

Talks at Google

Published on Oct 5, 2007

Renowned linguist Steven Pinker speaks at Google's Mountain View, CA, headquarters about his book "The Stuff of Thought." This event took place on September 24, 2007, as part of the Authors@Google series.

I watched this video, and took some notes - most of which are direct transcription of the slides: <https://www.youtube.com/watch?v=hBpetDxIEMU>

*For a summary, start at **58:16** to get the gist.*

Many Ways to Study Human Nature

- **Anthropology: universals, variation**
- **Biology: evolution, genes, brain**
- **Psychology: laboratory studies**
- **Fiction: universal plots**

The View from Language

Insight into thought, emotion, social relations from words and how we use them

Language as a Window into Human Nature

1. **Grammar: A window into thought (cognition)**
2. **Swearing: A window into emotion**
3. **Innuendo: A window into social relationships**

In each case:

- **Start with a puzzle in language**
- **Show how it reveals a much deeper feature of the human mind**
- **Specific examples from English**

- *Similar examples in many other languages*

1) Language as a Window into Cognition

(Richard Lederer - Crazy English)

- *Burn up (as something) -- Burn down*
- *Fill in (a form) -- Filling it out*
- *After dark -- (happens) after light*
- *Underwater/Underground (are actually surrounded by each)*

Puzzle Number 1:

Why do languages talk about the physical world in such crazy ways? There is theory of physics embedded in language. This way of construing reality differs from real physics, BUT it corresponds to human goals and purposes.

There is a theory of physics embedded in our language. Understanding the intuitive physics in language explains the quirks of language and the mental models that humans use to make sense of their lives. There is a concept of:

- *space in our prepositions*
- *matter in our nouns*
- *time in our tenses*
- *causality in our verbs*

Why is the Language of Space so Crazy? Prepositions divide up space into regions with different causal consequences.

A hypothetical language could be coordinate based where each preposition could have six syllables:

up-down, left-right, near-far, pitch, roll, and yaw --> but no language uses this system

Instead:

1. *Location is digitized (near/far, on/off, in/ant, on/under):*
2. *Scale is relative (ant walked across his hand):*
3. *Shape is schematic (language idealizes them as 1-D, 2-D, or 3-D)*
 - *line = 1D*
 - *road = 1D (+ width)*
 - *beam = 1D (+ thickness)*

- *surface = 2D*
- *slab = 2D (+ thickness)*
 - *Prepositions: along requires a 1-D object*
 - *the ant waled along the line/road/beam*
 - *but not: *along the plate/the ball*
 - *Nouns: wire != long skinny cylinder / CD != short fat cylinder (even though geometrically that is what they are)*

4. Boundaries of objects are treated like objects

- *edge = 1D boundary of a 2D surface*
- *end = boundary of 1D ribbon or 2D beam*
- *water, ground = 2D boundary of 3D volume*

Why is the Language of Substance so Crazy? Words for matter allow people to agree on how to package and quantify the material world.

Language distinguishes stuff from things. Four kinds of (or ways of looking at) matter:

1. **Countable Things (an apple)**
2. **Masses (much applesauce)**
3. **Plurals (many apples)**
4. **Collections (a dozen apples)**
 - *Selling matter: per item (count), by weight (mass), or by the dozen (collection)*
 - *Abstract concepts: many opinions vs. much advice*
 - *Happenings in time: events that took place are tied to consequences (such as insurance claims)*

Why is the Language of Time so Crazy? Stretches of time relative to the moment of speaking have different consequences for knowledge and action.

Time is conceived like space; happenings are conceived like matter ("time-stuff" - events)

1. **Spatial metaphors (The deadline is coming; we're approaching the deadline.)**

2. *Children's errors (Can I have any reading behind the dinner? [usage of before instead of after])*

3. **Verb Tense**

- *Time is digitized*
- *Time is relative*
 - *No language has tenses for precise intervals, dates (e.g. November 7, 2007 3:42 PM)*
 - *"location" in time: three regions relative to the moment of speaking*
 - *"Specious present": about 3 seconds (William James)*
 - *Handshake, quick decision, decay of short-term-memory (STM), line of poetry, musical motif, etc.*
 - *Past stretching backwards indefinitely*
 - *Future until eternity*
 - *There are shapes (aspect), too: happenings begin, unfold, and end*
 - *Shape in time (like shape in space) is treated schematically*
 - *Shake - "Amorphously spread out" with no crisp beginning or end*
 - *Swat a fly - Momentousness and crisp*
 - *Cross the street - No crisp beginning with a termination in the present*
 - *Stretches of time can be mentally packaged*
 - *matter: beer (mass) -> one beer (count)*
 - *time: shake it ("Amorphously spread out") -> shake it up (No crisp beginning with a termination in the present)*
 - *Boundary of an event can be treated like an event itself:*
 - *cut off the end of ribbon ~ I'm going to start the end of my talk*

