrepreneur herself, asks us to think about the ways we solve deep and complex social problems. How can we build supportive, enthusiastic relationships between those in need and those that provide help? At the Harbour School in Hong Kong, TED Senior Fellow Cesar Harada teaches citizen science and invention to the next generation of environmentalists. He's moved his classroom into an industrial mega-space where imaginative kids work with wood, metal, chemistry, biology, optics and, occasionally, power tools to create solutions to the threats facing the world's oceans. There, he instills a universal lesson that his own parents taught him at a young age: "You can make a mess, but you have to clean up after yourself." Artist and TED Fellow Christine Sun Kim was born deaf, and she was taught to believe that sound wasn't a part of her life, that it was a hearing person's thing. Through her art, she discovered similarities between American Sign Language and music, and she realized that sound doesn't have to be known solely through the ears -- it can be felt, seen and experienced as an idea. In this endearing talk, she invites us to open our eyes and ears and participate in the rich treasure of visual language. In 2013, the world learned that the NSA and its UK equivalent, GCHQ, routinely spied on the German government. Amid the outrage, artists Mathias Jud and Christoph Wachter thought: Well, if they're listening ... let's talk to them. With antennas mounted on the roof of the Swiss Embassy in Berlin's government district, they set up an open network that let the world send messages to US and UK spies listening nearby. It's one of three bold, often funny, and frankly subversive works detailed in this talk, which highlights the world's growing discontent with surveillance and closed networks. You're not at your best when you're stressed. In fact, your brain has evolved over millennia to release cortisol in stressful situations, inhibiting rational, logical thinking but potentially helping you survive, say, being attacked by a lion. Neuroscientist Daniel Levitin thinks there's a way to avoid making critical mistakes in stressful situations, when your thinking becomes clouded -- the pre-mortem. "We all are going to fail now and then," he says. "The idea is to think ahead

to what those failures might have been." When a young woman texted DoSomething.org with the heartbreaking cry for help, the organization responded by opening a nationwide Crisis Text Line for people in pain. Nearly 10 million text messages later, the organization is using the privacy and power of text messaging to help people handle addiction, suicidal thoughts, eating disorders, sexual abuse and more. But there's an even bigger win: The anonymous data collected by text is teaching us when crises are most likely to happen -- and helping schools and law enforcement to prepare for them. Aboard an overloaded ship carrying more than 500 refugees, a young woman becomes an unlikely hero. This single, powerful story, told by Melissa Fleming of the UN's refugee agency, gives a human face to the sheer numbers of human beings trying to escape to better lives ... as the refugee ships keep coming ... Although the tapir is one of the world's largest land mammals, the lives of these solitary, nocturnal creatures have remained a mystery. Known as "the living fossil," the very same tapir that roams the forests and grasslands of South America today arrived on the evolutionary scene more than 5 million years ago. But threats from poachers, deforestation and pollution, especially in quickly industrializing Brazil, threaten this longevity. In this insightful talk, conservation biologist, tapir expert and TED Fellow Patrícia Medici shares her work with these amazing animals and challenges us with a question: Do we want to be responsible for their extinction? What if we could use existing technologies to provide Internet access to the more than 4 billion people living in places where the infrastructure can't support it? Using off-the-shelf LEDs and solar cells, Harald Haas and his team have pioneered a new technology that transmits data using light, and it may just be the key to bridging the digital divide. Take a look at what the future of the Internet could look like. A genre unto herself, Kaki King fuses the ancient tradition of working with one's hands with digital technology, projection-mapping imagery onto her guitar in her groundbreaking multimedia work "The Neck Is a Bridge to the Body." Using her guitar's neck like a keyboard, she plays an intricate melody as she takes the audience on a musical journey of light and sound. She calls it "guitar as paintbrush." As a gay couple in San Francisco, Jenni Chang and Lisa Dazols had a relatively easy time living the way they wanted. But outside the bubble of the Bay Area, what was life like for people still lacking basic rights? They set off on a world tour in search of "Supergays," LGBT people who were doing something extraordinary in the world. In 15 countries across Africa, Asia and South America -- from India, recently home to the world's first openly gay prince, to Argentina, the first country in Latin America to grant marriage equality -- they found the inspiring stories and the courageous, resilient and proud Supergays they had been looking for. Search engines have become our most trusted sources of information and arbiters of truth. But can we ever get an unbiased search result? Swedish author and journalist Andreas Ekström argues that such a thing is a philosophical impossibility. In this thoughtful talk, he calls on us to strengthen the bonds between technology and the humanities, and he reminds us that behind every algorithm is a set of personal beliefs that no code can ever completely eradicate. How do we respect someone's religious beliefs, while also holding religion accountable for the damage those beliefs may cause? Chelsea Shields has a bold answer to this question. She was raised in the orthodox Mormon tradition, and she spent the early part of her life watching women be excluded from positions of importance within the LDS Church. Now, this anthropologist, activist and TED Fellow is working to reform her church's institutionalized gender inequality. "Religions can liberate or subjugate, they can empower or exploit, they can comfort or destroy," she says. "What is taught on the Sabbath leaks into our politics, our health policy, violence around the world." In April 2003, just as American troops began rolling into Baghdad, a shell smashed into the building author and war correspondent Jean-Paul Mari was reporting from. There he had a face-to-face encounter with death, beginning his acquaintance with a phantom that has haunted those who have risked their lives on battlefields since ancient times. "What is this thing that can kill you without leaving any visible scars?" Mari asks. We know it as post-traumatic stress disorder -- or, as Mari describes it, an experience with the void of death. In this probing talk, he searches for answers to questions about mortality and psychosis and in the aftermath of horror and trauma. Josh Lubner is a "sneakerhead," a collector of rare or limited sneakers. With their insatiable appetite for exclusive sneakers, these tastemakers drive marketing and create hype for the brands they love, specifically Nike, which absolutely dominates the multi-billion dollar secondary market for sneakers. Lubner's company, Campless, collects data about this market and analyzes it for collectors and investors. In this talk, he takes us on a journey into this complicated, unregulated market and imagines how it could be a model for a stock market for commerce. What if you could experience a story with your entire body, not just with your mind? Nonny de la Peña is working on a new form of journalism that combines traditional reporting with emerging virtual reality technology to put the audience inside the story. The result is an evocative experience that de la Peña hopes will help people understand the news in a brand new way. For the people

change of Kiribati, climate change isn't something to be debated or legislated against -- it's an everyday reality. The low-lying Pacific island nation may soon be under water, thanks to rising sea levels. In a personal conversation with TED Curator Chris Anderson, Kiribati President Anote Tong discusses his country's present climate catastrophe and its imperiled future. "In order to deal with climate change, there's got to be sacrifice. There's got to be commitment," he says. "We've got to tell people that the world has changed." What's going on inside the brains of animals? Can we know what, or if, they're thinking and feeling? Carl Safina thinks we can. Using discoveries and anecdotes that span ecology, biology and behavioral science, he weaves together stories of whales, wolves, elephants and albatrosses to argue that just as we think, feel, use tools and express emotions, so too do the other creatures -- and minds -- that share the Earth with us. Written language, the hallmark of human civilization, didn't just suddenly appear one day. Thousands of years before the first fully developed writing systems, our ancestors scrawled geometric signs across the walls of the caves they sheltered in. Paleoanthropologist, rock art researcher and TED Senior Fellow Genevieve von Petzinger has studied and codified these ancient markings in caves across Europe. The uniformity of her findings suggest that graphic communication, and the ability to preserve and transmit messages beyond a single moment in time, may be much older than we think. Ann Morgan considered herself well read -- until she discovered the "massive blindspot" on her bookshelf. Amid a multitude of English and American authors, there were very few books from beyond the English-speaking world. So she set an ambitious goal: to read one book from every country in the world over the course of a year. Now she's urging other Anglophiles to read translated works so that publishers will work harder to bring foreign literary gems back to their shores. Explore interactive maps of her reading journey here: [go.ted.com/readtheworld](http://go.ted.com/readtheworld) Given the choice between a job candidate with a perfect resume and one who has fought through difficulty, human resources executive Regina Hartley always gives the "Scrapper" a chance. As someone who grew up with adversity, Hartley knows that those who flourish in the darkest of spaces are empowered with the grit to persist in an ever-changing workplace. "Choose the underestimated contender, whose secret weapons are passion and purpose," she says. "Hire the Scrapper." Marina Abramović's art pushes the boundary between audience and artist in pursuit of heightened consciousness and personal change. In her groundbreaking 2010 work, "The Artist Is Present," she simply sat in a chair facing her audience, for eight hours a day ... with powerfully moving results. Her boldest work may still be yet to come -- it's taking the form of a sprawling art institute devoted to experimentation and simple acts done with mindful attention. "Nothing happens if you always do things the same way," she says. "My method is to do things I'm afraid of, the things I don't know, to go to territory that nobody's ever been." Kristen Marhaver studies corals, tiny creatures the size of a poppyseed that, over hundreds of slow years, create beautiful, life-sustaining ocean structures hundreds of miles long. As she admits, it's easy to get sad about the state of coral reefs; they're in the news lately because of how quickly they're bleaching, dying and turning to slime. But the good news is that we're learning more and more about these amazing marine invertebrates -- including how to help them (and help them help us). This biologist and TED Senior Fellow offers a glimpse into the wonderful and mysterious lives of these hard-working and fragile creatures. We need women to work, and we need working women to have babies. So why is America one of the only countries in the world that offers no national paid leave to new working mothers? In this incisive talk, Jessica Shortall makes the impassioned case that the reality of new working motherhood in America is both hidden and horrible: millions of women, every year, are forced back to work within just weeks of giving birth. Her idea worth spreading: the time has come for us to recognize the economic, physical and psychological costs of our approach to working mothers and their babies, and to secure our economic future by providing paid leave to all working parents. How can technology help improve our quality of life? How can we navigate the world without using the sense of vision? Inventor and IBM Fellow Chieko Asakawa, who's been blind since the age of fourteen, is working on answering these questions. In a charming demo, she shows off some new technology that's helping blind people explore the world ever more independently ... because, she suggests, when we design for greater accessibility, everyone benefits. In this breathtaking talk, world champion freediver Guillaume Néry takes us with him into the ocean's depths. Meter by meter, he explains the physical and emotional impact of water pressure, silence and holding your breath. His eloquent description of the underwater experience reveals the hidden poetry of freediving. Jedidah Isler dreamt of becoming an astrophysicist since she was a young girl, but the odds were against her: At that time, only 18 black women in the United States had ever earned a PhD in a physics-related discipline. In this personal talk, she shares the story of how she became the first black woman to earn a PhD in astrophysics from Yale -- and her deep belief in the value of diversity to science and other STEM fields. "Do not think for one minute that because y

you are, you cannot be, you can only imagine yourself to be," she says. "Hold fast to those dreams and let them carry you into a world you can't even imagine." Downloadable, printable clothing may be coming to a closet near you. What started as designer Danit Peleg's fashion school project turned into a collection of 3D-printed designs that have the strength and flexibility for everyday wear. "Fashion is a very physical thing," she says. "I wonder what our world will look like when our clothes will be digital." Raymond Wang is only 17 years old, but he's already helping to build a healthier future.

Using fluid dynamics, he created computational simulations of how air moves on airplanes, and what he found is disturbing -- when a person sneezes on a plane, the airflow actually helps to spread pathogens to other passengers. Wang shares an unforgettable animation of how a sneeze travels inside a plane cabin as well as his prize-winning solution: a

small, fin-shaped device that increases fresh airflow in airplanes and redirects pathogen-laden air out of circulation. Nicole Paris was raised to be a beatboxer -- when she was young, her father, Ed Cage, used to beatbox her to sleep at night. Now the duo is known for their beatbox battles and jam sessions, which mix classic rap beats with electronic dance sounds. Prepare yourself for a bit of a hip-hop history lesson, and enjoy the show. The way we fish for popular seafood such as salmon, tuna and shrimp is threatening

to ruin our oceans. Paul Greenberg explores the sheer size and irrationality of the seafood economy, and suggests a few specific ways we can change it, to benefit both the natural world and the people who depend on fishing for their livelihoods. Stellar astronomer and TED Senior Fellow Lucianne Walkowicz works on NASA's Kepler mission, searching for places in the universe that could support life. So it's worth a listen when she asks

us to think carefully about Mars. In this short talk, she suggests that we stop dreaming of Mars as a place that we'll eventually move to when we've messed up Earth, and to

start thinking of planetary exploration and preservation of the Earth as two sides of the same goal. As she says, "The more you look for planets like Earth, the more you appreciate our own planet." "If you want to go out and start your own cemetery" in the UK, says Alison Killing, "you kind of can." She thinks a lot about where we die and are buried

-- and in this talk, the architect and TED Fellow offers an eye-opening economic and social perspective on an overlooked feature of our towns and cities: the cemetery. Speaking specifically to UK laws, she unpacks the fascinating, sometimes funny, often contradictory laws about where you can be buried. Legendary duo Jane Fonda and Lily Tomlin have been friends for decades. In a raw, tender and wide-ranging conversation hosted by Pat Mitchell, the three discuss longevity, feminism, the differences between male and female friendship, what it means to live well and women's role in future of our planet. "I don't even know what I would do without my women friends," Fonda says. "I exist because I

have my women friends." António Guterres thinks that we can solve the global refugee crisis -- and he offers compelling, surprising reasons why we must try. In conversation with TED's Bruno Giussani, Guterres discusses the historical causes of the current crisis and outlines the mood of the European countries that are trying to screen, shelter and

resettle hundreds of thousands of desperate families. Bigger picture: Guterres calls for a multilateral turn toward acceptance and respect -- to defy groups like ISIS's anti-refugee propaganda and recruiting machine. The Internet has transformed the front lines of war, and it's leaving governments behind. As security analyst Rodrigo Bijou shows,

modern conflict is being waged online between non-state groups, activists and private corporations, and the digital landscape is proving to be fertile ground for the recruitment and radicalization of terrorists. Meanwhile, draconian surveillance programs are ripe for exploitation. Bijou urges governments to end mass surveillance programs and shut "backdoors" -- and he makes a bold call for individuals to step up. For sculptor Jason de

caires Taylor, the ocean is more than a muse -- it's an exhibition space and museum. Taylor creates sculptures of human forms and mundane life on land and sinks them to the ocean floor, where they are subsumed by the sea and transformed from lifeless stone into vibrant habitats for corals, crustaceans and other creatures. The result: Enigmatic, haunting and colorful commentaries about our transient existence, the sacredness of the ocean and its breathtaking power of regeneration. What keeps us happy and healthy as we go through life? If you think it's fame and money, you're not alone -- but, according to psychiatrist Robert Waldinger, you're mistaken. As the director of a 75-year-old study on

adult development, Waldinger has unprecedented access to data on true happiness and satisfaction. In this talk, he shares three important lessons learned from the study as well as some practical, old-as-the-hills wisdom on how to build a fulfilling, long life. Why is there something rather than nothing? Why does so much interesting stuff exist in the universe? Particle physicist Harry Cliff works on the Large Hadron Collider at CERN, and he has some potentially bad news for people who seek answers to these questions. Despite the best efforts of scientists (and the help of the biggest machine on the planet),

we may never be able to explain all the weird features of nature. Is this the end of physics? Learn more in this fascinating talk about the latest research into the secret str

ture of the universe. Does collecting more data lead to better decision-making? Competitive, data-savvy companies like Amazon, Google and Netflix have learned that data analysis alone doesn't always produce optimum results. In this talk, data scientist Sebastian Wernicke breaks down what goes wrong when we make decisions based purely on data -- and suggests a brainier way to use it. Astronomer Aomawa Shields searches for clues that life might exist elsewhere in the universe by examining the atmospheres of distant exoplanets. When she isn't exploring the heavens, the classically trained actor (and TED Fellow) looks for ways to engage young women in the sciences using theater, writing and visual art. "Maybe one day they'll join the ranks of astronomers who are full of contradictions," she says, "and use their backgrounds to discover, once and for all, that we are truly not alone in the universe." As the world's climate patterns continue to shift unpredictably, places where drinking water was once abundant may soon find reservoirs dry and groundwater aquifers depleted. In this talk, civil and environmental engineer David Sedlak shares four practical solutions to the ongoing urban water crisis. His goal: to shift our water supply towards new, local sources of water and create a system that is capable of withstanding any of the challenges climate change may throw at us in the coming years. Suspicious emails: unclaimed insurance bonds, diamond-encrusted safe deposit boxes, close friends marooned in a foreign country. They pop up in our inboxes, and standard procedure is to delete on sight. But what happens when you reply? Follow along as writer and comedian James Veitch narrates a hilarious, weeks-long exchange with a spammer who offered to cut him in on a hot deal. Challenges and problems can derail your creative process ... or they can make you more creative than ever. In the surprising story behind the best-selling solo piano album of all time, Tim Harford may just convince you of the advantages of having to work with a little mess. We've invested so much in police departments as protectors that we have forgotten what it means to serve our communities, says Baltimore Police officer Lt. Colonel Melvin Russell. It's led to coldness and callousness, and it's dehumanized the police force. After taking over as district commander in one of Baltimore's toughest neighborhoods, Russell instituted a series of reforms aimed at winning back the trust of the community and lowering the violent crime rate. "Law enforcement is in a crisis," he says. "But it's not too late for all of us to build our cities and nation to make it great again." Wael Ghonim helped touch off the Arab Spring in his home of Egypt ... by setting up a simple Facebook page. As he reveals, once the revolution spilled onto the streets, it turned from hopeful to messy, then ugly and heart-breaking. And social media followed suit. What was once a place for crowdsourcing, engaging and sharing became a polarized battleground. Ghonim asks: What can we do about online behavior now? How can we use the Internet and social media to create civility and reasoned argument? For architect Ole Scheeren, the people who live and work inside a building are as much a part of that building as concrete, steel and glass. He asks: Can architecture be about collaboration and storytelling instead of the isolation and hierarchy of a typical skyscraper? Visit five of Scheeren's buildings -- from a twisted tower in China to a floating cinema in the ocean in Thailand -- and learn the stories behind them. Cave diver Jill Heinerth explores the hidden underground waterways coursing through our planet. Working with biologists, climatologists and archaeologists, Heinerth unravels the mysteries of the life-forms that inhabit some of the earth's most remote places and helps researchers unlock the history of climate change. In this short talk, take a dive below the waves and explore the wonders of inner space. As the world's population grows and the effects of climate change come into sharper relief, we'll have to feed more people using less arable land. Molecular biologist Jill Farrant studies a rare phenomenon that may help: "resurrection plants" -- super-resilient plants that seemingly come back from the dead. Could they hold promise for growing food in our coming hotter, drier world? If you read a poem and feel moved by it, but then find out it was actually written by a computer, would you feel differently about the experience? Would you think that the computer had expressed itself and been creative, or would you feel like you had fallen for a cheap trick? In this talk, writer Oscar Schwartz examines why we react so strongly to the idea of a computer writing poetry -- and how this reaction helps us understand what it means to be human. The water hyacinth may look like a harmless, even beautiful flowering plant -- but it's actually an invasive aquatic weed that clogs waterways, stopping trade, interrupting schooling and disrupting everyday life. In this scourge, green entrepreneur Achenyo Idachaba saw opportunity. Follow her journey as she turns weeds into woven wonders. The Sistine Chapel is one of the most iconic buildings on earth -- but there's a lot you probably don't know about it. In this tour-de-force talk, art historian Elizabeth Lev guides us across the famous building's ceiling and Michelangelo's vital depiction of traditional stories, showing how the painter reached beyond the religious iconography of the time to chart new artistic waters. Five hundred years after the artist painted it, says Lev, the Sistine Chapel forces us to look around as if it were a mirror and ask, "Who am I, and what role do I play in this great theater of life?" Ha

... you wondered why politicians aren't what they used to be, why governments seem unable to solve real problems? Economist Yanis Varoufakis, the former Minister of Finance for Greece, says that it's because you can be in politics today but not be in power -- because real power now belongs to those who control the economy. He believes that the mega-rich and corporations are cannibalizing the political sphere, causing financial crisis.