Present - consciousness

Past - knowable, factual, unchangeable

Future - unknowable, hypothetical, willable

Why is the Language of Causality so Crazy? Directly caused events are foreseeable and intended, hence those for which we can hold people responsible. When the direction of causation is fuzzy, so is our sense of moral and legal responsibility.

An actor directly impinges on an entity making it move or change.

Phillip Wolff does a study comparing two cases with computer animations where a door is opened - Wolff asks two questions.

1) In the first animation, Sarah turns the handle of the door to physically swing the door open.

2) In the second animation, Sarah opens a window and the wind blew open the door.

When asked:

Did Sarah cause the door to open? - Respondents say 'Yes' to both animations

Did Sarah open the door? - Respondents say 'Yes' in the first animation, and 'No' in the second animation

2) Language as a Window into Emotion

Humans are prone to strong negative emotions:

- **Awe of the supernatural**
- **Disgust at bodily effluvia**
- **Dread of disease**
- **Revulsion at depraved sexual acts**
- **Hatred of disfavored people and groups**

Nonetheless, people sometimes want to impose these thoughts on others:

- **Gain their attention**
- **Intimidate, humiliate them**
- **Remind them of the awfulness of the objects and activities**
- **Advertise that one has the normal reactions to misfortunes**

Puzzle Number 2:

Why do people get so upset about certain words? Humans are prone to strong negative emotions and, nonetheless, people sometimes want to impose these thoughts on others.

Main legal battle ground of free speech (in the last century)

The Language of Swearing

- **The cognitive neuroscience of swearing (Taboo words activate brain areas associated with 'negative' emotions)**
 - *right hemisphere*
 - *basal ganglia (production)*
 - *amygdala (perception)*
- **Taboo words are processed involuntarily**
 - *Such as the "Stroop Test" - name the color in which the word is printed (literacy impacts ability to identify)*
- **Swearing is often used as a weapon to force a listener to think an unpleasant (or at least emotionally charged) thought**

What kinds of concepts trigger negative emotions?

The Contents of Swearing

- 1. The supernatural**
 - *damn, hell, Jesus Christ*
 - *emotions of awe and fear*
- 2. Bodily effluvia and organs**
 - *shit, piss, asshole, snot, bloody*
 - *effluvia are major vectors of disease*
 - *emotion of disgust*
- 3. Disease, death, infirmity**
 - *A pox on you! A plague on both your houses!*
 - *Cholerya (Cholera)*
 - *Cancer (Often referred to in an obituary as passing away from a long illness)*
 - *emotion of dread*
- 4. Sexuality**
 - *fuck, screw, cunt, pussy, prick, dick*
 - *But why should thoughts about sex trigger negative emotions?*
 - *exploitation, illegitimacy, incest, jealousy, spousal abuse, cuckoldry, desertion, child abuse, feuding, rape, etc.*
 - *emotion of revulsion (in negative cases)*
 - *"Sex is an emotionally fraught activity and its no surprise" it evokes strong emotions*
- 5. Disfavored people and groups**
 - *infidels, cripples, enemies, subordinate peoples*

- *"the n-word" (so vile a word it is often referred to in this way)*
- *nigger, wop, kike, dago, wog, spic, etc.*
- *emotions of hatred and contempt*

Why would speakers want to trigger negative emotions in their listeners?

Five Ways (at least) to Swear

1. Dysphemistic swearing

- *shit vs. feces, fuck vs. copulate, cunt vs. vagina*
- *Euphemism: "We have to talk about this for a specific purpose, but let's avoid thinking about how awful it is."*
- *Dysphemism: "I want you to think about how awful this is."*
-
- **34 Euphemisms for Feces**
 - *generic: waste, fecal matter, filth, muck*
 - *formal: feces, excrement, excreta, defecation, ordure*
 - *with children: poop, doo-doo, doody, ka-ka, job, business, Number 2, BM*
 - *of diapers (to other adults about children): soil, dirt, load*
 - *medical: stool, bowel movement*
 - *animal, large units: pats, chips, pres*
 - *animal, small units : droppings*
 - *animal, scientific: scat, coprolites*
 - *animal, agricultural: manure, guano, dung*
 - *human, agricultural : night soil, humanure, biosolids*
- *Context matters, so using the correct Euphemism in the correct context is important.*
- *In life, context also changes to bring the need for the appropriate Dysphemism, too - especially in times where being polite no longer works.*

1. Abusive swearing

- *Intimidate or humiliate another.*
- *Scholars of Malediction comment on the uses of poetic devices (metaphor, imagery, connotation, alliteration, meter, rhyme)*
- *Lots of examples in the video at 34:49*
 - *Liken people to effluvia, organs, accessories*
 - *Advise them to engage in undignified activities*

- *Accuse them of undignified sexual activities*
- 2. *Idiomatic swearing*
 - *i.e. shit out of luck, get your shit together, piss-poor, pissed off*
 - *Arouses listener's attention*
 - *Arouses listener's attention*
 - *Asserts macho/cool pose*
 - *Expresses informality*
- 3. *Emphatic swearing*
 - *This is really, really, fucking brilliant*
 - *He thinks he's a fucking scoutmaster; Rip Van Fuckin' Winkle*
 - *fuck patois:*
 - *"I come home to my fucking house after three fucking years in the fucking war, and what do I fucking-well find? My wife in bed, engaging in illicit sexual relations with a male!"*
- 4. *Cathartic swearing (three theories)*
 - *Hydraulic theory: ("lets off steam")*
 - *Rage-circuit theory:*
 - *mammals: when suddenly injured or confined, emit sudden angry noise to startle attacker.*
 - *humans: the reflex also triggers language system: aggressive words with negative affect*
 - *Response-cry theory (Erving Goffman)*
 - *But, cathartic swearing is conventional: specific to a language, and appropriate to the kind of misfortune*
 - *Cathartic swearing communicates strong emotional state to by-standards*
 - *Belong with other response cries in the language:*
 - *aha, mmm, ouch, whoops, wow, yes!, yuck, etc.*

3) Language as a Window into Social Relationships

Indirect speech acts are ways of communicating the meaning without stating it exactly. Instead, communication contains innuendo with the expectation that the audience will understand by inferring the meaning.

- *(Request) "If you could pass the guacamole, that would be awesome."*
- *(Solicitation) "We're counting on you to show leadership in our Campaign For the Future."*
- *(Sexual Offer) "Would you like to come up and see my etchings"*
- *(Threat) "Nice store you got there. Would be a real shame if something happened to it."*

Puzzle Number 3:

Why are bribes, requests, seductions, solicitations, and threats so often veiled, when both parties know exactly what they mean (Practical importance includes diplomacy, extortion, bribery, sexual harassment)? People have to convey messages while unsure of their relationship. Indirect speech (Innuendos) can minimize the risks in legal contexts with tangible costs (e.g. bribes, threats, etc.). The same thing can happen in everyday life, because relationship mismatches have a emotional costs. Also, Indirect speech prevents individual knowledge from becoming mutual knowledge. Mutual knowledge is the basis for a relationship.

The Solution in Three Parts:

- 1. The logic of plausible deniability**
- 2. The logic of relationship negotiation**
- 3. The logic of plausible mutual knowledge**

How do you deal with another intelligent agent when you don't know his or her values? Plausible deniability allows an actor in a system to get the benefits of communicating the idea (in addition to the possible payout), but minimize the risk and drawback of the idea backfiring.

1. The Identification Problem (Schelling)

- **Bribing an officer to get out of a traffic ticket (Legal Context)**
 - **Veiled Bribe (Combines the best of Bribe and Don't Bribe options)**
 - **Dishonest Officer - Go free**
 - **Honest Officer - Traffic Ticket**
 - **Logic of "plausible deniability"**
 - **Bribe**
 - **Dishonest Officer - Go free**
 - **Honest Officer - Arrest for Bribery and Traffic Ticket**
 - **Don't Bribe**
 - **Dishonest Officer - Traffic Ticket**
 - **Honest Officer - Traffic Ticket**