In this talk, hear his dream for a world in which capital and labor no longer struggle against each other, "one that is simultaneously libertarian, Marxist and Keynesian." Just a few meters below the waves, marine biologist and explorer-photographer David Gruber discovered something amazing -- a surprising new range of sea creatures that glow in many colors in the ocean's dim blue light. Join his journey in search of biofluorescent sharks, seahorses, sea turtles and more, and learn how these light-up creatures could illuminate a new understanding of our own brains. A decade ago, US law said human genes were patentable -- which meant patent holders had the right to stop anyone from sequencing, testing or even looking at a patented gene. Troubled by the way this law both harmed patients and created a barrier to biomedical innovation, Tania Simoncelli and her colleagues at the ACLU challenged it. In this riveting talk, hear the story of how they took a case everybody told them they would lose all the way to the Supreme Court. Robotist Auke Ijspeert designs biorobots, machines modeled after real animals that are capable of handling complex terrain and would appear at home in the pages of a sci-fi novel. The process of creating these robots leads to better automata that can be used for fieldwork, service, and search and rescue. But these robots don't just mimic the natural world -- they help us understand our own biology better, unlocking previously unknown secrets of the spinal cord. Plastic bags are essentially indestructible, yet they're used and thrown away with reckless abandon. Most end up in the ocean, where they pollute the water and harm marine life; the rest are burned in garbage piles, where they release harmful dioxins into the atmosphere. Melati and Isabel Wijsen are on a mission to stop plastic bags from suffocating their beautiful island home of Bali. Their efforts -- including petitions, beach cleanups, even a hunger strike -- paid off when they convinced their governor to commit to a plastic bag-free Bali by 2018. "Don't ever let anyone tell you that you're too young or you won't understand," Isabel says to other aspiring activists. "We're not telling you it's going to be easy. We're telling you it's going to be worth it." Computer code is the next universal language, and its syntax will be limited only by the imaginations of the next generation of programmers. Linda Liukas is helping to educate problem-solving kids, encouraging them to see computers not as mechanical, boring and complicated but as colorful, expressive machines meant to be tinkered with. In this talk, she invites us to imagine a world where the Ada Lovelaces of tomorrow grow up to be optimistic and brave about technology and use it to create a new world that is wonderful, whimsical and a tiny bit weird. When Andrés Ruzo was a young boy in Peru, his grandfather told him a story with an odd detail: There is a river, deep in the Amazon, which boils as if a fire burns below it. Twelve years later, after training as a geoscientist, he set out on a journey deep into the jungle of South America in search of this boiling river. At a time when everything seems mapped and measured, join Ruzo as he explores a river that forces us to question the line between known and unknown ... and reminds us that there are great wonders yet to be discovered. Can we break bad habits by being more curious about them? Psychiatrist Judson Brewer studies the relationship between mindfulness and addiction -- from smoking to overeating to all those other things we do even though we know they're bad for us. Learn more about the mechanism of habit development and discover a simple but profound tactic that might help you beat your next urge to smoke, snack or check a text while driving. When Ebola broke out in March 2014, Pardis Sabeti and her team got to work sequencing the virus's genome, learning how it mutated and spread. Sabeti immediately released her research online, so virus trackers and scientists from around the world could join in the urgent fight. In this talk, she shows how open cooperation was key to halting the virus ... and to attacking the next one to come along. "We had to work openly, we had to share and we had to work together," Sabeti says.

"Let us not let the world be defined by the destruction wrought by one virus, but illuminated by billions of hearts and minds working in unity." How much do you know about intellectual disabilities? Special Olympics champion and ambassador Matthew Williams is pro of that athletic competition and the camaraderie it fosters can transform lives, both on and off the field. Together with his fellow athletes, he invites you to join him at the next meet -- and challenges you to walk away with your heart unchanged. Economic growth is the defining challenge of our time; without it, political and social instability rises, human progress stagnates and societies grow dimmer. But, says economist Dambisa Moyo, dogmatic capitalism isn't creating the growth we need. As she shows, in both state-sponsored and market-driven models, capitalism is failing to solve social ills, fostering corruption and creating income inequality. Moyo surveys the current economic landscape and suggests that we have to start thinking about capitalism as a spectrum so we can bl

the best of different tools together to foster growth. What will the world look like when we move beyond the keyboard and mouse? Interaction designer Sean Follmer is building a future with machines that bring information to life under your fingers as you work with it. In this talk, check out prototypes for a 3D shape-shifting table, a phone that turns into a wristband, a deformable game controller and more that may change the way we live and work. Gregory Heyworth is a textual scientist; he and his lab work on new ways to read ancient manuscripts and maps using spectral imaging technology. In this fascinating talk, watch as Heyworth shines a light on lost history, deciphering texts that haven't been read in thousands of years. How could these lost classics rewrite what we know about the past? We're headed towards a global food crisis: Nearly 3 billion people depend on the ocean for food, and at our current rate we already take more fish from the ocean than it can naturally replace. In this fact-packed, eye-opening talk, entrepreneur and conservationist Mike Velings proposes a solution: Aquaculture, or fish farming. "We must start using the ocean as farmers instead of hunters," he says, echoing Jacques Cousteau. "The day will come where people will demand farmed fish on their plates that's farmed well and farmed healthy -- and refuse anything less." Social justice advocate and law scholar Dorothy Roberts has a precise and powerful message: Race-based medicine is bad medicine. Even today, many doctors still use race as a medical shortcut; they make important decisions about things like pain tolerance based on a patient's skin color instead of medical observation and measurement. In this searing talk, Roberts lays out the lingering traces of race-based medicine -- and invites us to be a part of ending it.

"It is more urgent than ever to finally abandon this backward legacy," she says, "and to affirm our common humanity by ending the social inequalities that truly divide us." Through treating everything from strokes to car accident traumas, neurosurgeon Jocelyne Bloch knows the brain's inability to repair itself all too well. But now, she suggests, she and her colleagues may have found the key to neural repair: Doublecortin-positive cells. Similar to stem cells, they are extremely adaptable and, when extracted from a brain, cultured and then re-injected in a lesioned area of the same brain, they can help repair and rebuild it. "With a little help," Bloch says, "the brain may be able to help itself." When your job hinges on how well you talk to people, you learn a lot about how to have conversations -- and that most of us don't converse very well. Celeste Headlee has worked as a radio host for decades, and she knows the ingredients of a great conversation: Honesty, brevity, clarity and a healthy amount of listening. In this insightful talk, she shares 10 useful rules for having better conversations. "Go out, talk to people, listen to people," she says. "And, most importantly, be prepared to be amazed." Shonda Rhimes, the titan behind Grey's Anatomy, Scandal and How to Get Away With Murder, is responsible for some 70 hours of television per season, and she loves to work. "When I am hard at work, when I am deep in it, there is no other feeling," she says. She has a name for this feeling: The hum. The hum is a drug, the hum is music, the hum is God's whisper in her ear. But what happens when it stops? Is she anything besides the hum? In this moving talk, join Rhimes on a journey through her "year of yes" and find out how she got her hum back. More than a billion years ago, two black holes in a distant galaxy locked into a spiral, falling inexorably toward each other, and collided. "All that energy was pumped into the fabric of time and space itself," says theoretical physicist Allan Adams, "making the universe explode in roiling waves of gravity." About 25 years ago, a group of scientists built a giant laser detector called LIGO to search for these kinds of waves, which had been predicted but never observed. In this mind-bending talk, Adams breaks down what happened when, in September 2015, LIGO detected an unthinkably small anomaly, leading to one of the most exciting discoveries in the history of physics. When you hear the word "drone," you probably think of something either very useful or very scary.

But could they have aesthetic value? Autonomous systems expert Raffaello D'Andrea develops flying machines, and his latest projects are pushing the boundaries of autonomous flight -- from a flying wing that can hover and recover from disturbance to an eight-propeller craft that's ambivalent to orientation ... to a swarm of tiny coordinated micro-quadcopters. Prepare to be dazzled by a dreamy, swirling array of flying machines as they dance like fireflies above the TED stage. Why is Al Gore optimistic about climate change? In this spirited talk, Gore asks three powerful questions about the man-made forces threatening to destroy our planet -- and the solutions we're designing to combat them.

(Featuring Q&A with TED curator Chris Anderson) When you look at Muslim scholar Dalia Mogahed, what do you see: A woman of faith? A scholar, a mom, a sister? Or an oppressed, brainwashed, potential terrorist? In this personal, powerful talk, Mogahed asks us, in this polarizing time, to fight negative perceptions of her faith in the media -- and to choose empathy over prejudice. Can global capital markets become catalysts for social change? According to investment expert Audrey Choi, individuals own almost half of all global capital, giving them (us!) the power to make a difference by investing in companies that champion social values and sustainability. "We have more opportunity today than ever

er before to make choices," she says. "So change your perspective. Invest in the change you want to see in the world." In Zimbabwe in the 1980s, Mary Bassett witnessed the AIDS epidemic firsthand, and she helped set up a clinic to treat and educate local people about the deadly virus. But looking back, she regrets not sounding the alarm for the real problem: the structural inequities embedded in the world's political and economic organizations, inequities that make marginalized people more vulnerable. These same structural problems exist in the United States today, and as New York City's Health Commissioner, Bassett is using every chance she has to rally support for health equity and speak out against racism. "We don't have to have all the answers to call for change," she says.

"We just need courage." There are a few things that we all need: fresh air, water, food, shelter, love ... and a safe place to pee. For trans people who don't fit neatly into the gender binary, public restrooms are a major source of anxiety and the place where they are most likely to be questioned or harassed. In this poetically rhythmic talk, Ivan Coyote grapples with complex and intensely personal issues of gender identity and highlights the need for gender-neutral bathrooms in all public places. Somersaulting manta rays, dashing dolphins, swarming schools of fish and munching sharks inhabit a world beneath the ocean's surface that few get a chance to see. Conservation photographer Thomas Peschak visits incredible seascapes around the world, and his photos reveal these hidden ecosystems. "You can't love something and become a champion for it if you don't know it exists," he says. Join Peschak in a new, immersive TED Talk format as he shares his stunning work and his dream for a future of respectful coexistence with the ocean. Textile artist Magda Sayeg transforms urban landscapes into her own playground by decorating everyday objects with colorful knit and crochet works. These warm, fuzzy "yarn bombs" started small, with stop sign poles and fire hydrants in Sayeg's hometown, but soon people found a connection to the craft and spread it across the world. "We all live in this fast-paced, digital world, but we still crave and desire something that's relatable,"

Sayeg says. "Hidden power can be found in the most unassuming places, and we all possess skills that are just waiting to be discovered." If you take two different medications for two different reasons, here's a sobering thought: your doctor may not fully understand what happens when they're combined, because drug interactions are incredibly hard to study. In this fascinating and accessible talk, Russ Altman shows how doctors are studying unexpected drug interactions using a surprising resource: search engine queries.

A million refugees arrived in Europe this year, says Alexander Betts, and "our response, frankly, has been pathetic." Betts studies forced migration, the impossible choice for families between the camps, urban poverty and dangerous illegal journeys to safety. In this insightful talk, he offers four ways to change the way we treat refugees, so they can make an immediate contribution to their new homes. "There's nothing inevitable about refugees being a cost," Betts says. "They're human beings with skills, talents, aspirations, with the ability to make contributions -- if we let them." Uber didn't start out with grand ambitions to cut congestion and pollution. But as the company took off, co-founder Travis Kalanick wondered if there was a way to get people using Uber along the same routes to share rides, reducing costs and carbon footprint along the way. The result: uberPOOL, the company's carpooling service, which in its first eight months took 7.9 million miles off the roads and 1,400 metric tons of carbon dioxide out of the air in Los Angeles. Now, Kalanick says carpooling could work for commuters in the suburbs, too. "With the technology in our pockets today, and a little smart regulation," he says,

"we can turn every car into a shared car, and we can reclaim our cities starting today." We're raising our girls to be perfect, and we're raising our boys to be brave, says Reshma Saujani, the founder of Girls Who Code. Saujani has taken up the charge to socialize young girls to take risks and learn to program -- two skills they need to move society forward. To truly innovate, we cannot leave behind half of our population, she says. "I need each of you to tell every young woman you know to be comfortable with imperfection." What if we could grow delicious, nutrient-dense food, indoors anywhere in the world? Caleb Harper, director of the Open Agriculture Initiative at the MIT Media Lab, wants to change the food system by connecting growers with technology. Get to know Harper's "food computers" and catch a glimpse of what the future of farming might look like.

Hundreds of meters below the surface of the ocean, Laura Robinson probes the steep slopes of massive undersea mountains. She's on the hunt for thousand-year-old corals that she can test in a nuclear reactor to discover how the ocean changes over time. By studying the history of the earth, Robinson hopes to find clues of what might happen in the future. Simple solutions are often best, even when dealing with something as complicated as Parkinson's. In this inspiring talk, Mileha Soneji shares accessible designs that make the everyday tasks of those living with Parkinson's a bit easier. "Technology is not always it," she says. "What we need are human-centered solutions." Deep in the Himalayas, on the border between China and India, lies the Kingdom of Bhutan, which has pledged to remain carbon neutral for all time. In this illuminating talk, Bhutan's Prime Minister



Tshering Tobgay shares his country's mission to put happiness before economic growth and set a world standard for environmental preservation. What do you do when your firmly held beliefs turn out not to be true? When Casey Gerald's religion failed him, he searched for something new to believe in -- in business, in government, in philanthropy -- but found only false saviors. In this moving talk, Gerald urges us all to question our beliefs and embrace uncertainty. Joe Gebbia, the co-founder of Airbnb, bet his whole company on the belief that people can trust each other enough to stay in one another's homes. How did he overcome the stranger-danger bias? Through good design. Now, 123 million hosted nights (and counting) later, Gebbia sets out his dream for a culture of sharing in which design helps foster community and connection instead of isolation and separation. Tim Urban knows that procrastination doesn't make sense, but he's never been able to shake his habit of waiting until the last minute to get things done. In this hilarious and insightful talk, Urban takes us on a journey through YouTube binges, Wikipedia rabbit holes and bouts of staring out the window -- and encourages us to think harder about what we're really procrastinating on, before we run out of time. We don't have to live in a world where 99 percent of rapists get away with it, says TED Fellow Jessica Ladd. With Callisto, a new platform for college students to confidentially report sexual assault, Ladd is helping survivors get the support and justice they deserve while respecting their privacy concerns. "We can create a world where there's a real deterrent to violating the rights of another human being," she says. Conservatives and liberals both believe that they alone are motivated by love while their opponents are motivated by hate. How can we solve problems with so much polarization? In this talk, social scientist Arthur Brooks shares ideas for what we can each do as individuals to break the gridlock. "We might just be able to take the ghastly holy war of ideology that we're suffering under and turn it into a competition of ideas," he says. What if technology could connect us more deeply with our surroundings instead of distracting us from the real world? With the Meta 2, an augmented reality headset that makes it possible for users to see, grab and move holograms just like physical objects, Meron Gribetz hopes to extend our senses through a more natural machine. Join Gribetz as he takes the TED stage to demonstrate the reality-shifting Meta 2 for the first time. (Featuring Q&A with TED Curator Chris Anderson) When a kid commits a crime, the US justice system has a choice: prosecute to the full extent of the law, or take a step back and ask if saddling young people with criminal records is the right thing to do every time. In this searching talk, Adam Foss, a prosecutor with the Suffolk County District Attorney's Office in Boston, makes his case for a reformed justice system that replaces wrath with opportunity, changing people's lives for the better instead of ruining them. If you've taken a career break and are now looking to return to the workforce, would you consider taking an internship? Career reentry expert Carol Fishman Cohen thinks you should. In this talk, hear about Cohen's own experience returning to work after a career break, her work championing the success of "relaunchers" and how employers are changing how they engage with return-to-work talent. Camels are so well adapted to the desert that it's hard to imagine them living anywhere else. But what if we have them pegged all wrong? What if those big humps, feet and eyes were evolved for a different climate and a different time? In this talk, join Radiolab's Latif Nasser as he tells the surprising story of how a very tiny, very strange fossil upended the way he sees camels, and the world. This talk comes from the PBS special "TED Talks: Science & Wonder." What can a young woman with an idea, an Internet connection and a bit of creativity achieve? That's all Siyanda Mohutsiwa needed to unite young African voices in a new way. Hear how Mohutsiwa and other young people across the continent are using social media to overcome borders and circumstance, accessing something they have long had to violently take: a voice. Explore a speculative digital world without screens in this fanciful demo, a mix of near reality and far-future possibility. Wearing the HoloLens headset, Alex Kipman demos his vision for bringing 3D holograms into the real world, enhancing our perceptions so that we can touch and feel digital content. Featuring Q&A with TED's Helen Walters. Angélica Dass's photography challenges how we think about skin color and ethnic identity. In this personal talk, hear about the inspiration behind her portrait project, Humanæ, and her pursuit to document humanity's true colors rather than the untrue white, red, black and yellow associated with race. It doesn't matter whether you love or hate guns; it's obvious that the US would be a safer place if there weren't thousands of them sold every day without background checks. Dan Gross, president of the Brady Campaign to Prevent Gun Violence, makes a passionate, personal appeal for something that more than 90 percent of Americans want: background checks for all gun sales. "For every great movement around the world, there's a moment where you can look back and say, 'That's when things really started to change,'" Gross says. "For the movement to end gun violence in America, that moment is here." If we hope to one day leave Earth and explore the universe, our bodies are going to have to get a lot better at surviving the harsh conditions of space. Using synthetic biology, Lisa Nip hopes to