2. Language has to do two things

- **Convey content (e.g. bribe, command, proposition)**

- *Negotiate a relationship type*
- 3. **Solution: Use language at two levels:**
 - *The speaker uses the literal form to signal the safest relationship to the listener*
 - *The speaker counts on the listener reading between the lines to entertain a proposition that may be incompatible with that relationship.*
 - *In the simple case: Politeness*
 - *"If you could pass the guacamole, that would be awesome."*
 - *Literal content makes no sense (overstatement, irrelevant)*
 - *The listener thinks: "The speaker says an outcome is good, therefore he must be requesting it."*
 - *Overall effect:*
 - *Intended content = imperative*
 - *But, without presumption of dominance*

What Kinds of Relationships do People Negotiate? Dominance, Communality, and Reciprocity are three major human relationship types according to Fiske (There may be more or less with different names - interestingly, the idea of a Null relationship is not mentioned until later in the discussion). Relationship negotiation allows an actor in a system to combine the best of the available options into a single ambiguous action (through innuendo). The ambiguity allows for interpretation based on the actual relationship.

According to Fiske, there are three major types of human relationships. Each prescribes a distinct way of distributing resources. Each has distinct evolutionary basis. And, each applies most naturally to certain people (but can be extended to others)

1. **Dominance**
 - *"Don't mess with me."*
 - *Dominance hierarchies*
2. **Communality**
 - *"Share and share alike."*
 - *Kin selection and mutualism (kin, spouse, close friends)*
3. **Reciprocity**
 - *"You scratch my back; I'll scratch yours."*
 - *Trading of goods and services*

***"Behavior that is acceptable in one relationship type is anomalous in another."
When relationships are ambiguous, divergent understanding can be costly
("awkwardness")***

- ***Dominance or friendship? (workplace)***
- ***Communality or reciprocity? (friends doing business)***
- ***Dominance or sex? (sexual harassment)***
- ***Friendship or sex? (dating)***

Social identification problems occur when the social costs of awkwardness (from mismatched relationship types) can mimic the legal identification problem example mentioned (bribing an officer)

1. Revisiting the Identification Problem in a Social Context

- ***Story of bribing a restaurant host to get seated sooner (Non-Legal Context)***
 - ***Veiled Bribe (Combines the best of Bribe and Don't Bribe options)***
 - ***Corrupt Host - Quick Table (Reciprocity, Reciprocity)***
 - ***Scrupulous Host - Long Wait (Dominance , Dominance)***
 - ***Logic of "relationship negotiation"***
 - ***Bribe***
 - ***Corrupt Host - Quick Table (Reciprocity, Reciprocity)***
 - ***Scrupulous Host - Awkwardness (Reciprocity, Dominance)***
 - ***Don't Bribe***
 - ***Corrupt Host - Long Wait (Dominance , Dominance)***
 - ***Scrupulous Host - Long Wait (Dominance , Dominance)***

Why should an obvious indirect overture feel less awkward than an overture that is "on the record"? Plausible Mutual knowledge establishes, maintains, and/or nullifies relationships (based on the preexisting relationship type). Individual knowledge learned through innuendos allows for relationships to exist in a 'fictional' state due to ambiguity. More precisely, actors in a system maintain 'fictitious' relationships based on assumptions in their Individual knowledge, where Mutual knowledge would otherwise remove the assumption.

Mutual knowledge, or common knowledge, is distinct from Individual knowledge.

- ***Individual knowledge.***
 - ***A knows x***
 - ***B knows x***
- ***Mutual knowledge***

- *A knows x*
- *B knows x*
- *A knows that B knows x*
- *B knows that A knows x*
- *A knows that B knows that A knows x*
- *And so on...*

Some differences between individual knowledge and mutual knowledge.

- ***Freedom of assembly and political revolutions***
 - *Mutual knowledge emboldens groups to act differently*
 - *Actors in a system change their behavior based on the shared knowledge of those actors*
- ***The Emperor's New Clothes***
 - *Everyone acknowledges that the Emperor's now wearing any clothes*
 - *The mutual knowledge causes the Emperor to be overthrown*
- ***Language creates mutual knowledge***
 - *Innuendos (Indirect speech) merely provide individual knowledge*
 - *Direct speech provides mutual knowledge*
 - *Relationships are maintained or nullified by a mutual knowledge of the relationship type (maintaining or nullifying fictional relationships/establishing new relationships)*