harness special powers from microbes on Earth -- such as the ability to withstand radiation -- to make humans more fit for exploring space. "We're approaching a time during which we'll have the capacity to decide our own genetic destiny," Nip says. "Augmenting the human body with new abilities is no longer a question of how, but of when." Is it possible to run a company and reinvent it at the same time? For business strategist Knut Haanaes, the ability to innovate after becoming successful is the mark of a great organization. He shares insights on how to strike a balance between perfecting what we already know and exploring totally new ideas -- and lays out how to avoid two major strategy traps. How do creative people come up with great ideas? Organizational psychologist Adam Grant studies "originals": thinkers who dream up new ideas and take action to put them into the world. In this talk, learn three unexpected habits of originals -- including embracing failure. "The greatest originals are the ones who fail the most, because they're the ones who try the most," Grant says. "You need a lot of bad ideas in order to get a few good ones." Haley Van Dyck is transforming the way America delivers critical services to everyday people. At the United States Digital Service, Van Dyck and her team are using lessons learned by Silicon Valley and the private sector to improve services for veterans, immigrants, the disabled and others, creating a more awesome government along the way. "We don't care about politics," she says. "We care about making government work better, because it's the only one we've got." "I want you to reimagine how life is organized on earth," says global strategist Parag Khanna. As our expanding cities grow ever more connected through transportation, energy and communications networks, we evolve from geography to what he calls "connectography." This emerging global network civilization holds the promise of reducing pollution and inequality -- and even overcoming geopolitical rivalries. In this talk, Khanna asks us to embrace a new maxim for the future: "Connectivity is destiny." Danielle Feinberg, Pixar's director of photography, creates stories with soul and wonder using math, science and code. Go behind the scenes of Finding Nemo, Toy Story, Brave, WALL-E and more, and discover how Pixar interweaves art and science to create fantastic worlds where the things you imagine can become real. This talk comes from the PBS special "TED Talks: Science & Wonder." Something massive, with roughly 1,000 times the area of Earth, is blocking the light coming from a distant star known as KIC 8462852, and nobody is quite sure what it is. As astronomer Tabetha Boyajian investigated this perplexing celestial object, a colleague suggested something unusual: Could it be an alien-built megastructure? Such an extraordinary idea would require extraordinary evidence. In this talk, Boyajian gives us a look at how scientists search for and test hypotheses when faced with the unknown. On April 3, 2016 we saw the largest data leak in history. The Panama Papers exposed rich and powerful people hiding vast amounts of money in offshore accounts. But what does it all mean? We called Robert Palmer of Global Witness to find out. Linus Torvalds transformed technology twice -- first with the Linux kernel, which helps power the Internet, and again with Git, the source code management system used by developers worldwide. In a rare interview with TED Curator Chris Anderson, Torvalds discusses with remarkable openness the personality traits that prompted his unique philosophy of work, engineering and life. "I am not a visionary, I'm an engineer," Torvalds says. "I'm perfectly happy with all the people who are walking around and just staring at the clouds ... but I'm looking at the ground, and I want to fix the pothole that's right in front of me before I fall in." Hugh Evans started a movement that mobilizes "global citizens," people who self-identify first and foremost not as members of a state, nation or tribe but as members of the human race. In this uplifting and personal talk, learn more about how this new understanding of our place in the world is galvanizing people to take action in the fights against extreme poverty, climate change, gender inequality and more. "These are ultimately global issues," Evans says, "and they can only be solved by global citizens demanding global solutions from their leaders." It sounds like science fiction, but journalist Stephen Petranek considers it fact: within 20 years, humans will live on Mars. In this provocative talk, Petranek makes the case that humans will become a spacefaring species and describes in fascinating detail how we'll make Mars our next home. "Humans will survive no matter what happens on Earth," Petranek says. "We will never be the last of our kind." Cancer is a very clever, adaptable disease. To defeat it, says medical researcher and educator Paula Hammond, we need a new and powerful mode of attack. With her colleagues at MIT, Hammond engineered a nanoparticle one-hundredth the size of a human hair that can treat the most aggressive, drug-resistant cancers. Learn more about this molecular superweapon and join Hammond's quest to fight a disease that affects us all. "Great dreams aren't just visions," says Astro Teller, "They're visions coupled to strategies for making them real." The head of X (formerly Google X), Teller takes us inside the "moonshot factory," as it's called, where his team seeks to solve the world's biggest problems through experimental projects like balloon-powered Internet and wind turbines that sail through the air. Find out X's secret to creating an organization where people feel comfortable working on big, risky pro

jects and exploring audacious ideas. "Copy editing for 'The New Yorker' is like playing shortstop for a Major League Baseball team -- every little movement gets picked over by the critics," says Mary Norris, who has played the position for more than thirty years. In that time, she's gotten a reputation for sternness and for being a "comma maniac," but this is unfounded, she says. Above all, her work is aimed at one thing: making authors look good. Explore The New Yorker's distinctive style with the person who knows it best in this charming talk. What would you do if your job was to save the planet? When Christiana Figueres was tapped by the UN to lead the Paris climate conference (COP 21) in December 2015, she reacted the way many people would: she thought it would be impossible to bring the leaders of 195 countries into agreement on how to slow climate change. Find out how she turned her skepticism into optimism -- and helped the world achieve the most important climate agreement in history. There's no single formula for a great talk, but there is a secret ingredient that all the best ones have in common. TED curator Chris Anderson shares this secret -- along with four ways to make it work for you. Do you have what it takes to share an idea worth spreading? As different as we humans are from one another, we all age along the same great sequence, and the shared patterns of our lives pass into the pages of the books we love. In this moving talk, journalist Joshua Prager explores the stages of life through quotations from Norman Mailer, Joyce Carol Oates, William Trevor and other great writers, set to visualizations by graphic designer Milton Glaser. "Books tell us who we've been, who we are, who we will be, too," Prager says. For four billion years, what lived and died on Earth depended on two principles: natural selection and random mutation. Then humans came along and changed everything -- hybridizing plants, breeding animals, altering the environment and even purposefully evolving ourselves. Juan Enriquez provides five guidelines for a future where this ability to program life rapidly accelerates. "This is the single most exciting adventure human beings have been on," Enriquez says. "This is the single greatest superpower humans have ever had." It's true: talking about menstruation makes many people uncomfortable. And that taboo has consequences: in India, three out of every 10 girls don't even know what menstruation is at the time of their first period, and restrictive customs related to periods inflict psychological damage on young girls. Growing up with this taboo herself, Aditi Gupta knew she wanted to help girls, parents and teachers talk about periods comfortably and without shame. She shares how she did it. What happens when you discover a dinosaur? Paleontologist Kenneth Lacovara details his unearthing of Dreadnoughtus -- a 77-million-year-old sauropod that was as tall as a two-story house and as heavy as a jumbo jet -- and considers how amazingly improbable it is that a tiny mammal living in the cracks of the dinosaur world could evolve into a sentient being capable of understanding these magnificent creatures. Join him in a celebration of the Earth's geological history and contemplate our place in deep time. Trust: How do you earn it? Banks use credit scores to determine if you're trustworthy, but there are about 2.5 billion people around the world who don't have one to begin with -- and who can't get a loan to start a business, buy a home or otherwise improve their lives. Hear how TED Fellow Shivani Siroya is unlocking untapped purchasing power in the developing world with InVenture, a start-up that uses mobile data to create a financial identity. "With something as simple as a credit score," says Siroya, "we're giving people the power to build their own futures." Artist R. Luke DuBois makes unique portraits of presidents, cities, himself and even Britney Spears using data and personality. In this talk, he shares nine projects -- from maps of the country built using information taken from millions of dating profiles to a gun that fires a blank every time a shooting is reported in New Orleans. His point: the way we use technology reflects on us and our culture, and we reduce others to data points at our own peril. When Ameera Harouda hears the sounds of bombs or shells, she heads straight towards them. "I want to be there first because these stories should be told," says Gaza's first female "fixer," a role that allows her to guide journalists into chaotic, war zone scenarios in her home country, which she still loves despite its terrible situation. Find out what motivates Harouda to give a voice to Gaza's human suffering in this unforgettable talk. Will we do whatever it takes to fight climate change? Back in 2008, following the global financial crisis, governments across the world adopted a "whatever it takes" commitment to monetary recovery, issuing \$250 billion worth of international currency to stem the collapse of the economy. In this delightfully wonky talk, financial expert Michael Metcalfe suggests we can use that very same unconventional monetary tool to fund a global commitment to a green future. Secrets, disease and beauty are all written in the human genome, the complete set of genetic instructions needed to build a human being. Now, as scientist and entrepreneur Riccardo Sabatini shows us, we have the power to read this complex code, predicting things like height, eye color, age and even facial structure -- all from a vial of blood. And soon, Sabatini says, our new understanding of the genome will allow us to personalize treatments for diseases like cancer. We have the power to change life as we know it. How will we use it? After Sarah Gray's unborn son

Thomas was diagnosed with amyotrophic lateral sclerosis, a terminal condition, she decided to turn her family's tragedy into an extraordinary gift and donate his organs to scientific research. In this tribute to life and discovery, she shares her journey to find meaning in loss and spreads a message of hope for other grieving families. In this ode to design renegades, Alice Rawsthorn highlights the work of unlikely heroes, from Blackbeard to Florence Nightingale. Drawing a line from these bold thinkers to some early modern visionaries like Buckminster Fuller, Rawsthorn shows how the greatest designers are often the most rebellious. What are your dreams? Better yet, what are your broken dreams? Dan Pallotta dreams of a time when we are as excited, curious and scientific about the development of our humanity as we are about the development of our technology. "What we fear most is that we will be denied the opportunity to fulfill our true potential," Pallotta says. "Imagine living in a world where we simply recognize that deep, existential fear in one another -- and love one another boldly because we know that to be human is to live with that fear." Science fiction writer Monica Byrne imagines rich worlds populated with characters who defy our racial, social and gender stereotypes. In this performance, Byrne appears as a hologram named Pilar, transmitting a story of love and loss back to us from a near future when humans have colonized the universe. "It's always funny what you think the future is going to be like versus what it turns out to be," she says. Virtual reality is no longer part of some distant future, and it's not just for gaming and entertainment anymore. Michael Bodekaer wants to use it to make quality education more accessible. In this refreshing talk, he demos an idea that could revolutionize the way we teach science in schools. CRISPR gene drives allow scientists to change sequences of DNA and guarantee that the resulting edited genetic trait is inherited by future generations, opening up the possibility of altering entire species forever. More than anything, the technology has led to questions: How will this new power affect humanity? What are we going to use it to change? Are we gods now? Join journalist Jennifer Kahn as she ponders these questions and shares a potentially powerful application of gene drives: the development of disease-resistant mosquitoes that could knock out malaria and Zika. Neuroscientist Uri Hasson researches the basis of human communication, and experiments from his lab reveal that even across different languages, our brains show similar activity, or become "aligned," when we hear the same idea or story. This amazing neural mechanism allows us to transmit brain patterns, sharing memories and knowledge. "We can communicate because we have a common code that presents meaning," Hasson says. Conceptual artist and TED Fellow Sanford Biggers uses painting, sculpture, video and performance to spark challenging conversations about the history and trauma of black America. Join him as he details two compelling works and shares the motivation behind his art. "Only through more thoughtful dialogue about history and race can we evolve as individuals and society," Biggers says. What if we could find cancerous tumors years before they can harm us -- without expensive screening facilities or even steady electricity? Physician, bioengineer and entrepreneur Sangeeta Bhatia leads a multidisciplinary lab that searches for novel ways to understand, diagnose and treat human disease. Her target: the two-thirds of deaths due to cancer that she says are fully preventable. With remarkable clarity, she breaks down complex nanoparticle science and shares her dream for a radical new cancer test that could save millions of lives. Are children poor liars? Do you think you can easily detect their lies? Developmental researcher Kang Lee studies what happens physiologically to children when they lie. They do it a lot, starting as young as two years old, and they're actually really good at it. Lee explains why we should celebrate when kids start to lie and presents new lie-detection technology that could someday reveal our hidden emotions. Anyone who has lost a loved one to pancreatic cancer knows the devastating speed with which it can affect an otherwise healthy person. TED Fellow and biomedical entrepreneur Laura Indolfi is developing a revolutionary way to treat this complex and lethal disease: a drug delivery device that acts as a cage at the site of a tumor, preventing it from spreading and delivering medicine only where it's needed. "We are hoping that one day we can make pancreatic cancer a curable disease," she says. Sebastian Junger has seen war up close, and he knows the impact that battlefield trauma has on soldiers. But he suggests there's another major cause of pain for veterans when they come home: the experience of leaving the tribal closeness of the military and returning to an alienating and bitterly divided modern society. "Sometimes, we ask ourselves if we can save the vets," Junger says. "I think the real question is if we can save ourselves." (This talk comes from the PBS special "TED Talks: War & Peace," which premieres Monday, May 30 at 9 p.m. EST.) Everyone has an opinion about how to legislate sex work (whether to legalize it, ban it or even tax it) ... but what do workers themselves think would work best? Activist Juno Mac explains four legal models that are being used around the world and shows us the model that she believes will work best to keep sex workers safe and offer greater self-determination. "If you care about gender equality or poverty or migration or public health, then sex worker rights matter to you," she says. "Make space for us in your movements." (Adult the

mes) In the US, the press has the right to publish secret information that the public needs to know, protected by the First Amendment. Government surveillance has made it increasingly more dangerous for whistleblowers, the source of virtually every important story about national security since 9/11, to share information. In this concise, informative talk, Freedom of the Press Foundation co-founder and TED Fellow Trevor Timm traces the recent history of government action against individuals who expose crime and injustice and advocates for technology that can help them do it safely and anonymously. To those who feel like they don't belong: there is beauty in being a misfit. Author Lidia Yuknavitch shares her own wayward journey in an intimate recollection of patchwork stories about loss, shame and the slow process of self-acceptance. "Even at the moment of your failure, you are beautiful," she says. "You don't know it yet, but you have the ability to reinvent yourself endlessly. That's your beauty." Can the way you speak and write today predict your future mental state, even the onset of psychosis? In this fascinating talk, neuroscientist Mariano Sigman reflects on ancient Greece and the origins of introspection to investigate how our words hint at our inner lives and details a word-mapping algorithm that could predict the development of schizophrenia. "We may be seeing in the future a very different form of mental health," Sigman says, "based on objective, quantitative and automated analysis of the words we write, of the words we say." Zaria Forman's large-scale compositions of melting glaciers, icebergs floating in glassy water and waves cresting with foam explore moments of transition, turbulence and tranquility. Join her as she discusses the meditative process of artistic creation and the motivation behind her work.

"My drawings celebrate the beauty of what we all stand to lose," she says. "I hope they can serve as records of sublime landscapes in flux." The barbershop can be a safe haven for black men, a place for honest conversation and trust -- and, as physician Joseph R. Venell suggests, a good place to bring up tough topics about health. He's turning the barbershop into a place to talk about medical problems that statistically affect black men more often and more seriously, like high blood pressure. It's a new approach to problem solving with broad applications. "What is your barbershop?" he asks. "Where is that place for you where people affected by a unique problem can meet a unique solution?" Before he fought in the galactic battles of Star Wars: The Force Awakens, Adam Driver was a United States Marine with 1st Weapons Company. He tells the story of how and why he became a Marine, the complex transition from soldier to civilian -- and Arts in the Armed Forces, his nonprofit that brings theater to the military. Because, as he says: "Self-expression is just as valuable a tool as a rifle on your shoulder." Followed by a spirited performance of Marco Ramirez's "I am not Batman" by Jesse J. Perez and Matt Johnson.

(Adult language) Sue Desmond-Hellmann is using precision public health -- an approach that incorporates big data, consumer monitoring, gene sequencing and other innovative tools -- to solve the world's most difficult medical problems. It's already helped cut HIV transmission from mothers to babies by nearly half in sub-Saharan Africa, and now it's being used to address alarming infant mortality rates all over the world. The goal:

to save lives by bringing the right interventions to the right populations at the right time. In some parts of the world, it's easier to get an automatic rifle than a glass of clean drinking water. Is this just the way it is? Samantha Nutt, doctor and founder of the international humanitarian organization War Child, explores the global arms trade -- and suggests a bold, common sense solution for ending the cycle of violence. "War is ours," she says. "We buy it, sell it, spread it and wage it. We are therefore not powerless to solve it." In the 1970s (and decades following), TV producer Norman Lear touched the lives of millions with culture-altering sitcoms like All in the Family, The Jeffersons and Good Times, pushing the boundaries of the era and giving a primetime voice to underrepresented Americans. In an intimate, smart conversation with Eric Hirshberg, he shares with humility and humor how his early relationship with "the foolishness of the human condition" shaped his life and creative vision. Photographer Stephen Wilkes crafts stunning compositions of landscapes as they transition from day to night, exploring the space-time continuum within a two-dimensional still photograph. Journey with him to iconic locations like the Tournelle Bridge in Paris, El Capitan in Yosemite National Park and a life-giving watering hole in heart of the Serengeti in this tour of his art and process.

Hidden truths permeate our world; they're inaccessible to our senses, but math allows us to go beyond our intuition to uncover their mysteries. In this survey of mathematical breakthroughs, Fields Medal winner Cédric Villani speaks to the thrill of discovery and details the sometimes perplexing life of a mathematician. "Beautiful mathematical explanations are not only for our pleasure," he says. "They change our vision of the world." What does a cultural Big Bang look like? For Amit Sood, director of Google's Cultural Institute and Art Project, it's an online platform where anyone can explore the world's greatest collections of art and artifacts in vivid, lifelike detail. Join Sood and Google artist in residence Cyril Diagne in a mind-bending demo of experiments from the Cultural Institute and glimpse the exciting future of accessibility to arts and culture.

e. A quarter of the world's population cares a lot about the Chinese zodiac. Even if you don't believe in it, you'd be wise to know how it works, says technologist and entrepreneur ShaoLan Hseuh. In this fun, informative talk, ShaoLan shares some tips for understanding the ancient tradition and describes how it's believed to influence your personality, career, marriage prospects and how you'll do in a given year. What does your sign say about you? "Once upon a time in America," says professor Sajay Samuel, "going to college did not mean graduating with debt." Today, higher education has become a consumer product -- costs have skyrocketed, saddling students with a combined debt of over \$1 trillion, while universities and loan companies make massive profits. Samuel proposes a radical solution: link tuition costs to a degree's expected earnings, so that students can make informed decisions about their future, restore their love of learning and contribute to the world in a meaningful way. TED Fellow Negin Farsad weaves comedy and social commentary to cleverly undercut stereotypes of her culture. In this uproarious talk/stand-up hybrid, Farsad speaks on her documentary, *The Muslims Are Coming!*, narrates her fight with the MTA in New York and offers a detailed breakdown of the different types of haters she's encountered in her work. "Comedy is one of our best weapons," she says. "We've tried a lot of approaches to social justice, like war and competitive ice dancing -- but a lot of things are still kind of awful. I think it's time we try and tell a really good poop joke." Half of the world's poorest people have something in common: they're small farmers. In this eye-opening talk, activist Andrew Youn shows how his group, One Acre Fund, is helping these farmers lift themselves out of poverty by delivering to them life-sustaining farm services that are already in use all over the world. Enter this talk believing we'll never be able to solve hunger and extreme poverty, and leave it with a new understanding of the scale of the world's biggest problems. We're not going to end violence by telling people that it's morally wrong, says Jamila Raqib, executive director of the Albert Einstein Institution. Instead, we must find alternative ways to conduct conflict that are equally powerful and effective. Raqib promotes nonviolent resistance to people living under tyranny -- and there's a lot more to it than street protests. She shares encouraging examples of creative strategies that have led to change around the world and a message of hope for a future without armed conflict. "The greatest hope for humanity lies not in condemning violence but in making violence obsolete," Raqib says. TED Fellow Andrew Pelling is a biohacker, and nature is his hardware. His favorite materials are the simplest ones (and oftentimes he finds them in the garbage). Building on the cellulose structure that gives an apple its shape, he "grows" lifelike human ears, pioneering a process that might someday be used to repair body parts safely and cheaply. And he has some even wilder ideas to share ... "What I'm really curious about is if one day it will be possible to repair, rebuild and augment our own bodies with stuff we make in the kitchen," he says. Chris Milk uses innovative technologies to make personal, interactive, human stories. Accompanied by Joshua Roman on cello and McKenzie Stubbert on piano, Milk traces his relationship to music and art -- from the first moment he remembers putting on headphones to his current work creating breakthrough virtual reality projects. VR is the last medium for storytelling, he says, because it closes the gap between audience and storyteller. To illustrate, he brought the TED audience together in the world's largest collective VR experience. Join them and take part in this interactive talk by getting a Google Cardboard and downloading the experience at [with.in/TED](http://with.in/TED). How often does technology interrupt us from what we really mean to be doing? At work and at play, we spend a startling amount of time distracted by pings and pop-ups -- instead of helping us spend our time well, it often feels like our tech is stealing it away from us. Design thinker Tristan Harris offers thoughtful new ideas for technology that creates more meaningful interaction. He asks: "What does the future of technology look like when you're designing for the deepest human values?" Gill Hicks's story is one of compassion and humanity, emerging from the ashes of chaos and hate. A survivor of the London terrorist bombings on July 7, 2005, she shares her story of the events of that day -- and the profound lessons that came as she learned how to live on. Ninety-six percent of genome studies are based on people of European descent. The rest of the world is virtually unrepresented -- and this is dangerous, says geneticist and TED Fellow Keolu Fox, because we react to drugs differently based on our genetic makeup. Fox is working to democratize genome sequencing, specifically by advocating for indigenous populations to get involved in research, with the goal of eliminating health disparities. "The research community needs to immerse itself in indigenous culture," he says, "or die trying." Seema Bansal forged a path to public education reform for 15,000 schools in Haryana, India, by setting an ambitious goal: by 2020, 80 percent of children should have grade-level knowledge. She's looking to meet this goal by seeking reforms that will work in every school without additional resources. Bansal and her team have found success using creative, straightforward techniques such as communicating with teachers using SMS group chats, and they have already measurably improved learning and engagement in Haryana's schools. Wh

ask you, makes you? Psychologists like to talk about our defined characteristics that make us who we are. But Brian Little is more interested in moments when we transcend those traits -- sometimes because our culture demands it of us, and sometimes because we demand it of ourselves. Join Little as he dissects the surprising differences between introverts and extroverts and explains why your personality may be more malleable than you think. How do you build a product people really want? Allow consumers to be a part of the process. "Empathy for what your customers want is probably the biggest leading indicator of business success," says designer Tom Hulme. In this short talk, Hulme lays out three insightful examples of the intersection of design and user experience, where people have developed their own desire paths out of necessity. Once you know how to spot them, you'll start noticing them everywhere. Wanda Diaz Merced studies the light emitted by gamma-ray bursts, the most energetic events in the universe. When she lost her sight and was left without a way to do her science, she had a revelatory insight: the light curves she could no longer see could be translated into sound. Through sonification, she regained mastery over her work, and now she's advocating for a more inclusive scientific community. "Science is for everyone," she says. "It has to be available to everyone, because we are all natural explorers." We're on the edge of a new frontier in art and creativity -- and it's not human. Blaise Agüera y Arcas, principal scientist at Google, works with deep neural networks for machine perception and distributed learning. In his captivating demo, he shows how neural nets trained to recognize images can be run in reverse, to generate them. The results: spectacular, hallucinatory collages (and poems!) that defy categorization. "Perception and creativity are very intimately connected," Agüera y Arcas says. "Any creature, any being that is able to do perceptual acts is also able to create." Perspective is everything, especially when it comes to examining your beliefs. Are you a soldier, prone to defending your viewpoint at all costs -- or a scout, spurred by curiosity? Julia Galef examines the motivations behind these two mindsets and how they shape the way we interpret information, interweaved with a compelling history lesson from 19th-century France. When your steadfast opinions are tested, Galef asks: "What do you most yearn for? Do you yearn to defend your own beliefs or do you yearn to see the world as clearly as you possibly can?" TED Fellow Prosanta Chakrabarty explores hidden parts of the world in search of new species of cave-dwelling fish. These subterranean creatures have developed fascinating adaptations, and they provide biological insights into blindness as well as geological clues about how the continents broke apart million of years ago. Contemplate deep time in this short talk. John Legend is on a mission to transform America's criminal justice system. Through his Free America campaign, he's encouraging rehabilitation and healing in our prisons, jails and detention centers -- and giving hope to those who want to create a better life after serving their time. With a spoken-word prelude from James Cavitt, an inmate at San Quentin State Prison, Legend treats us to his version of Bob Marley's "Redemption Song." "Won't you help to sing these songs of freedom?" What caused the war in Syria? Oppression, drought and religious differences all played key roles, but Marwa Al-Sabouni suggests another reason: architecture. Speaking to us over the Internet from Homs, where for the last six years she has watched the war tear her city apart, Al-Sabouni suggests that Syria's architecture divided its once tolerant and multicultural society into single-identity enclaves defined by class and religion. The country's future now depends on how it chooses to rebuild. We are embarrassingly unaware of how divided our societies are, and Brexit grew out of a deep, unexamined divide between those that fear globalization and those that embrace it, says social scientist Alexander Betts. How do we now address that fear as well as growing disillusionment with the political establishment, while refusing to give in to xenophobia and nationalism? Join Betts as he discusses four post-Brexit steps toward a more inclusive world. Artist Safwat Saleem grew up with a stutter -- but as an independent animator, he decided to do his own voiceovers to give life to his characters. When YouTube commenters started mocking his Pakistani accent, it crushed him, and his voice began to leave his work. Hear how this TED Fellow reclaimed his voice and confidence in this charming, thoughtful talk. "I believe that losing my hearing was one of the greatest gifts I've ever received," says Elise Roy. As a disability rights lawyer and design thinker, she knows that being Deaf gives her a unique way of experiencing and reframing the world -- a perspective that could solve some of our largest problems. As she says: "When we design for disability first, you often stumble upon solutions that are better than those when we design for the norm." Professional Arab women juggle more responsibilities than their male counterparts, and they face more cultural rigidity than Western women. What can their success teach us about tenacity, competition, priorities and progress? Trading her career as an engineer, advocate and mother in Abu Dhabi, Leila Hoteit shares three lessons for thriving in the modern world. Throughout history, speculation has spurred beautiful, revolutionary science -- opening our eyes to entirely new universes. "I'm not talking about science that takes baby steps," says Eric Haseltine. "I'm talking

about science takes leaps." In this talk, Haseltine takes us to the edges of intellectual pursuit with two ideas -- one that's already made history, and the other that's digging into one of humanity's biggest questions with admirable ambition (and a healthy dose of skepticism from many). How do you define "nature?" If we define it as that which is untouched by humans, then we won't have any left, says environmental writer Emma Marris. She urges us to consider a new definition of nature -- one that includes not only pristine wilderness but also the untended patches of plants growing in urban spaces -- and encourages us to bring our children out to touch and tinker with it, so that one day they might love and protect it. Forests don't have to be far-flung nature reserves, isolated from human life. Instead, we can grow them right where we are -- even in cities. Eco-entrepreneur and TED Fellow Shubhendu Sharma grows ultra-dense, biodiverse mini-forests of native species in urban areas by engineering soil, microbes and biomass to kickstart natural growth processes. Follow along as he describes how to grow a 100-year-old forest in just 10 years, and learn how you can get in on this tiny jungle party. Adam Savage makes things and builds experiments, and he uses costumes to add humor, color and clarity to the stories he tells. Tracing his lifelong love of costumes -- from a childhood space helmet made of an ice cream tub to a No-Face costume he wore to Comic-Con -- Savage explores the world of cosplay and the meaning it creates for its community. "We're connecting with something important inside of us," he says. "The costumes are how we reveal ourselves to each other." We're heading for a world population of 10 billion people -- but what will we all eat? Lisa Dyson rediscovered an idea developed by NASA in the 1960s for deep-space travel, and it could be a key to reinventing how we grow food. eL Seed fuses Arabic calligraphy with graffiti to paint colorful, swirling messages of hope and peace on buildings from Tunisia to Paris. The artist and TED Fellow shares the story of his most ambitious project yet: a mural painted across 50 buildings in Manshiyat Naser, a district of Cairo, Egypt, that can only be fully seen from a nearby mountain. Gerard Ryle led the international team that divulged the Panama Papers, the 11.5 million leaked documents from 40 years of activity of the Panamanian law firm Mossack Fonseca that have offered an unprecedented glimpse into the scope and methods of the secretive world of offshore finance. Hear the story behind the biggest collaborative journalism project in history. Neuroengineer Ed Boyden wants to know how the tiny biomolecules in our brains generate emotions, thoughts and feelings -- and he wants to find the molecular changes that lead to disorders like epilepsy and Alzheimer's. Rather than magnify these invisible structures with a microscope, he wondered: What if we physically enlarge them and make them easier to see? Learn how the same polymers used to make baby diapers swell could be a key to better understanding our brains. "A forest is much more than what you see," says ecologist Suzanne Simard. Her 30 years of research in Canadian forests have led to an astounding discovery -- trees talk, often and over vast distances. Learn more about the harmonious yet complicated social lives of trees and prepare to see the natural world with new eyes. Machine learning isn't just for simple tasks like assessing credit risk and sorting mail anymore -- today, it's capable of far more complex applications, like grading essays and diagnosing diseases. With these advances comes an uneasy question: Will a robot do your job in the future? If you want to build a business that lasts, there may be no better place to look for inspiration than your own immune system. Join strategist Martin Reeves as he shares startling statistics about shrinking corporate life spans and explains how executives can apply six principles from living organisms to build resilient businesses that flourish in the face of change. Our poop and pee have superpowers, but for the most part we don't harness them. Molly Winter faces down our squeamishness and asks us to see what goes down the toilet as a resource, one that can help fight climate change, spur innovation and even save us money. African growth is a trend, not a fluke, says economist and former Finance Minister of Nigeria Ngozi Okonjo-Iweala. In this refreshingly candid and straightforward talk, Okonjo-Iweala describes the positive progress on the continent and outlines eight challenges African nations still need to address in order to create a better future. "Venus is too hot, Mars is too cold, and Earth is just right," says planetary scientist Dave Brain. But why? In this pleasantly humorous talk, Brain explores the fascinating science behind what it takes for a planet to host life -- and why humanity may just be in the right place at the right time when it comes to the timeline of life-sustaining planets. How do we build a society without fossil fuels? Using her native Costa Rica as an example of positive action on environmental protection and renewables, climate advocate Monica Araya outlines a bold vision for a world committed to clean energy in all sectors. Is there life beyond Earth? Join NASA's director of planetary science James Green for a survey of the places in our solar system that are most likely to harbor alien life. Around the world, hundreds of thousands of lost ancient sites lie buried and hidden from view. Satellite archaeologist Sarah Parcak is determined to find them before looters do. With the 2016 TED Prize, Parcak is building an online citizen-science tool called GlobalXplorer



that will train an army of volunteer explorers to find and protect the world's hidden heritage. In this talk, she offers a preview of the first place they'll look: Peru -- the home of Machu Picchu, the Nazca lines and other archaeological wonders waiting to be discovered. Summer, 2016: amid populist revolts, clashing resentments and fear, writer Anand Giridharadas doesn't give a talk but reads a letter. It's from those who have won in this era of change, to those who have, or feel, lost. It confesses to ignoring pain until it became anger. It chides an idealistic yet remote elite for its behind-closed-doors world-saving and airy, self-serving futurism -- for at times worrying more about sending people to Mars than helping them on Earth. And it rejects the exclusionary dogmas to which we cling, calling us instead to "dare to commit to the dream of each other." With warmth and respect, Gonzalo Vilariño tells the captivating story of Argentina's blind soccer team -- and how a sincere belief in themselves and their capabilities transformed the players from humble beginnings into two-time World Champions. "You have to get out there and play every game in this beautiful tournament that we call life," Vilariño says. Economic growth has been slowing for the past 50 years, but relief might come from an unexpected place -- a new form of manufacturing that is neither what you thought it was nor where you thought it was. Industrial systems thinker Olivier Scalabre details how a fourth manufacturing revolution will produce a macroeconomic shift and boost employment, productivity and growth. The healthcare industry in America is so focused on pathology, surgery and pharmacology -- on what doctors "do" to patients -- that it often overlooks the values of the human beings it's supposed to care for. Palliative care physician Timothy Ihrig explains the benefits of a different approach, one that fosters a patient's overall quality of life and navigates serious illness from diagnosis to death with dignity and compassion. The destruction of war doesn't stop when the fighting is over. Photographer and TED Fellow Laura Boushnak shares a powerful photo essay about the survivors of cluster bombs, people who encountered these deadly submunitions years after the end of conflict. With her haunting photos, Boushnak asks those who still produce and condone the use of these weapons to abandon them. What is the blockchain? If you don't know, you should; if you do, chances are you still need some clarification on how it actually works. Don Tapscott is here to help, demystifying this world-changing, trust-building technology which, he says, represents nothing less than the second generation of the internet and holds the potential to transform money, business, government and society. Vanessa Ruiz takes us on an illustrated journey of human anatomical art over the centuries, sharing captivating images that bring this visual science -- and the contemporary artists inspired by it -- to life. "Anatomical art has the power to reach far beyond the pages of a medical textbook," she says, "connecting our innermost selves with our bodies through art." Are you setting out to change the world? Here's a stat you should know: nonviolent campaigns are 100 percent more likely to succeed than violent ones. So why don't more groups use nonviolence when faced with conflict? Filmmaker Julia Bacha shares stories of effective nonviolent resistance, including eye-opening research on the crucial leadership role that women play. Why is it so hard to find female superhero merchandise? In this passionate, sparkling talk, media studies scholar (and father of a Star Wars-obsessed daughter) Christopher Bell addresses the alarming lack of female superheroes in the toys and products marketed to kids -- and what it means for how we teach them about the world. "When you talk to strangers, you're making beautiful interruptions into the expected narrative of your daily life -- and theirs," says Kio Stark. In this delightful talk, Stark explores the overlooked benefits of pushing past our default discomfort when it comes to strangers and embracing those fleeting but profoundly beautiful moments of genuine connection. Global problems such as terrorism, inequality and political dysfunction aren't easy to solve, but that doesn't mean we should stop trying. In fact, suggests journalist Jonathan Tepperman, we might even want to think riskier. He traveled the world to ask global leaders how they're tackling hard problems -- and unearthed surprisingly hopeful stories that he's distilled into three tools for problem-solving. It happens to all of us: you unsubscribe from an unwanted marketing email, and a few days later another message from the same company pops up in your inbox. Comedian James Veitch turned this frustration into whimsy when a local supermarket refused to take no for an answer. Hijinks ensued. Would you choose to build a house on top of an unfinished foundation? Of course not. Why, then, do we rush students through education when they haven't always grasped the basics? Yes, it's complicated, but educator Sal Khan shares his plan to turn struggling students into scholars by helping them master concepts at their own pace. For the first time in history, the majority of American parents don't think their kids will be better off than they were. This shouldn't be a cause for alarm, says journalist Courtney E. Martin. Rather, it's an opportunity to define a new approach to work and family that emphasizes community and creativity. "The biggest danger is not failing to achieve the American Dream," she says in a talk that will resonate far beyond the US. "The biggest danger is achieving a dream that you don't actually believe in." What is

a concussion? Probably not. What about this talk, in this cutting edge of research, bioengineer (and former football player) David Camarillo shows what really happens during a concussion -- and why standard sports helmets don't prevent it. Here's what the future of concussion prevention looks like. At the intersection of medical invention and indigenous culture, pediatric cardiologist Franz Freudenthal mends holes in the hearts of children across the world, using a device born from traditional Bolivian loom weaving. "The most complex problems in our time," he says, "can be solved with simple techniques, if we are able to dream." What happens when the way we buy, sell and pay for things changes, perhaps even removing the need for banks or currency exchange bureaus? That's the radical promise of a world powered by cryptocurrencies like Bitcoin and Ethereum. We're not there yet, but in this sparky talk, digital currency researcher Neha Narula describes the collective fiction of money -- and paints a picture of a very different looking future. By loading kids with high expectations and micromanaging their lives at every turn, parents aren't actually helping. At least, that's how Julie Lythcott-Haims sees it. With passion and wry humor, the former Dean of Freshmen at Stanford makes the case for parents to stop defining their children's success via grades and test scores. Instead, she says, they should focus on providing the oldest idea of all: unconditional love. "We're not in a clean energy revolution; we're in a clean energy crisis," says climate policy expert Michael Shellenberger. His surprising solution: nuclear. In this passionate talk, he explains why it's time to overcome longstanding fears of the technology, and why he and other environmentalists believe it's past time to embrace nuclear as a viable and desirable source of clean power. Architecture is more than a clever arrangement of bricks. In this eloquent talk, Michael Murphy shows how he and his team look far beyond the blueprint when they're designing. Considering factors from airflow to light, theirs is a holistic approach that produces community as well as (beautiful) buildings. He takes us on a tour of projects in countries such as Rwanda and Haiti, and reveals a moving, ambitious plan for The Memorial to Peace and Justice, which he hopes will heal hearts in the American South. Why do some people do selfless things, helping other people even at risk to their own well-being? Psychology researcher Abigail Marsh studies the motivations of people who do extremely altruistic acts, like donating a kidney to a complete stranger. Are their brains just different? Many people like to talk about how important voting is, how it's your civic duty and responsibility as an adult. Eric Liu agrees with all that, but he also thinks it's time to bring joy back to the ballot box. The former political speechwriter details how he and his team are fostering the culture around voting in the 2016 US presidential election -- and closes with a powerful analysis of why anyone eligible should show up on Election Day. How much do you get paid? How does it compare to the people you work with? You should know, and so should they, says management researcher David Burkus. In this talk, Burkus questions our cultural assumptions around keeping salaries secret and makes a compelling case for why sharing them could benefit employees, organizations and society. Our kids are our future, and it's crucial they believe in themselves. That's why Nadia Lopez opened an academic oasis in Brownsville, Brooklyn, one of the most underserved and violent neighborhoods in New York -- because she believes in every child's brilliance and capabilities. In this short, energizing talk, the founding principal of Mott Hall Bridges Academy (and a star of *Humans of New York*) shares how she helps her scholars envision a brighter future for themselves and their families. From improving vaccines to modifying crops to solving crimes, DNA technology has transformed our world. Now, for the first time in history, anyone can experiment with DNA at home, in their kitchen, using a device smaller than a shoebox. We are living in a personal DNA revolution, says biotech entrepreneur Sebastian Kraves, where the secrets buried in DNA are yours to find. Can we fight terror without destroying democracy? Internet freedom activist Rebecca MacKinnon thinks that we'll lose the battle against extremism and demagoguery if we censor the internet and press. In this critical talk, she calls for a doubling-down on strong encryption and appeals to governments to better protect, not silence, the journalists and activists fighting against extremists. J. D. Vance grew up in a small, poor city in the Rust Belt of southern Ohio, where he had a front-row seat to many of the social ills plaguing America: a heroin epidemic, failing schools, families torn apart by divorce and sometimes violence. In a searching talk that will echo throughout the country's working-class towns, the author details what the loss of the American Dream feels like and raises an important question that everyone from community leaders to policy makers needs to ask: How can we help kids from America's forgotten places break free from hopelessness and live better lives? Why do we dance? African-American social dances started as a way for enslaved Africans to keep cultural traditions alive and retain a sense of inner freedom. They remain an affirmation of identity and independence. In this electric demonstration, packed with live performances, choreographer, educator and TED Fellow Camille A. Brown explores what happens when communities let loose and express themselves by dancing together. What do you get when you combine

the strongest materials from the plant world with the most elastic ones from the insect kingdom? Super-performing materials that might transform ... everything. Nanobiotechnologist Oded Shoseyov walks us through examples of amazing materials found throughout nature, in everything from cat fleas to sequoia trees, and shows the creative ways his team is harnessing them in everything from sports shoes to medical implants. Scared of super intelligent AI? You should be, says neuroscientist and philosopher Sam Harris -- and not just in some theoretical way. We're going to build superhuman machines, says Harris, but we haven't yet grappled with the problems associated with creating something that may treat us the way we treat ants. In our tech-driven, interconnected world, we've developed new ways and rules to court each other, but the fundamental principles of love have stayed the same, says anthropologist Helen Fisher. Our faster connections, she suggests, are actually leading to slower, more intimate relationships. At 12:20, couples therapist and relationship expert Esther Perel steps in to make an important point -- that while love itself stays the same, technology has affected the way we form and end relationships. Should we bring back the woolly mammoth? Or edit a human embryo? Or wipe out an entire species that we consider harmful? The genome-editing technology CRISPR has made extraordinary questions like these legitimate -- but how does it work? Scientist and community lab advocate Ellen Jorgensen is on a mission to explain the myths and realities of CRISPR, hype-free, to the non-scientists among us. In politics, representation matters -- and that's why we should elect leaders who reflect their country's diversity and embrace its multicultural tapestry, says Sayu Bhojwani. Through her own story of becoming an American citizen, the immigration scholar reveals how her love and dedication to her country turned into a driving force for political change. "We have fought to be here," she says, calling immigrant voices to action. "It's our country, too." Learn about the latest advances in the war against cancer from Stanford researcher Adam de la Zerda, who's working on some cutting-edge techniques of his own. Using a remarkable imaging technology that illuminates cancer-seeking gold particles injected into the body, de la Zerda's lab hopes to light the way for surgeons to remove even the tiniest trace of deadly tumors. Reality isn't something you perceive; it's something you create in your mind. Isaac Lidsky learned this profound lesson firsthand, when unexpected life circumstances yielded valuable insights. In this introspective, personal talk, he challenges us to let go of excuses, assumptions and fears, and accept the awesome responsibility of being the creators of our own reality. Being alone takes its toll. Feel like it's time to make a real connection? Third-wheel with Rainn Wilson (star of "The Office") as he dates some of the best ideas on TED.com and discover your perfect "idea mate" along the way. English is fast becoming the world's universal language, and instant translation technology is improving every year. So why bother learning a foreign language? Linguist and Columbia professor John McWhorter shares four alluring benefits of learning an unfamiliar tongue. We need a more considered approach to using social media for social justice, says writer and activist Ione Wells. After she was the victim of an assault in London, Wells published a letter to her attacker in a student newspaper that went viral and sparked the #NotGuilty campaign against sexual violence and victim-blaming. In this moving talk, she describes how sharing her personal story gave hope to others and delivers a powerful message against the culture of online shaming. Almost 30 years ago, Pico Iyer took a trip to Japan, fell in love with the country and moved there. A keen observer of the human spirit, Iyer professes that he now feels he knows far less about Japan -- or, indeed, about anything -- than he thought he knew three decades ago. In this lyrical meditation on wisdom, Iyer expands on this curious insight about knowledge gained with age: that the more we know, the more we see how little we know. Trauma silences its victims, says creative arts therapist Melissa Walker, but art can help those suffering from the psychological wounds of war begin to open up and heal. In this inspiring talk, Walker describes how mask-making, in particular, allows afflicted servicemen and women reveal what haunts them -- and, finally, start to let it go. Who says change needs to be hard? Organizational change expert Jim Hemerling thinks adapting your business in today's constantly-evolving world can be invigorating instead of exhausting. He outlines five imperatives, centered around putting people first, for turning company reorganization into an empowering, energizing task for all. Tango, waltz, foxtrot ... these classic ballroom dances quietly perpetuate an outdated idea: that the man always leads and the woman always follows. That's an idea worth changing, say Trevor Copp and Jeff Fox, as they demonstrate their "Liquid Lead" dance technique along with fellow dancer Alida Esmail. Watch as Copp and Fox captivate and command the stage while boldly deconstructing and transforming the art of ballroom dance. Something profound is changing our concept of trust, says Rachel Botsman. While we used to place our trust in institutions like governments and banks, today we increasingly rely on others, often strangers, on platforms like Airbnb and Uber and through technologies like the blockchain. This new era of trust could bring with it a more transparent, inclusive and accountable society -- if we get it right. Who do you tru

What if doctors could monitor patients at home with the same degree of accuracy they'd get during a stay at the hospital? Bioelectronics innovator Todd Coleman shares his quest to develop wearable, flexible electronic health monitoring patches that promise to revolutionize healthcare and make medicine less invasive. Machine intelligence is here, and we're already using it to make subjective decisions. But the complex way AI grows and improves makes it hard to understand and even harder to control. In this cautionary talk, techno-sociologist Zeynep Tufekci explains how intelligent machines can fail in ways that don't fit human error patterns -- and in ways we won't expect or be prepared for. "We cannot outsource our responsibilities to machines," she says. "We must hold on ever tighter to human values and human ethics." "For a long time, I lived for death," says Manwar Ali, a former radical jihadist who participated in violent, armed campaigns in the Middle East and Asia in the 1980s. In this moving talk, he reflects on his experience with radicalization and makes a powerful, direct appeal to anyone drawn to Islamist groups that claim violence and brutality are noble and virtuous: let go of anger and hatred, he says, and instead cultivate your heart to see goodness, beauty and truth in others. How do you teach an entire country how to vote when no one has done it before? It's a huge challenge facing fledgling democracies around the world -- and one of the biggest problems turns out to be a lack of shared language. After all, if you can't describe something, you probably can't understand it. In this eye-opening talk, election expert Philippa Neave shares her experiences from the front lines of democracy -- and her solution to this unique language gap. What if traffic flowed through our streets as smoothly and efficiently as blood flows through our veins? Transportation geek Wanis Kabbaj thinks we can find inspiration in the genius of our biology to design the transit systems of the future. In this forward-thinking talk, preview exciting concepts like modular, detachable buses, flying taxis and networks of suspended magnetic pods that could help make the dream of a dynamic, driverless world into a reality. Americanization and globalization have basically been the same thing for the last several generations. But the US's view of the world -- and the world's view of the US -- is changing. In a fast-paced tour of the current state of international politics, Ian Bremmer discusses the challenges of a world where no single country or alliance can meet the challenges of global leadership and asks if the US is ready to lead by example, not by force. Painter Alyssa Monks finds beauty and inspiration in the unknown, the unpredictable and even the awful. In a poetic, intimate talk, she describes the interaction of life, paint and canvas through her development as an artist, and as a human. Sound design is built on deception -- when you watch a movie or TV show, nearly all of the sounds you hear are fake. In this audio-rich talk, Tasos Frantzolas explores the role of sound in storytelling and demonstrates just how easily our brains are fooled by what we hear. Singer Rhiannon Giddens joins international music collective Silk Road Ensemble to perform "St. James Infirmary Blues," spiking the American folk song that Louis Armstrong popularized in the 1920s with Roman influence and mischievous energy. In a society obsessed with body image and marked by a fear of fat, Kelli Jean Drinkwater engages in radical body politics through art. She confronts the public's perception of bigger bodies by bringing them into spaces that were once off limits -- from fashion runways to the Sydney Festival -- and entices all of us to look again and rethink our biases. "Unapologetic fat bodies can blow people's minds," she says. The smartphone you use reflects more than just personal taste ... it could determine how closely you can be tracked, too. Privacy expert and TED Fellow Christopher Soghoian details a glaring difference between the encryption used on Apple and Android devices and urges us to pay attention to a growing digital security divide. "If the only people who can protect themselves from the gaze of the government are the rich and powerful, that's a problem," he says. "It's not just a cybersecurity problem -- it's a civil rights problem." Why should a good education be exclusive to rich kids? Schools in low-income neighborhoods across the US, specifically in communities of color, lack resources that are standard at wealthier schools -- things like musical instruments, new books, healthy school lunches and soccer fields -- and this has a real impact on the potential of students. Kandice Sumner sees the disparity every day in her classroom in Boston. In this inspiring talk, she asks us to face facts -- and change them. Your company might have donated money to help solve humanitarian issues, but you could have something even more useful to offer: your data. Mallory Soldner shows us how private sector companies can help make real progress on big problems -- from the refugee crisis to world hunger -- by donating untapped data and decision scientists. What might your company be able to contribute? In the face of artificial intelligence and machine learning, we need a new radical humanism, says Tim Leberecht. For the self-described "business romantic," this means designing organizations and workplaces that celebrate authenticity instead of efficiency and questions instead of answers. Leberecht proposes four (admittedly subjective) principles for building beautiful organizations. Singer Amanda Palmer pays tribute to the inimitable David Bowie with a cover of "Space Oddity." She's joined onstage by Jhe

rek Bishoff, Ted Felson, Ted Uman Riaz and, no, your eyes are not deceiving you, none other than former Vice President Al Gore. With warmth and wit, Halla Tómasdóttir shares how she overcame media bias, changed the tone of the political debate and surprised her entire nation when she ran for president of Iceland -- inspiring the next generation of leaders along the way. "What we see, we can be," she says. "It matters that women run." On February 10, 2015, Suzanne Barakat's brother Deah, her sister-in-law Yusor and Yusor's sister Razan were murdered by their neighbor in Chapel Hill, North Carolina. The perpetrator's story, that he killed them over a traffic dispute, went unquestioned by the media and police until Barakat spoke out at a press conference, calling the murders what they really were: hate crimes. As she reflects on how she and her family reclaimed control of their narrative, Barakat calls on us to speak up when we witness hateful bigotry and express our allyship with those who face discrimination. How can the US recover after the negative, partisan presidential election of 2016? Social psychologist Jonathan Haidt studies the morals that form the basis of our political choices. In conversation with TED Curator Chris Anderson, he describes the patterns of thinking and historical causes that have led to such sharp divisions in America -- and provides a vision for how the country might move forward. TED Resident Fawn Qiu designs fun, low-cost projects that use familiar materials like paper and fabric to introduce engineering to kids. In this quick, clever talk, she shares how nontraditional workshops like hers can change the perception of technology and inspire students to participate in creating it. Before soldiers are sent into combat, they're trained on how to function in an immensely dangerous environment. But they also need training on how to return from the battlefield to civilian life, says psychologist Hector Garcia. Applying the same principles used to prepare soldiers for war, Garcia is helping veterans suffering from PTSD get their lives back. Now more than ever, it's important to look boldly at the reality of race and gender bias -- and understand how the two can combine to create even more harm. Kimberlé Crenshaw uses the term "intersectionality" to describe this phenomenon; as she says, if you're standing in the path of multiple forms of exclusion, you're likely to get hit by both. In this moving talk, she calls on us to bear witness to this reality and speak up for victims of prejudice. Say hello to the decentralized economy -- the blockchain is about to change everything. In this lucid explainer of the complex (and confusing) technology, Bettina Warburg describes how the blockchain will eliminate the need for centralized institutions like banks or governments to facilitate trade, evolving age-old models of commerce and finance into something far more interesting: a distributed, transparent, autonomous system for exchanging value. Necessity is the mother of invention, right? Well, not always. Steven Johnson shows us how some of the most transformative ideas and technologies, like the computer, didn't emerge out of necessity at all but instead from the strange delight of play. Share this captivating, illustrated exploration of the history of invention. Turns out, you'll find the future wherever people are having the most fun. Define students by what they contribute, not what they lack -- especially those with difficult upbringings, says educator Victor Rios. Interweaved with his personal tale of perseverance as an inner-city youth, Rios identifies three straightforward strategies to shift attitudes in education and calls for fellow educators to see "at-risk" students as "at-promise" individuals brimming with resilience, character and grit. Unlock the mysteries and inner workings of the world through one of the most imaginative art forms ever -- mathematics -- with Roger Antonsen, as he explains how a slight change in perspective can reveal patterns, numbers and formulas as the gateways to empathy and understanding. Women's equality won't just happen -- not unless more women are put in positions of power, says Sandi Toksvig. In a disarmingly hilarious talk, Toksvig tells the story of how she helped start a new political party in Britain, the Women's Equality Party, with the express purpose of putting equality on the ballot. Now she hopes people around the world will copy her party's model and mobilize for equality. We can evolve bacteria, plants and animals -- futurist Juan Enriquez asks: Is it ethical to evolve the human body? In a visionary talk that ranges from medieval prosthetics to present day neuroengineering and genetics, Enriquez sorts out the ethics associated with evolving humans and imagines the ways we'll have to transform our own bodies if we hope to explore and live in places other than Earth. Speaking up is hard to do, even when you know you should. Learn how to assert yourself, navigate tricky social situations and expand your personal power with sage guidance from social psychologist Adam Galinsky. Joe Lassiter is a deep thinker and straight talker focused on developing clean, secure and carbon-neutral supplies of reliable, low-cost energy. His analysis of the world's energy realities puts a powerful lens on the stubbornly touchy issue of nuclear power, including new designs for plants that can compete economically with fossil fuels. We have the potential to make nuclear safer and cheaper than it's been in the past, Lassiter says. Now we have to make the choice to pursue it. Born out of a social media post, the Black Lives Matter movement has sparked discussion about race and inequality across the world. In this spirited conversation wi

leader Mia Birdsong, the movement's three founders share what they've learned about leadership and what provides them with hope and inspiration in the face of painful realities.

Their advice on how to participate in ensuring freedom for everybody: join something, start something and "sharpen each other, so that we all can rise." What does the world look like when you map it using data? Social geographer Danny Dorling invites us to see the world anew, with his captivating and insightful maps that show Earth as it truly is -- a connected, ever-changing and fascinating place in which we all belong. You'll never look at a map the same way again. Urban planner Ryan Gravel shares the story of how his hometown of Atlanta, Georgia, rallied to build a massive urban park that will transform an abandoned railroad track into 22 miles of public green space called the Atlanta Belt Line. The places we live aren't inevitable, he says -- and if we want something different, we need to speak up. Soap operas and telenovelas may be (ahem) overdramatic, but as

Kate Adams shows us, their exaggerated stories and characters often cast light on the problems of real life. In this sparkling, funny talk, Adams, a former assistant casting director for "As the World Turns," share four lessons for life and business that we can learn from melodramas. Love is a tool for revolutionary change and a path toward inclusivity and understanding for the LGBTQ+ community. Married activists Tiq and Kim Katrin Milan have imagined their marriage -- as a transgender man and cis woman -- a model of possibility for people of every kind. With infectious joy, Tiq and Kim question our misconceptions about who they might be and offer a vision of an inclusive, challenging love that grows day by day. Our lives depend on a world we can't see: the satellite infrastructure we use every day for information, entertainment, communication and so much more. But

Earth orbit isn't a limitless resource, and the problem of space debris will get worse without a significant change to our behavior. Natalie Panek challenges us to consider the environmental impact of the satellites we rely on. Our orbital environment is breathtakingly beautiful and our gateway to exploration, she says. It's up to us to keep it that way. Jia Jiang adventures boldly into a territory so many of us fear: rejection. By seeking out rejection for 100 days -- from asking a stranger to borrow \$100 to requesting

a "burger refill" at a restaurant -- Jiang desensitized himself to the pain and shame that rejection often brings and, in the process, discovered that simply asking for what you want can open up possibilities where you expect to find dead ends. In a lyrical, unexpectedly funny talk about heavy topics such as frayed relationships and the death of a loved one, Elizabeth Lesser describes the healing process of putting aside pride and defensiveness to make way for soul-baring and truth-telling. "You don't have to wait for a

life-or-death situation to clean up the relationships that matter to you," she says. "Be like a new kind of first responder ... the one to take the first courageous step toward the other." How do we define a parent -- or a family? Bioethicist Veerle Provoost explores these questions in the context of non-traditional families, ones brought together by adoption, second marriages, surrogate mothers and sperm donations. In this talk, she shares stories of how parents and children create their own family narratives. Science is

a learning process that involves experimentation, failure and revision -- and the science of medicine is no exception. Cancer researcher Kevin B. Jones faces the deep unknowns about surgery and medical care with a simple answer: honesty. In a thoughtful talk about the nature of knowledge, Jones shows how science is at its best when scientists humbly admit what they do not yet understand. "The actual path of a raindrop as it goes down the valley is unpredictable, but the general direction is inevitable," says digital vision

ary Kevin Kelly -- and technology is much the same, driven by patterns that are surprising but inevitable. Over the next 20 years, he says, our penchant for making things smarter and smarter will have a profound impact on nearly everything we do. Kelly explores three trends in AI we need to understand in order to embrace it and steer its development. "The most popular AI product 20 years from now that everyone uses has not been invented yet," Kelly says. "That means that you're not late." The path to better medicine is

paved with accidental yet revolutionary discoveries. In this well-told tale of how science happens, neuroscientist Rebecca Brachman shares news of a serendipitous breakthrough treatment that may prevent mental disorders like depression and PTSD from ever developing. And listen for an unexpected -- and controversial -- twist. As a black woman from a tough part of the Bronx who grew up to attain all the markers of academic prestige, Den

a Simmons knows that for students of color, success in school sometimes comes at the cost of living authentically. Now an educator herself, Simmons discusses how we might create a classroom that makes all students feel proud of who they are. "Every child deserves

an education that guarantees the safety to learn in the comfort of one's own skin," she says. There are 168 hours in each week. How do we find time for what matters most? Time management expert Laura Vanderkam studies how busy people spend their lives, and she's discovered that many of us drastically overestimate our commitments each week, while underestimating the time we have to ourselves. She offers a few practical strategies to help find more time for what matters to us, so we can "build the lives we want in the t

time we've got." Here's a paradox about a century of creating machines to do our work for us, the proportion of adults in the US with a job has consistently gone up for the past 125 years. Why hasn't human labor become redundant and our skills obsolete? In this talk about the future of work, economist David Autor addresses the question of why there are still so many jobs and comes up with a surprising, hopeful answer. With words like shards of glass, Chinaka Hodge cuts open 2016 and lets 12 months of violence, grief, fear, shame, courage and hope spill out in this original poem about a year none of us will soon forget. Every minute, 400 pounds of hydrogen and almost 7 pounds of helium escape from Earth's atmosphere into outer space. Astrophysicist Anjali Tripathi studies the phenomenon of atmospheric escape, and in this fascinating and accessible talk, she considers how this process might one day (a few billion years from now) turn our blue planet red. At a moment when the world seems to be spinning out of control, religion might feel irrelevant -- or like part of the problem. But Rabbi Sharon Brous believes we can reinvent religion to meet the needs of modern life. In this impassioned talk, Brous shares four principles of a revitalized religious practice and offers faith of all kinds as a hopeful counter-narrative to the numbing realities of violence, extremism and pessimism. James Beacham looks for answers to the most important open questions of physics using the biggest science experiment ever mounted, CERN's Large Hadron Collider. In this fun and accessible talk about how science happens, Beacham takes us on a journey through extra-spatial dimensions in search of undiscovered fundamental particles (and an explanation for the mysteries of gravity) and details the drive to keep exploring. In every workplace, there are three basic kinds of people: givers, takers and matchers. Organizational psychologist Adam Grant breaks down these personalities and offers simple strategies to promote a culture of generosity and keep self-serving employees from taking more than their share. Today nine nations collectively control more than 15,000 nuclear weapons, each hundreds of times more powerful than those dropped on Hiroshima and Nagasaki. We don't need more nuclear weapons; we need a new generation to face the unfinished challenge of disarmament started decades ago. Nuclear reformer Erika Gregory calls on today's rising leaders -- those born in a time without Cold War fears and duck-and-cover training -- to pursue an ambitious goal: ridding the world of nuclear weapons by 2045. What can we expect our kids to learn if they're hungry or eating diets full of sugar and empty of nutrients? Former White House Chef and food policymaker Sam Kass discusses the role schools can play in nourishing students' bodies in addition to their minds. "When we tell women that sex isn't worth the risk during pregnancy, what we're telling her is that her sexual pleasure doesn't matter ... that she in fact doesn't matter," says sex researcher Sofia Jawed-Wessel. In this eye-opening talk, Jawed-Wessel mines our views about pregnancy and pleasure to lay bare the relationship between women, sex and systems of power. In love, we fall. We're struck, we're crushed, we swoon. We burn with passion. Love makes us crazy and makes us sick. Our hearts ache, and then they break. Talking about love in this way fundamentally shapes how we experience it, says writer Mandy Len Catron. In this talk for anyone who's ever felt crazy in love, Catron highlights a different metaphor for love that may help us find more joy -- and less suffering -- in it. Nearly every other year the transistors that power silicon computer chip shrink in size by half and double in performance, enabling our devices to become more mobile and accessible. But what happens when these components can't get any smaller? George Tulevski researches the unseen and untapped world of nanomaterials. His current work: developing chemical processes to compel billions of carbon nanotubes to assemble themselves into the patterns needed to build circuits, much the same way natural organisms build intricate, diverse and elegant structures. Could they hold the secret to the next generation of computing? Dan Bricklin changed the world forever when he codeveloped VisiCalc, the first electronic spreadsheet and grandfather of programs you probably use every day like Microsoft Excel and Google Sheets. Join the software engineer and computing legend as he explores the tangled web of first jobs, daydreams and homework problems that led to his transformational invention. Nature is wonderfully abundant, diverse and mysterious -- but biological research today tends to focus on only seven species, including rats, chickens, fruit flies and us. We're studying an astonishingly narrow sliver of life, says biologist Alejandro Sánchez Alvarado, and hoping it'll be enough to solve the oldest, most challenging problems in science, like cancer. In this visually captivating talk, Alvarado calls on us to interrogate the unknown and shows us the remarkable discoveries that surface when we do. Stories are necessary, but they're not as magical as they seem, says writer Sisonke Msimang. In this funny and thoughtful talk, Msimang questions our emphasis on storytelling and spotlights the decline of facts. During a critical time when listening has been confused for action, Msimang asks us to switch off our phones, step away from our screens and step out into the real world to create a plan for justice. Five years ago, TED Fellow Jennifer Brea became progressively ill with myalgic encephalomyelitis, commonly known as chronic fatigue syndrome, a debilitating illness

that severely impairs normal activities and on bad days even the rustling of bed sheets unbearable. In this poignant talk, Brea describes the obstacles she's encountered in seeking treatment for her condition, whose root causes and physical effects we don't fully understand, as well as her mission to document through film the lives of patients that medicine struggles to treat. Enough with online hate speech, sexual harassment and threats of violence against women and marginalized groups. It's time to take the global crisis of online abuse seriously. In this searching, powerful talk, Ashley Judd recounts her ongoing experience of being terrorized on social media for her unwavering activism and calls on citizens of the internet, the tech community, law enforcement and legislators to recognize the offline harm of online harassment. Emily Parsons-Lord recreates air from distinct moments in Earth's history -- from the clean, fresh-tasting air of the Carboniferous period to the soda-water air of the Great Dying to the heavy, toxic air of the future we're creating. By turning air into art, she invites us to know the invisible world around us. Breathe in the Earth's past and future in this imaginative, trippy talk. Robb Willer studies the forces that unite and divide us. As a social psychologist, he researches how moral values -- typically a source of division -- can also be used to bring people together. Willer shares compelling insights on how we might bridge the ideological divide and offers some intuitive advice on ways to be more persuasive when talking politics. Creating genetically modified people is no longer a science fiction fantasy; it's a likely future scenario. Biologist Paul Knoepfler estimates that within fifteen years, scientists could use the gene editing technology CRISPR to make certain "upgrades" to human embryos -- from altering physical appearances to eliminating the risk of auto-immune diseases. In this thought-provoking talk, Knoepfler readies us for the coming designer baby revolution and its very personal, and unforeseeable, consequences. A skyscraper that channels the breeze ... a building that creates community around a hearth ... Jeanne Gang uses architecture to build relationships. In this engaging tour of her work, Gang invites us into buildings large and small, from a surprising local community center to a landmark Chicago skyscraper. "Through architecture, we can do much more than create buildings," she says. "We can help steady this planet we all share." Cybercrime netted a whopping \$450 billion in profits last year, with 2 billion records lost or stolen worldwide. Security expert Caleb Barlow calls out the insufficiency of our current strategies to protect our data. His solution? We need to respond to cybercrime with the same collective effort as we apply to a health care crisis, sharing timely information on who is infected and how the disease is spreading. If we're not sharing, he says, then we're part of the problem. As the child of an Afghan mother and Pakistani father raised in Norway, Deeyah Khan knows what it's like to be a young person stuck between your community and your country. In this powerful, emotional talk, the filmmaker unearths the rejection and isolation felt by many Muslim kids growing up in the West -- and the deadly consequences of not embracing our youth before extremist groups do. Deepika Kurup has been determined to solve the global water crisis since she was 14 years old, after she saw kids outside her grandparents' house in India drinking water that looked too dirty even to touch. Her research began in her family kitchen -- and eventually led to a major science prize. Hear how this teenage scientist developed a cost-effective, eco-friendly way to purify water. Sarah Parcak uses satellites orbiting hundreds of miles above Earth to uncover hidden ancient treasures buried beneath our feet. There's a lot to discover; in the Egyptian Delta alone, Parcak estimates we've excavated less than a thousandth of one percent of what's out there. Now, with the 2016 TED Prize and an infectious enthusiasm for archaeology, she's developed an online platform called GlobalXplorer that enables anyone with an internet connection to discover unknown sites and protect what remains of our shared human inheritance. Think you're good at guessing stats? Guess again. Whether we consider ourselves math people or not, our ability to understand and work with numbers is terribly limited, says data visualization expert Alan Smith. In this delightful talk, Smith explores the mismatch between what we know and what we think we know. Working hard but not improving? You're not alone. Eduardo Briceño reveals a simple way to think about getting better at the things you do, whether that's work, parenting or creative hobbies. And he shares some useful techniques so you can keep learning and always feel like you're moving forward. Sue Klebold is the mother of Dylan Klebold, one of the two shooters who committed the Columbine High School massacre, murdering 12 students and a teacher. She's spent years excavating every detail of her family life, trying to understand what she could have done to prevent her son's violence. In this difficult, jarring talk, Klebold explores the intersection between mental health and violence, advocating for parents and professionals to continue to examine the link between suicidal and homicidal thinking. Nagin Cox is a first-generation Martian. As a spacecraft engineer at NASA's Jet Propulsion Laboratory, Cox works on the team that manages the United States' rovers on Mars. But working a 9-to-5 on another planet -- whose day is 40 minutes longer than Earth's -- has particular, often comical challenges. What do you get when



you give a design tool a digital nervous system? Improving our ability to think and imagine, and robotic systems that come up with (and build) radical new designs for bridges, cars, drones and much more -- all by themselves. Take a tour of the Augmented Age with futurist Maurice Conti and preview a time when robots and humans will work side-by-side to accomplish things neither could do alone. In 1996, Thordis Elva shared a teenage romance with Tom Stranger, an exchange student from Australia. After a school dance, Tom raped Thordis, after which they parted ways for many years. In this extraordinary talk, Elva and Stranger move through a years-long chronology of shame and silence, and invite us to discuss the omnipresent global issue of sexual violence in a new, honest way. For a Q&A with the speakers, visit [go.ted.com/thordisandtom](http://go.ted.com/thordisandtom). What if every home had an early-warning cancer detection system? Researcher Joshua Smith is developing a nanobiotechnology "cancer alarm" that scans for traces of disease in the form of special biomarkers called exosomes. In this forward-thinking talk, he shares his dream for how we might revolutionize cancer detection and, ultimately, save lives. Freedom from cars, freedom from sprawl, freedom to walk your city! City planner Jeff Speck shares his "general theory of walkability" -- four planning principles to transform sprawling cities of six-lane highways and 600-foot blocks into safe, walkable oases full of bike lanes and tree-lined streets. How do parents protect their children and help them feel secure again when their homes are ripped apart by war? In this warm-hearted talk, psychologist Aala El-Khani shares her work supporting -- and learning from -- refugee families affected by the civil war in Syria. She asks: How can we help these loving parents give their kids the warm, secure parenting they most need? Racism is making people sick -- especially black women and babies, says Miriam Zoila Pérez. The doula turned journalist explores the relationship between race, class and illness and tells us about a radically compassionate prenatal care program that can buffer pregnant women from the stress that people of color face every day. Guitar duo Rodrigo y Gabriela combine furiously fast riffs and dazzling rhythms to create a style that draws on both flamenco guitar and heavy metal in this live performance of their song, "The Soundmaker." Sexting, like anything that's fun, runs its risks -- but a serious violation of privacy shouldn't be one of them. Amy Adelle Hasinoff looks at problematic responses to sexting in mass media, law and education, offering practical solutions for how individuals and tech companies can protect sensitive (and, ahem, potentially scandalous) digital files. Something is very wrong with the news industry. Trust in the media has hit an all-time low; we're inundated with sensationalist stories, and consistent, high-quality reporting is scarce, says journalist Lara Setrakian. She shares three ways we can fix the news to better inform all of us about the complex issues of our time. Why do we jail people for being poor? Today, half a million Americans are in jail only because they can't afford to post bail, and still more are locked up because they can't pay their debt to the court, sometimes for things as minor as unpaid parking tickets. Salil Dudani shares stories from individuals who have experienced debtors' prison in Ferguson, Missouri, challenging us to think differently about how we punish the poor and marginalized. New tech spawns new anxieties, says scientist and philosopher Grady Booch, but we don't need to be afraid of an all-powerful, unfeeling AI. Booch allays our worst (sci-fi induced) fears about superintelligent computers by explaining how we'll teach, not program, them to share our human values. Rather than worry about an unlikely existential threat, he urges us to consider how artificial intelligence will enhance human life. How do we make sense of today's political divisions? In a wide-ranging conversation full of insight, historian Yuval Harari places our current turmoil in a broader context, against the ongoing disruption of our technology, climate, media -- even our notion of what humanity is for. This is the first of a series of TED Dialogues, seeking a thoughtful response to escalating political divisiveness. Make time (just over an hour) for this fascinating discussion between Harari and TED curator Chris Anderson. Cultural theorist Brittney Cooper examines racism through the lens of time, showing us how historically it has been stolen from people of color, resulting in lost moments of joy and connection, lost years of healthy quality of life and the delay of progress. A candid, thought-provoking take on history and race that may make you reconsider your understanding of time, and your place in it. Meet the "Row-bot," a robot that cleans up pollution and generates the electricity needed to power itself by swallowing dirty water. Roboticist Jonathan Rossiter explains how this special swimming machine, which uses a microbial fuel cell to neutralize algal blooms and oil slicks, could be a precursor to biodegradable, autonomous pollution-fighting robots. Charity Wayua put her skills as a cancer researcher to use on an unlikely patient: the government of her native Kenya. She shares how she helped her government drastically improve its process for opening up new businesses, a crucial part of economic health and growth, leading to new investments and a World Bank recognition as a top reformer. Where are all the women and girls in film? Social scientist Stacy Smith analyzes how the media underrepresents and portrays women -- and the potentially destructive effects those portrayals have on viewers. She

shares hard data behind gender bias in Hollywood, where on-screen females outnumber males three to one (and behind-the-camera workers fare even worse.) What if you could take a smell selfie, a smelfie? What if you had a lipstick that caused plants to grow where you kiss? Ani Liu explores the intersection of technology and sensory perception, and her work is wedged somewhere between science, design and art. In this swift, smart talk, she shares dreams, wonderings and experiments, asking: What happens when science fiction becomes science fact? The earth is a big place to keep clean. With Litterati -- an app for users to identify, collect and geotag the world's litter -- TED Resident Jeff Kirschner has created a community that's crowdsource-cleaning the planet. After tracking trash in more than 100 countries, Kirschner hopes to use the data he's collected to work with brands and organizations to stop litter before it reaches the ground. Lux Narayan starts his day with scrambled eggs and the question: "Who died today?" Why? By analyzing 2,000 New York Times obituaries over a 20-month period, Narayan gleaned, in just a few words, what achievement looks like over a lifetime. Here he shares what those immortalized in print can teach us about a life well lived. To honor and celebrate young lives cut short, Kathy Hull founded the first freestanding pediatric palliative care facility in the United States, the George Mark Children's House. Its mission: to give terminally ill children and their families a peaceful place to say goodbye. She shares stories brimming with wisdom, joy, imagination and heartbreaking loss. Singer, songwriter and actress Sara Ramirez is a woman of many talents. Joined by Michael Pemberton on guitar, Ramirez sings of opportunity, wisdom and the highs and lows of life in this live performance of her song, "Rollercoaster." What's haunting Carrie Poppy? Is it ghosts or something worse? In this talk, the investigative journalist narrates her encounter with a spooky feeling you'll want to warn your friends about and explains why we need science to deal with paranormal activity. What's it like to grow up within a group of people who exult in demonizing ... everyone else? Megan Phelps-Roper shares details of life inside America's most controversial church and describes how conversations on Twitter were key to her decision to leave it. In this extraordinary talk, she shares her personal experience of extreme polarization, along with some sharp ways we can learn to successfully engage across ideological lines. Gutsy girls skateboard, climb trees, clamber around, fall down, scrape their knees, get right back up -- and grow up to be brave women. Learn how to spark a little productive risk-taking and raise confident girls with stories and advice from firefighter, paraglider and all-around adventurer Caroline Paul. For many centuries (and for many reasons) critically acclaimed creative genius has generally come from a male perspective. As theater director Jude Kelly points out in this passionately reasoned talk, that skew affects how we interpret even non-fictional women's stories and rights. She thinks there's a more useful, more inclusive way to look at the world, and she calls on artists -- women and men -- to paint, draw, write about, film and imagine a gender-equal society. MIT grad student Joy Buolamwini was working with facial analysis software when she noticed a problem: the software didn't detect her face -- because the people who coded the algorithm hadn't taught it to identify a broad range of skin tones and facial structures. Now she's on a mission to fight bias in machine learning, a phenomenon she calls the "coded gaze." It's an eye-opening talk about the need for accountability in coding ... as algorithms take over more and more aspects of our lives. John Koenig loves finding words that express our unarticulated feelings -- like "lachesism," the hunger for disaster, and "sonder," the realization that everyone else's lives are as complex and unknowable as our own. Here, he meditates on the meaning we assign to words and how these meanings latch onto us. Here's a question we all have to answer sooner or later: What do you want to happen to your body when you die? Funeral director Caitlin Doughty explores new ways to prepare us for inevitable mortality. In this thoughtful talk, learn more about ideas for burial (like "recomposting" and "conservation burial") that return our bodies back to the earth in an eco-friendly, humble and self-aware way. TED Fellow Carrie Nugent is an asteroid hunter -- part of a group of scientists working to discover and catalog our oldest and most numerous cosmic neighbors. Why keep an eye out for asteroids? In this short, fact-filled talk, Nugent explains how their awesome impacts have shaped our planet, and how finding them at the right time could mean nothing less than saving life on Earth. Why do girls feel empowered to engage in sexual activity but not to enjoy it? For three years, author Peggy Orenstein interviewed girls ages 15 to 20 about their attitudes toward and experiences of sex. She discusses the pleasure that's largely missing from their sexual encounters and calls on us to close the "orgasm gap" by talking candidly with our girls from an early age about sex, bodies, pleasure and intimacy. How much energy and brain power do we devote to learning how to spell? Language evolves over time, and with it the way we spell -- is it worth it to spend so much time memorizing rules that are filled with endless exceptions? Literary scholar Karina Galperin suggests that it may be time for an update in the way we think about and record language. (In Spanish with English subtitles.) Grammy-winning Silk Road Ensemble display their

eclectic convergence of violin, clarinet, bass, drums and more in this energetic rendition of the traditional Roma tune, "Turceasca." What happens when a mall falls into ruin?

Filmmaker Dan Bell guides us through abandoned monoliths of merchandise, providing a surprisingly funny and lyrical commentary on consumerism, youth culture and the inspiration we can find in decay. Critical care doctor Peter Weinstock shows how surgical teams are using a blend of Hollywood special effects and 3D printing to create amazingly lifelike reproductions of real patients -- so they can practice risky surgeries ahead of time.

Think: "Operate twice, cut once." Glimpse the future of surgery in this forward-thinking talk. We all go through challenges -- some you can see, most you can't, says Michele

L. Sullivan. In a talk about perspective, Sullivan shares stories full of wit and wisdom and reminds us that we're all part of each other's support systems. "The only shoes you can walk in are your own," she says. "With compassion, courage and understanding, we can walk together, side by side." In a war, it turns out that violence isn't the biggest killer of civilians. What is? Illness, hunger, poverty -- because war destroys the institutions that keep society running, like utilities, banks, food systems and hospitals. Physician Margaret Bourdeaux proposes a bold approach to post-conflict recovery, setting priorities on what to fix first. Wish you could vote in another country's election?

Simon Anholt unveils the Global Vote, an online platform that lets anybody, anywhere in the world, "vote" in the election of any country on earth (with surprising results). Sometimes it's hard to know what statistics are worthy of trust. But we shouldn't count out stats altogether ... instead, we should learn to look behind them. In this delightful, hilarious talk, data journalist Mona Chalabi shares handy tips to help question, interpret and truly understand what the numbers are saying. From packing peanuts to disposable coffee cups, each year the US alone produces some two billion pounds of Styrofoam --

none of which can be recycled. Frustrated by this waste of resources and landfill space, Ashton Cofer and his science fair teammates developed a heating treatment to break down used Styrofoam into something useful. Check out their original design, which won both the FIRST LEGO League Global Innovation Award and the Scientific American Innovator Award from Google Science Fair. Breast milk grows babies' bodies, fuels neurodevelopment, provides essential immunofactors and safeguards against famine and disease -- why, then, does science know more about tomatoes than mother's milk? Katie Hinde shares insights into this complex, life-giving substance and discusses the major gaps scientific research still needs to fill so we can better understand it. Only one in nine people in the United States gets the care and treatment they need for addiction and substance abuse. A

former Director of National Drug Control Policy, Michael Botticelli is working to end this epidemic and treat people with addictions with kindness, compassion and fairness. In a personal, thoughtful talk, he encourages the millions of Americans in recovery today to make their voices heard and confront the stigma associated with substance use disorders. Moshe Szyf is a pioneer in the field of epigenetics, the study of how living things reprogram their genome in response to social factors like stress and lack of food. His

research suggests that biochemical signals passed from mothers to offspring tell the child what kind of world they're going to live in, changing the expression of genes. "DNA isn't just a sequence of letters; it's not just a script." Szyf says. "DNA is a dynamic movie in which our experiences are being written." Sô Percussion creates adventurous

compositions with new, unconventional instruments. Performing "Music for Wood and Strings" by Bryce Dessner of The National, the quartet plays custom-made dulcimer-like instruments that combine the sound of an electric guitar with the percussionist's toolkit to

create a hypnotic effect. Emtithal "Emi" Mahmoud writes poetry of resilience, confronting her experience of escaping the genocide in Darfur in verse. She shares two stirring original poems about refugees, family, joy and sorrow, asking, "Will you witness me?" Your boss probably isn't paying you what you're worth -- instead, they're paying you what they think you're worth. Take the time to learn how to shape their thinking. Pricing

consultant Casey Brown shares helpful stories and learnings that can help you better communicate your value and get paid for your excellence. How can we bridge the gap between left and right to have a wiser, more connected political conversation? Journalist Gretchen Carlson and op-ed columnist David Brooks share insights on the tensions at the heart of American politics today -- and where we can find common ground. Followed by a rousing performance of "America the Beautiful" by Vy Higginsen's Gospel Choir of Harlem. At the

heart of the Milky Way, there's a supermassive black hole that feeds off a spinning disk of hot gas, sucking up anything that ventures too close -- even light. We can't see it, but its event horizon casts a shadow, and an image of that shadow could help answer some important questions about the universe. Scientists used to think that making such an image would require a telescope the size of Earth -- until Katie Bouman and a team

of astronomers came up with a clever alternative. Bouman explains how we can take a picture of the ultimate dark using the Event Horizon Telescope. We need to talk to kids about the risks they face online, says information security expert Sebastián Bortnik. In the

is talk, Borlik discusses the issue of "grooming" -- the sexual predation of children by adults on the internet -- and outlines the conversations we need to start having about technology to keep our kids safe. (In Spanish with English subtitles) Why does race matter so profoundly for health? David R. Williams developed a scale to measure the impact of discrimination on well-being, going beyond traditional measures like income and education to reveal how factors like implicit bias, residential segregation and negative stereotypes create and sustain inequality. In this eye-opening talk, Williams presents evidence for how racism is producing a rigged system -- and offers hopeful examples of programs across the US that are working to dismantle discrimination. Giorgia Lupi uses data to tell human stories, adding nuance to numbers. In this charming talk, she shares how we can bring personality to data, visualizing even the mundane details of our daily lives and transforming the abstract and uncountable into something that can be seen, felt and directly reconnected to our lives. We increasingly make decisions based on short-term goals and gains -- an approach that makes the future more uncertain and less safe. How can we learn to think about and plan for a better future in the long term ... like, grand children-scale long term? Ari Wallach shares three tactics for thinking beyond the immediate. Conflict is bad; compromise, consensus and collaboration are good -- or so we're told. Lawyer and bioethicist Jonathan Marks challenges this conventional wisdom, showing how governments can jeopardize public health, human rights and the environment when they partner with industry. An important, timely reminder that common good and common ground are not the same thing. If Yoda goes into cardiac arrest, will you know what to do? Artist and first-aid enthusiast Todd Scott breaks down what you need to know about using an automated external defibrillator, or AED -- in this galaxy and ones that are far, far away. Prepare to save the life of a Jedi, Chewbacca (he'll need a quick shave first) or someone else in need with some helpful pointers. TED Fellow Zubaida Bai works with medical professionals, midwives and mothers to bring dignity and low-cost interventions to women's health care. In this quick, inspiring talk, she presents her clean birth kit in a purse, which contains everything a new mother needs for a hygienic birth and a healthy delivery -- no matter where in the world (or how far from a medical clinic) she might be. We teach girls that they can have ambition, but not too much ... to be successful, but not too successful, or they'll threaten men, says author Chimamanda Ngozi Adichie. In this classic talk that started a worldwide conversation about feminism, Adichie asks that we begin to dream about and plan for a different, fairer world -- of happier men and women who are truer to themselves. To design the Bahá'í Temple of South America, architect Siamak Hariri focused on illumination -- from the temple's form, which captures the movement of the sun throughout the day, to the iridescent, luminous stone and glass used to construct it. Join Hariri for a journey through the creative process, as he explores what makes for a sacred experience in a secular world. Our universe is strange, wonderful and vast, says astronomer Natasha Hurley-Walker. A spaceship can't carry you in to its depths (yet) -- but a radio telescope can. In this mesmerizing talk, Hurley-Walker shows how she probes the mysteries of the universe using special technology that reveals light spectrums we can't see. When Amy Green's young son was diagnosed with a rare brain tumor, she made up a bedtime story for his siblings to teach them about cancer. What resulted was a video game, "That Dragon, Cancer," which takes players on a journey they can't win. In this beautiful talk about coping with loss, Green brings joy and play to tragedy. "We made a game that's hard to play," she says, "because the hardest moments of our lives change us more than any goal we could ever accomplish." Physician David Casarett was tired of hearing hype and half-truths around medical marijuana, so he put on his skeptic's hat and investigated on his own. He comes back with a fascinating report on what we know and what we don't -- and what mainstream medicine could learn from the modern medical marijuana dispensary. Financial literacy isn't a skill -- it's a lifestyle. Take it from Curtis "Wall Street" Carroll. As an incarcerated individual, Carroll knows the power of a dollar. While in prison, he taught himself how to read and trade stocks, and now he shares a simple, powerful message: we all need to be more savvy with our money. On April 14, 2014, the terrorist organization Boko Haram kidnapped more than 200 schoolgirls from the town of Chibok, Nigeria. Around the world, the crime became epitomized by the slogan #BringBackOurGirls -- but in Nigeria, government officials called the crime a hoax, confusing and delaying efforts to rescue the girls. In this powerful talk, journalist Stephanie Busari points to the Chibok tragedy to explain the deadly danger of fake news and what we can do to stop it. We give scientists and engineers great technical training, but we're not as good at teaching ethical decision-making or building character. Take, for example, the environmental crisis that recently unfolded in Flint, Michigan -- and the professionals there who did nothing to fix it. Siddhartha Roy helped prove that Flint's water was contaminated, and he tells a story of science in service to the public good, calling on the next generation of scientists and engineers to dedicate their work to protecting people and the planet. A single individual is enough for

hope to exist, and that individual can be you, says His Holiness Pope Francis in his earring TED Talk delivered directly from Vatican City. In a hopeful message to people of all faiths, to those who have power as well as those who don't, the spiritual leader provides illuminating commentary on the world as we currently find it and calls for equality, solidarity and tenderness to prevail. "Let us help each other, all together, to remember that the 'other' is not a statistic, or a number," he says. "We all need each other." Twenty-three Grand Slam titles later, tennis superstar Serena Williams sits down with journalist Gayle King to share a warm, mischievous conversation about her life, love, wins and losses -- starting with the story of how she accidentally shared her pregnancy news with the world. Alzheimer's doesn't have to be your brain's destiny, says neuroscientist and author of "Still Alice," Lisa Genova. She shares the latest science investigating the disease -- and some promising research on what each of us can do to build an Alzheimer's-resistant brain. Elon Musk discusses his new project digging tunnels under LA, the latest from Tesla and SpaceX and his motivation for building a future on Mars in conversation with TED's Head Curator, Chris Anderson. "There are facts, there are opinions, and there are lies," says historian Deborah Lipstadt, telling the remarkable story of her research into Holocaust deniers -- and their deliberate distortion of history. Lipstadt encourages us all to go on the offensive against those who assault the truth and facts. "Truth is not relative," she says. Hacking, fake news, information bubbles ... all these and more have become part of the vernacular in recent years. But as cyber space analyst Laura Galante describes in this alarming talk, the real target of anyone looking to influence geopolitics is dastardly simple: it's you. When stress got to be too much for TED Fellow Sangu Delle, he had to confront his own deep prejudice: that men shouldn't take care of their mental health. In a personal talk, Delle shares how he learned to handle anxiety in a society that's uncomfortable with emotions. As he says: "Being honest about how we feel doesn't make us weak -- it makes us human." In the US, most kids have a very long summer break, during which they forget an awful lot of what they learned during the school year. This "summer slump" affects kids from low-income neighborhoods most, setting them back almost three months. TED Fellow Karim Abouelnaga has a plan to reverse this learning loss. Learn how he's helping kids improve their chances for a brighter future. Carolyn Jones spent five years interviewing, photographing and filming nurses across America, traveling to places dealing with some of the nation's biggest public health issues. She shares personal stories of unwavering dedication in this celebration of the everyday heroes who work at the front lines of health care. How can humans be so compassionate and altruistic -- and also so brutal and violent? To understand why we do what we do, neuroscientist Robert Sapolsky looks at extreme context, examining actions on timescales from seconds to millions of years before they occurred. In this fascinating talk, he shares his cutting edge research into the biology that drives our worst and best behaviors. One night in 2002, a friend gave Jorge Drexler the chorus to a song and challenged him to write the rest of it using a complex, poetic form known as the "Décima." In this fascinating talk, Drexler examines the blended nature of identity, weaving together the history of the Décima with his own quest to write one. He closes the talk with a performance of the resulting song, "La Milonga del Moro Judío." (In Spanish with English subtitles) Oceanographer Kate Stafford lowers us into the sonically rich depths of the Arctic Ocean, where ice groans, whales sing to communicate over vast distances -- and climate change and human noise threaten to alter the environment in ways we don't understand. Learn more about why this underwater soundscape matters and what we might do to protect it. "I sell dreams, and I peddle love to millions of people," says Shah Rukh Khan, Bollywood's biggest star. In this charming, funny talk, Khan traces the arc of his life, showcases a few of his famous dance moves and shares hard-earned wisdom from a life spent in the spotlight. How can we harness the power of superintelligent AI while also preventing the catastrophe of robotic takeover? As we move closer toward creating all-knowing machines, AI pioneer Stuart Russell is working on something a bit different: robots with uncertainty. Hear his vision for human-compatible AI that can solve problems using common sense, altruism and other human values. In this deeply moving talk, Lucy Kalanithi reflects on life and purpose, sharing the story of her late husband, Paul, a young neurosurgeon who turned to writing after his terminal cancer diagnosis. "Engaging in the full range of experience -- living and dying, love and loss -- is what we get to do," Kalanithi says. "Being human doesn't happen despite suffering -- it happens within it." Why are we so deadlocked on climate, and what would it take to overcome the seemingly insurmountable barriers to progress? Policy entrepreneur Ted Halstead proposes a transformative solution based on the conservative principles of free markets and limited government. Learn more about how this carbon dividends plan could trigger an international domino effect towards a more popular, cost-effective and equitable climate solution. Teens don't get enough sleep, and it's not because of Snapchat, social lives or hormones -- it's because of public policy, says Wendy Troxel. Drawing from her experience

a sleep researcher, a clinician or a mother of a teenager, Troxel discusses how early school start times deprive adolescents of sleep during the time of their lives when they need it most. T. Morgan Dixon and Vanessa Garrison, founders of the health nonprofit GirlTrek, are on a mission to reduce the leading causes of preventable death among Black women -- and build communities in the process. How? By getting one million women and girls to prioritize their self-care, lacing up their shoes and walking in the direction of their healthiest, most fulfilled lives. "Ideas can and do change the world," says historian Rutger Bregman, sharing his case for a provocative one: guaranteed basic income. Learn more about the idea's 500-year history and a forgotten modern experiment where it actually worked -- and imagine how much energy and talent we would unleash if we got rid of poverty once and for all. Once homebound by epilepsy, mental health advocate Sitawa Wafula found her strength in writing about it. Now, she advocates for others who are yet to find their voices, cutting through stigma and exclusion to talk about what it's like to live with the condition. In a quest to make sense of the political environment in the United States in 2017, lawyer and ACLU executive director Anthony D. Romero turned to a surprising place -- a 14th-century fresco by Italian Renaissance master Ambrogio Lorenzetti. What could a 700-year-old painting possibly teach us about life today? Turns out, a lot. Romero explains all in a talk that's as striking as the painting itself. Where did Zika come from, and what can we do about it? Molecular biologist Nina Fedoroff takes us around the world to understand Zika's origins and how it spread, proposing a controversial way to stop the virus -- and other deadly diseases -- by preventing infected mosquitoes from multiplying. Where does OK Go come up with ideas like dancing in zero gravity, performing in ultra slow motion or constructing a warehouse-sized Rube Goldberg machine for their music videos? In between live performances of "This Too Shall Pass" and "The One Moment," lead singer and director Damian Kulash takes us inside the band's creative process, showing us how to look for wonder and surprise. As we keep pumping carbon dioxide into the atmosphere, more of it is dissolving in the oceans, leading to drastic changes in the water's chemistry. Triona McGrath researches this process, known as ocean acidification, and in this talk she takes us for a dive into an oceanographer's world. Learn more about how the "evil twin of climate change" is impacting the ocean -- and the life that depends on it. We must face our fears if we want to get the most out of technology -- and we must conquer those fears if we want to get the best out of humanity, says Garry Kasparov. One of the greatest chess players in history, Kasparov lost a memorable match to IBM supercomputer Deep Blue in 1997. Now he shares his vision for a future where intelligent machines help us turn our grandest dreams into reality. For a crime he committed in his early twenties, the courts sentenced Marlon Peterson to 10 years in prison -- and, as he says, a lifetime of irrelevance. While behind bars, Peterson found redemption through a penpal mentorship program with students from Brooklyn. In this brave talk, he reminds us why we should invest in the humanity of those people society would like to disregard and discard. Illness is universal -- but access to care is not. Physician Raj Panjabi has a bold vision to bring health care to everyone, everywhere. With the 2017 TED Prize, Panjabi is building the Community Health Academy, a global platform that aims to modernize how community health workers learn vital skills, creating jobs along the way. Rhiannon Giddens pours the emotional weight of American history into her music. Listen as she performs traditional folk ballads -- including "Waterboy," "Up Above My Head," and "Lonesome Road" by Sister Rosetta Tharp -- and one glorious original song, "Come Love Come," inspired by Civil War-era slave narratives. When Michael Bierut was tapped to design a logo for public school libraries, he had no idea that he was embarking on a years-long passion project. In this often hilarious talk, he recalls his obsessive quest to bring energy, learning, art and graphics into these magical spaces where school librarians can inspire new generations of readers and thinkers. The more we read and watch online, the harder it becomes to tell the difference between what's real and what's fake. It's as if we know more but understand less, says philosopher Michael Patrick Lynch. In this talk, he dares us to take active steps to burst our filter bubbles and participate in the common reality that actually underpins everything. There's a creepy transformation taking over our cities, says architecture critic Justin Davidson. From Houston, Texas to Guangzhou, China, shiny towers of concrete and steel covered with glass are cropping up like an invasive species. Rethink your city's anatomy as Davidson explains how the exteriors of building shape the urban experience -- and what we lose when architects stop using the full range of available materials. Carina Morillo knew almost nothing about autism when her son Ivan was diagnosed -- only that he didn't speak or respond to words, and that she had to find other ways to connect with him. She shares how she learned to help her son thrive by being curious along with him. (In Spanish with English subtitles) Attention isn't just about what we focus on -- it's also about what our brains filter out. By investigating patterns in the brain as people try to focus, computational neuroscientist Mehdi Ordikhani-Seyedlar hopes to build computer models that can b

used to test ADHD and lost the ability to communicate. Hear more about this exciting science in this brief, fascinating talk. A few days before she turned 61, writer Anne Lamott decided to write down everything she knew for sure. She dives into the nuances of being a human who lives in a confusing, beautiful, emotional world, offering her characteristic life-affirming wisdom and humor on family, writing, the meaning of God, death and more. The hard choices -- what we most fear doing, asking, saying -- are very often exactly what we need to do. How can we overcome self-paralysis and take action? Tim Ferriss encourages us to fully envision and write down our fears in detail, in a simple but powerful exercise he calls "fear-setting." Learn more about how this practice can help you thrive in high-stress environments and separate what you can control from what you cannot. We've all dreamed of flying -- but for Richard Browning, flight is an obsession. He's built an Iron Man-like suit that leans on an elegant collaboration of mind, body and technology, bringing science fiction dreams a little closer to reality. Learn more about the trial and error process behind his invention and take flight with Browning in an unforgettable demo. What if our bodies could help grow new life after we die, instead of being embalmed and buried or turned to ash? Join Katrina Spade as she discusses "recomposition" -- a system that uses the natural decomposition process to turn our deceased into life-giving soil, honoring both the earth and the departed. Meet Sharon Terry, a former college chaplain and stay-at-home mom who took the medical research world by storm when her two young children were diagnosed with a rare disease known as pseudoxanthoma elasticum (PXE). In this knockout talk, Terry explains how she and her husband became citizen scientists, working midnight shifts at the lab to find the gene behind PXE and establishing mandates that require researchers to share biological samples and work together. Electro-pop duo Sofi Tukker dance it out with the TED audience in a performance of their upbeat, rhythmic song "Awoo," featuring Betta Lemme. Aspirations are rising as never before across the world, thanks in large part to smartphones and the internet -- will they be met with opportunity or frustration? As President of the World Bank Group, Jim Yong Kim wants to end extreme poverty and boost shared prosperity. He shares how the institution is working to improve the health and financial futures of people in the poorest countries by boosting investment and de-risking development. Anab Jain brings the future to life, creating experiences where people can touch, see and feel the potential of the world we're creating. Do we want a world where intelligent machines patrol our streets, for instance, or where our genetic heritage determines our health care? Jain's projects show why it's important to fight for the world we want. Catch a glimpse of possible futures in this eye-opening talk. Sixty-five million people were displaced from their homes by conflict and disaster in 2016. It's not just a crisis; it's a test of who we are and what we stand for, says David Miliband -- and each of us has a personal responsibility to help solve it. In this must-watch talk, Miliband gives us specific, tangible ways to help refugees and turn empathy and altruism into action. Sinéad Burke is acutely aware of details that are practically invisible to many of us. At 105 centimeters (or 3' 5") tall, the designed world -- from the height of a lock to the range of available shoe sizes -- often inhibits her ability to do things for herself. Here she tells us what it's like to navigate the world as a little person and asks: "Who are we not designing for?" Cheyenne Cochrane explores the role that hair texture has played in the history of being black in America -- from the heat straightening products of the post-Civil War era to the thousands of women today who have decided to stop chasing a conventional beauty standard and start embracing their natural hair. "This is about more than a hairstyle," Cochrane says. "It's about being brave enough not to fold under the pressure of others' expectations." "We have seen advances in every aspect of our lives -- except our humanity," says Luma Mufleh, a Jordanian immigrant and Muslim of Syrian descent who founded the first accredited school for refugees in the United States. Mufleh shares stories of hope and resilience, explaining how she's helping young people from war-torn countries navigate the difficult process of building new homes. Get inspired to make a personal difference in the lives of refugees with this powerful talk. Inventor Manu Prakash turns everyday materials into powerful scientific devices, from paper microscopes to a clever new mosquito tracker. From the TED Fellows stage, he demos Paperfuge, a hand-powered centrifuge inspired by a spinning toy that costs 20 cents to make and can do the work of a \$1,000 machine, no electricity required. It's a fateful moment in history. We've seen divisive elections, divided societies and the growth of extremism -- all fueled by anxiety and uncertainty. "Is there something we can do, each of us, to be able to face the future without fear?" asks Rabbi Lord Jonathan Sacks. In this electrifying talk, the spiritual leader gives us three specific ways we can move from the politics of "me" to the politics of "all of us, together." You can kick Jorge Ramos out of your press conference (as Donald Trump infamously did in 2015), but you can never silence him. A reporter for more than 30 years, Ramos believes that a journalist's responsibility is to question and challenge those in power. In this compelling talk -- which earn

ed him a standing ovation midway through -- Ramon explains why, in certain circumstances, he believes journalists must take sides. (In Spanish with English subtitles.) Rivers are one of nature's most powerful forces -- they bulldoze mountains and carve up the earth, and their courses are constantly moving. Understanding how they form and how they'll change is important for those that call their banks and deltas home. In this visual-packed talk, geoscientist Liz Hajek shows us how rocks deposited by ancient rivers can be used as a time machine to study the history of the earth, so we can figure out how to more sustainably live on it today. What are our screens and devices doing to us? Psychologist Adam Alter studies how much time screens steal from us and how they're getting away with it. He shares why all those hours you spend staring at your smartphone, tablet or computer might be making you miserable -- and what you can do about it. Climate change is real, case closed. But there's still a lot we don't understand about it, and the more we know the better chance we have to slow it down. One still-unknown factor: How might clouds play a part? There's a small hope that they could buy us some time to fix things ... or they could make global warming worse. Climate scientist Kate Marvel takes us through the science of clouds and what it might take for Earth to break its own fever. Right now, billions of neurons in your brain are working together to generate a conscious experience -- and not just any conscious experience, your experience of the world around you and of yourself within it. How does this happen? According to neuroscientist Anil Seth, we're all hallucinating all the time; when we agree about our hallucinations, we call it "reality." Join Seth for a delightfully disorienting talk that may leave you questioning the very nature of your existence. Why do so many companies make bad decisions, even with access to unprecedented amounts of data? With stories from Nokia to Netflix to the oracles of ancient Greece, Tricia Wang demystifies big data and identifies its pitfalls, suggesting that we focus instead on "thick data" -- precious, unquantifiable insights from actual people -- to make the right business decisions and thrive in the unknown. The divisiveness plaguing American politics today is nothing new, says constitutional law scholar Noah Feldman. In fact, it dates back to the early days of the republic, when a dispute between Alexander Hamilton and James Madison led the two Founding Fathers to cut ties and form the country's first political parties. Join Feldman for some fascinating history of American factionalism -- and a hopeful reminder about how the Constitution has proven itself to be greater than partisanship. Born with a genetic visual impairment that has no correction or cure, Susan Robinson is legally blind (or partially sighted, as she prefers it) and entitled to a label she hates: "disabled." In this funny and personal talk, she digs at our hidden biases by explaining five ways she flips expectations of disability upside down. Loneliness doesn't always stem from being alone. For architect Grace Kim, loneliness is a function of how socially connected we feel to the people around us -- and it's often the result of the homes we live in. She shares an age-old antidote to isolation: cohousing, a way of living where people choose to share space with their neighbors, get to know them, and look after them. Rethink your home and how you live in it with this eye-opening talk. Jimmy Lin is developing technologies to catch cancer months to years before current methods. He shares a breakthrough technique that looks for small signals of cancer's presence via a simple blood test, detecting the recurrence of some forms of the disease 100 days earlier than traditional methods. It could be a ray of hope in a fight where early detection makes all the difference. A handful of people working at a handful of tech companies steer the thoughts of billions of people every day, says design thinker Tristan Harris. From Facebook notifications to Snapchat streaks to YouTube autoplays, they're all competing for one thing: your attention. Harris shares how these companies prey on our psychology for their own profit and calls for a design renaissance in which our tech instead encourages us to live out the timeline we want. Do your kidneys have a sense of smell? Turns out, the same tiny scent detector found in your nose is also found in some pretty unexpected places -- like your muscles, kidneys and even your lungs. In this quick talk (filled with weird facts), physiologist Jennifer Pluznick explains why they're there and what they do. Corals in the Pacific Ocean have been dying at an alarming rate, particularly from bleaching brought on by increased water temperatures. But it's not too late to act, says TED Fellow Kristen Marhaver. She points to the Caribbean -- given time, stable temperatures and strong protection, corals there have shown the ability to survive and recover from trauma. Marhaver reminds us why we need to keep working to protect the precious corals we have left. "Corals have always been playing the long game," she says, "and now so are we." That science fiction future where robots can do what people and animals do may be closer than you think. Marc Raibert, founder of Boston Dynamics, is developing advanced robots that can gallop like a cheetah, negotiate 10 inches of snow, walk upright on two legs and even open doors and deliver packages. Join Raibert for a live demo of SpotMini, a nimble robot that maps the space around it, handles objects, climbs stairs -- and could soon be helping you out around the house. Artist Titus Kaphar makes paintings and sculptures that wrestle



the struggles of the past to the challenges of the present. In an unforgettable live workshop, Kaphar takes a brush full of white paint to a replica of a 17th-century Frans Hals painting, obscuring parts of the composition and bringing its hidden story into view. There's a narrative coded in art like this, Kaphar says. What happens when we shift our focus and confront unspoken truths? In 2002, the Colombian guerrilla movement known as the FARC (Revolutionary Armed Forces of Colombia) kidnapped Ingrid Betancourt in the middle of her presidential campaign. For the next six years, Betancourt was held hostage in jungle prison camps where she was ravaged by malaria, fleas, hunger and human cruelty until her rescue by the Colombian government. In this deeply personal talk, the politician turned writer explains what it's like to live in a perpetual state of fear -- and how her faith sustained her. (In Spanish with English subtitles.) Meet Françoise Mouly, The New Yorker's art director. For the past 24 years, she's helped decide what appears on the magazine's famous cover, from the black-on-black depiction of the Twin Towers the week after 9/11 to a recent, Russia-influenced riff on the magazine's mascot, Eustace Tilley. In this visual retrospective, Mouly considers how a simple drawing can cut through the torrent of images that we see every day and elegantly capture the feeling (and the sensibility) of a moment in time. Ten years ago, researchers thought that getting a computer to tell the difference between a cat and a dog would be almost impossible. Today, computer vision systems do it with greater than 99 percent accuracy. How? Joseph Redmon works on the YOLO (You Only Look Once) system, an open-source method of object detection that can identify objects in images and video -- from zebras to stop signs -- with lightning-quick speed. In a remarkable live demo, Redmon shows off this important step forward for applications like self-driving cars, robotics and even cancer detection. How smart can our machines make us? Tom Gruber, co-creator of Siri, wants to make "humanistic AI" that augments and collaborates with us instead of competing with (or replacing) us. He shares his vision for a future where AI helps us achieve superhuman performance in perception, creativity and cognitive function -- from turbocharging our design skills to helping us remember everything we've ever read and the name of everyone we've ever met. "We are in the middle of a renaissance in AI," Gruber says. "Every time a machine gets smarter, we get smarter." Anjan Chatterjee uses tools from evolutionary psychology and cognitive neuroscience to study one of nature's most captivating concepts: beauty. Learn more about the science behind why certain configurations of line, color and form excite us in this fascinating, deep look inside your brain. It's not the passage of time that makes it so hard to get older. It's ageism, a prejudice that pits us against our future selves -- and each other. Ashton Applewhite urges us to dismantle the dread and mobilize against the last socially acceptable prejudice. "Aging is not a problem to be fixed or a disease to be cured," she says. "It is a natural, powerful, lifelong process that unites us all." On August 21, 2017, the moon's shadow raced from Oregon to South Carolina in what some consider to be the most awe-inspiring spectacle in all of nature: a total solar eclipse. Umbraphile David Baron chases these rare events across the globe, and in this ode to the bliss of seeing the solar corona, he explains why you owe it to yourself to witness one, too. Movement artists Jon Boogz and Lil Buck debut "Honor thy mother," a delicate, powerful performance of spoken word, violin and dance that draws on the tormented relationship between nature and humanity. Behold the microscopic jungle in and around you: tiny organisms living on your cheeks, under your sofa and in the soil in your backyard. We have an adversarial relationship with these microbes -- we sanitize, exterminate and disinfect them -- but according to microbiologist Anne Madden, they're sources of new technologies and medicines waiting to be discovered. These microscopic alchemists aren't gross, Madden says -- they're the future. When artist Damon Davis went to join the protests in Ferguson, Missouri, after police killed Michael Brown in 2014, he found not only anger but also a sense of love for self and community. His documentary "Whose Streets?" tells the story of the protests from the perspective of the activists who showed up to challenge those who use power to spread fear and hate. Do you sometimes have your most creative ideas while folding laundry, washing dishes or doing nothing in particular? It's because when your body goes on autopilot, your brain gets busy forming new neural connections that connect ideas and solve problems. Learn to love being bored as Manoush Zomorodi explains the connection between spacing out and creativity. Harvard Law professor Ronald Sullivan fights to free wrongfully convicted people from jail -- in fact, he has freed some 6,000 innocent people over the course of his career. He shares heartbreaking stories of how (and why) people end up being put in jail for something they didn't do, and the consequences in their lives and the lives of others. Watch this essential talk about the duty we all have to make the world a bit more fair every day, however we can. It's been a weird 100 years for artists and creators, says musician and entrepreneur Jack Conte. The traditional ways we've returned art into money (like record sales) have been broken by the internet, leaving musicians, writers and artists wondering how to make a living. With Patreon, Conte has

created a way for artists to get paid by being paid by their fans. Could payment platforms like this change what it means to be an artist in the digital age? More than half of the world's population already lives in cities, and another 2.5 billion people are projected to move to urban areas by 2050. The way we build new cities will be at the heart of so much that matters, from climate change to economic vitality to our very well-being and sense of connectedness. Peter Calthorpe is already at work planning the cities of the future and advocating for community design that's focused on human interaction. He shares seven universal principles for solving sprawl and building smarter, more sustainable cities. When Richard J. Berry, the mayor of Albuquerque, saw a man on a street corner holding a cardboard sign that read "Want a job," he decided to take him (and others in his situation) up on it. He and his staff started a citywide initiative to help the homeless by giving them day jobs and a place to sleep -- and the results were incredible. Find out how your city can replicate Albuquerque's model with this frank and optimistic talk. The Italian island of Sardinia has more than six times as many centenarians as the mainland and ten times as many as North America. Why? According to psychologist Susan Pinker, it's not a sunny disposition or a low-fat, gluten-free diet that keeps the islanders healthy -- it's their emphasis on close personal relationships and face-to-face interactions. Learn more about super longevity as Pinker explains what it takes to live to 100 and beyond. "Music is everywhere, and it is in everything," says musician, student and TED-Ed Clubs star Anika Paulson. Guitar in hand, she plays through the beats of her life in an exploration of how music connects us and makes us what we are. Algorithms decide who gets a loan, who gets a job interview, who gets insurance and much more -- but they don't automatically make things fair. Mathematician and data scientist Cathy O'Neil coined a term for algorithms that are secret, important and harmful: "weapons of math destruction." Learn more about the hidden agendas behind the formulas. Should your driverless car kill you if it means saving five pedestrians? In this primer on the social dilemmas of driverless cars, Iyad Rahwan explores how the technology will challenge our morality and explains his work collecting data from real people on the ethical trade-offs we're willing (and not willing) to make. With his signature charm and searching insight, David Whyte meditates on the frontiers of the past, present and future, sharing two poems inspired by his niece's hike along El Camino de Santiago de Compostela in Spain. Meet the "ems" -- machines that emulate human brains and can think, feel and work just like the brains they're copied from. Futurist and social scientist Robin Hanson describes a possible future when ems take over the global economy, running on superfast computers and copying themselves to multitask, leaving humans with only one choice: to retire, forever. Glimpse a strange future as Hanson describes what could happen if robots ruled the earth. Your cells are coated with sugars that store information and speak a secret language. What are they trying to tell us? Your blood type, for one -- and, potentially, that you have cancer. Chemical biologist Carolyn Bertozzi researches how sugars on cancerous cells interact with (and sometimes trick) your immune system. Learn more about how your body detects cancer and how the latest cancer-fighting medicines could help your immune system beat the disease. Every artist has a name, and every artist has a story. Laolu Senbanjo's story started in Nigeria, where he was surrounded by the culture and mythology of the Yoruba, and brought him to law school, to New York and eventually to work on Beyoncé's "Lemonade." He shares what he calls "The Sacred Art of the Ori," art that uses skin as canvas and connects artist and muse through mind, body and soul. Another economic reality is possible -- one that values community, sustainability and resiliency instead of profit by any means necessary. Niki Okuk shares her case for cooperative economics and a vision for how working-class people can organize and own the businesses they work for, making decisions for themselves and enjoying the fruits of their labor. We're so used to narratives out of Africa being about war, poverty and devastation, says TED Fellow Wanuri Kahiu. Where's the fun? Introducing "AfroBubbleGum" -- African art that's vibrant, lighthearted and without a political agenda. Rethink the value of all that is unserious as Kahiu explains why we need art that captures the full range of human experiences to tell the stories of Africa. Could it be wrong to help children in need by starting an orphanage? In this eye-opening talk about the bad consequences of good intentions, Tara Winkler speaks out against the spread of orphanages in developing countries, caused in part by foreign donors, and details the harm done to children when they are separated from their families and left to grow up in institutions. Meet Todai Robot, an AI project that performed in the top 20 percent of students on the entrance exam for the University of Tokyo -- without actually understanding a thing. While it's not matriculating anytime soon, Todai Robot's success raises alarming questions for the future of human education. How can we help kids excel at the things that humans will always do better than AI? What's stopping the American government from recording your phone calls, reading your emails and monitoring your location? Very little, says surveillance and cybersecurity counsel Jennifer Granick. The government collects all kinds of inform

ation about you easily, or cheaply -- without a warrant -- and if you've ever participated in a protest or attended a gun show, you're likely a person of interest. Learn more about your rights, your risks and how to protect yourself in the golden age of surveillance. Digital archaeologist Chance Coughenour is using pictures -- your pictures -- to reclaim antiquities that have been lost to conflict and disaster. After crowdsourcing photographs of destroyed monuments, museums and artifacts, Coughenour uses advanced technology called photogrammetry to create 3D reconstructions, preserving the memory of our global, shared, human heritage. Find out more about how you can help celebrate and safeguard history that's being lost. We all have origin stories and identity myths, our tribal narratives that give us a sense of security and belonging. But sometimes our small-group identities can keep us from connecting with humanity as a whole -- and even keep us from seeing others as human. In a powerful talk about how we understand who we are, Chetan Bhatt challenges us to think creatively about each other and our future. As he puts it: it's time to change the question from "Where are you from?" to "Where are you going?" Daan Roosegaarde uses technology and creative thinking to produce imaginative, earth-friendly designs. He presents his latest projects -- from a bike path in Eindhoven, where he reinterpreted "The Starry Night" to get people thinking about green energy, to Beijing, where he developed a smog vacuum cleaner to purify the air in local parks, to a dance floor that generates electricity to power a DJ booth. Check out Roosegaarde's vision for a future where creativity is our true capital. Terrorists and extremists aren't all naturally violent sociopaths -- they're deliberately recruited and radicalized in a process that doesn't fit into a neat pattern. Erin Marie Saltman discusses the push and pull factors that cause people to join extremist groups and explains innovative ways of preventing and countering radicalization. What if you knew what your coworkers really thought about you and what they were really like? Ray Dalio makes the business case for using radical transparency and algorithmic decision-making to create an idea meritocracy where people can speak up and say what they really think -- even calling out the boss in a fair game. Learn more about how these strategies helped Dalio create one of the world's most successful hedge funds and how you might harness the power of data-driven group decision-making. In a mind-bending talk that blurs the line between science and art, Tomás Saraceno exhibits a series of air-inspired sculptures and installations designed to usher in a new era of sustainability, the "Aerocene." From giant, cloud-like playgrounds suspended 22 meters in the air to a balloon sculpture that travels the world without burning a single drop of fossil fuel, Saraceno's work invites us to explore the bounds of our fragile human and terrestrial ecosystems. (In Spanish with English subtitles.) What the astronauts felt when they saw Earth from space changed them forever. Author and artist Benjamin Grant aims to provoke this same feeling of overwhelming scale and beauty in each of us through a series of stunning satellite images that show the effects human beings are having on the planet. "If we can adopt a more expansive perspective, embrace the truth of what is going on and contemplate the long-term health of our planet, we will create a better, safer and smarter future for our one and only home," Grant says. Underneath every shiny new megacity, there's often a story of communities displaced. In this moving, poetic talk, OluTimehin Adegboye details how government land grabs are destroying the lives of thousands who live in the coastal communities of Lagos, Nigeria, to make way for a "new Dubai." She compels us to hold our governments and ourselves accountable for keeping our cities safe for everyone. "The only cities worth building, indeed the only futures worth dreaming of, are those that include all of us, no matter who we are or how we make homes for ourselves," she says. Can you still be friends with someone who doesn't vote the same way as you? For Caitlin Quattromani and Lauran Arledge, two best friends who think very differently about politics, the outcome of the 2016 US presidential election could have resulted in hostility and disrespect. Hear about how they chose to engage in dialogue instead -- and learn some simple tactics they're using to maintain their bipartisan friendship. Our culture is obsessed with happiness, but what if there's a more fulfilling path? Happiness comes and goes, says writer Emily Esfahani Smith, but having meaning in life -- serving something beyond yourself and developing the best within you -- gives you something to hold onto. Learn more about the difference between being happy and having meaning as Esfahani Smith offers four pillars of a meaningful life. Each year, one in seven large corporations commits fraud. Why? To find out, Alexander Wagner takes us inside the economics, ethics and psychology of doing the right thing. Join him for an introspective journey down the slippery slopes of deception as he helps us understand why people behave the way they do. Forget quinoa. Meet fonio, an ancient "miracle grain" native to Senegal that's versatile, nutritious and gluten-free. In this passionate talk, chef Pierre Thiam shares his obsession with the hardy crop and explains why he believes that its industrial-scale cultivation could transform societies in Africa. We've heard a lot of rhetoric lately suggesting that countries like the US are losing valuable manufacturing jobs to lower-cost markets like China, Mexico and Vietnam --

and that protectionism is the best way forward. But those jobs haven't disappeared for the reasons you may think, says border and logistics specialist Augie Picado. He gives us a reality check about what global trade really looks like and how shared production and open borders help us make higher quality products at lower costs. Physics doesn't just happen in a fancy lab -- it happens when you push a piece of buttered toast off the table or drop a couple of raisins in a fizzy drink or watch a coffee spill dry. Become a more interesting dinner guest as physicist Helen Czerski presents various concepts in physics you can become familiar with using everyday things found in your kitchen. In the century-old statues that occupy Cape Town, Sethembile Mzesane didn't see anything that looked like her own reality. So she became a living sculpture herself, standing for hours on end in public spaces dressed in symbolic costumes, to reclaim the city and its public spaces for her community. In this powerful, tour-de-force talk, she shares the stories and motivation behind her mesmerizing performance art. What if you could know exactly how food or medication would impact your health -- before you put it in your body? Genomics researcher Jun Wang is working to develop digital doppelgangers for real people; they start with genetic code, but they'll also factor in other kinds of data as well, from food intake to sleep to data collected by a "smart toilet." With all of this valuable information, Wang hopes to create an engine that will change the way we think about health, both on an individual level and as a collective. How can Africa, the home to some of the largest bodies of water in the world, be said to have a water crisis? It doesn't, says Olúfẹ́mi Táíwò -- it has a knowledge crisis. Táíwò suggests that lack of knowledge on important topics like water and food is what stands between Africa's current state and a future of prosperity. In a powerful talk, he calls for Africa to make the production of knowledge within the continent rewarding and reclaim its position as a locus of learning on behalf of humanity. Between 2008 and 2016, the United States deported more than three million people. What happens to those left behind? Journalist Duarte Geraldino picks up the story of deportation where the state leaves off. Learn more about the wider impact of forced removal as Geraldino explains how the sudden absence of a mother, a local business owner or a high school student ripples outward and wreaks havoc on the relationships that hold our communities together. How can you study Mars without a spaceship? Head to the most Martian place on Earth -- the Atacama Desert in Chile. Astrobiologist Armando Azua-Bustos grew up in this vast, arid landscape and now studies the rare life forms that have adapted to survive there, some in areas with no reported rainfall for the past 400 years. Explore the possibility of finding life elsewhere in the universe without leaving the planet with this quick, funny talk. Science fiction visions of the future show us AI built to replicate our way of thinking -- but what if we modeled it instead on the other kinds of intelligence found in nature? Robotics engineer Radhika Nagpal studies the collective intelligence displayed by insects and fish schools, seeking to understand their rules of engagement. In a visionary talk, she presents her work creating an artificial collective power and previews a future where swarms of robots work together to build flood barriers, pollinate crops, monitor coral reefs and form constellations of satellites. In an unmissable talk about race and politics in America, Theo E.J. Wilson tells the story of becoming Lucius25, white supremacist lurker, and the unexpected compassion and surprising perspective he found from engaging with people he disagrees with. He encourages us to let go of fear, embrace curiosity and have courageous conversations with people who think differently from us. "Conversations stop violence, conversations start countries and build bridges," he says. With more than half of the world population living in cities, one thing is undeniable: we are an urban species. Part game, part urban planning sketching tool, "Cities: Skylines" encourages people to use their creativity and self-expression to rethink the cities of tomorrow. Designer Karoliina Korppoo takes us on a tour through some extraordinary places users have created, from futuristic fantasy cities to remarkably realistic landscapes. What does your dream city look like?

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In [39]: # Creating and plotting the wordcloud to see popular words
wordcloud = WordCloud(width=800, height=400, background_color='white', stopwords=None, c

plt.figure(figsize=(10, 6))
plt.imshow(wordcloud, interpolation='bilinear')
plt.axis('off')
plt.show()
```

