# 4创新者、颠覆者、怪人和比特币

**Innovators, Disruptors, Misfits, and Bitcoin**

Maker Faire; Henry Ford Museum, Detroit Michigan; July 2014

Video Link: <https://www.youtube.com/watch?v=LeclUjKm408>

Just before this presentation began, attendees viewed a video presented by the museum about the history of the automobile. That is the video referenced throughout this talk.

就在这个演讲开始之前，与会者观看了博物馆展示的关于汽车历史的视频。

这是整个谈话中谈到的视频。

Good morning. Now that was a fun video, wasn’t it? About a month ago, I sold my car for bitcoin. That was an interesting experience, a whole new world. How many here have bitcoin? Of those who don’t, how many of you have heard of bitcoin? 95% of audience has heard of bitcoin. Anybody who has not heard of bitcoin? Okay, great, this is going to be a lot easier than I thought.

早上好。这是一个有趣的视频，不是吗？

大约一个月前，我为比特币卖掉了我的车。这是一个有趣的经历，一个全新的世界。

你们有多少人有比特币？有多少人听说过比特币？ 95%的观众听说过比特币。

有没有听说过比特币的人吗？好的，很好，这比我想的要容易得多。

## 4.1认识创新

**Recognizing Innovation**

Bitcoin is the internet of money, but it’s a lot more than that. For this audience in particular and for the people who are here at the Maker Faire, I want to talk about bitcoin from the perspective of the misfits, the weirdos, the freaks. The people who refuse to think the way everybody else thinks. The people who see a half-working, elegant technology and don’t look at the halfworking; they look at the elegant side. They recognize innovation. And they recognize innovation, not just a few months or a few years before others, but sometimes a decade before others. Those are the kinds of people that come to Maker Faire. And so it’s a great place to start talking about bitcoin.

比特币是货币互联网，但它不止于此。

特别是对于这里的观众，以及在这里做客的人，我想从怪人、怪胎的角度来谈论比特币。

那些拒绝以别人的方式思考的人。

那些看到半成品的优雅技术，但没有看到半成品的人，他们看着优雅的一面。他们认识到创新。

他们认识到创新，他们不只是比别人早几个月或几年前认识到创新，有时是比别人早十年前。

那些是来这里的人。所以这里开始谈论比特币的好地方。

Bitcoin is unexpected. Bitcoin is not money as we know it. Bitcoin should not have happened. Bitcoin really has no possibility of success. It can’t possibly work. It’s one of those things that does not work in theory, but it works in practice. Like Wikipedia. Like Linux. Like the internet. Weird ideas made by people with ponytails and neckbeards. Weirdos nobody really trusts.

比特币是意外的。比特币不是我们认为的钱。

比特币不应该发生。比特币真的没有成功的可能性。它不可能奏效。

这是理论上不可行的事情，但它在实践中却可行。

像维基百科一样，像Linux一样， 像互联网一样。人们做出奇怪的想法。没有人真正相信怪人。

*"Bitcoin is unexpected. Bitcoin is not money as we know it. Bitcoin should not have happened. Bitcoin really has no possibility of success. It can’t possibly work. It’s one of those things that does not work in theory, but it works in practice. Like Wikipedia. Like Linux. Like the internet."*

Bitcoin succeeds because it works. As a technology, it’s elegant. I want to talk about that spirit of the misfit. About walking into an industry boardroom saying, "You know what? We’re about to change everything,” and being laughed out of the room. Then, keeping on and going on, until, in fact, they change everything. This happens in technology all the time. We just forget about it. We ignore it. We rewrite the history in glowing terms.

比特币成功是因为它有效。作为一种技术，它很优雅。 我想谈谈这种怪人的精神。

走进行业会议室说：“你知道什么？我们即将改变一切，”然后被嘲笑出房间。

然后，继续前进，最终事实上，他们改变了一切。

这种事情在技术上一直都在发生。我们只是忘了它。我们忽略了它。我们用发光的术语重写了历史。

## 4.2汽车、电力和比特币的危险

**The Dangers of Automobiles, Electricity, and Bitcoin**

We just watched a video about the early automobile. Do you know what the media said about the early automobile? They ridiculed cars. They mocked cars. Cars were slower than horses. Cars broke down all the time. Cars needed expensive gasoline that you couldn’t find anywhere. They required enormous amounts of infrastructure to work. The media focused on the part of the story that sold the most papers: car accidents, pedestrians mangled by cars. For more than two decades from the first cars, the story was that of infernal, disgusting, dirty, noisy machines that were far inferior to horses, that couldn’t go anywhere, that only weirdos would use, and that, most of the time, killed the occupants and everyone who came anywhere near them.

我们刚观看了一个关于早期汽车的视频。

你知道媒体对早期汽车的看法吗？他们嘲讽汽车。他们戏弄汽车。汽车比马慢。汽车总是出问题。

汽车需要昂贵的汽油，而不是到处都有汽油。他们需要大量的基础设施才能工作。

媒体聚焦的故事卖了很多报纸：汽车事故，被汽车撞倒的行人。

从第一辆汽车开始的二十多年来，这个故事就是地狱、恶心、肮脏、嘈杂的机器，远远不如马匹，无法到达任何地方，只有怪人才使用，而且很多时候，杀死了居民和所有靠近他们的人。

*"For more than two decades from the first cars, the story was that of infernal, disgusting, dirty, noisy machines that were far inferior to horses, that couldn’t go anywhere, that only weirdos would use, and that, most of the time, killed the occupants and everyone who came anywhere near them."*

This hysteria got so bad that in 1896 in the UK, they passed a law called the Red Flag Act. The Red Flag Act required that any operator of a vehicle have three crew members on staff: a driver, an engineer, and a flagman. The driver would operate the vehicle, the engineer would supervise that operation (think railroads), and the flagman would carry a red flag and run 100 yards ahead of the car to warn pedestrians of the imminent arrival of an infernal death machine that was going to mow them down.

1896年，在英国，这种歇斯底里非常糟糕，他们通过了一项法律：红旗法案。

红旗法案规定，任何车辆操作员都有三名机组人员：司机、工程师、旗手。

司机操作车辆，工程师监督操作（想想铁路），旗手携带一面红旗，并在汽车前面100码的地方跑，警告行人即地狱死亡机器将到来的，它会收了他们。

Guess what happened to the UK? They lost the automobile-industry race because they saw that technology and, instead of seeing potential, they allowed fear to define their reaction. They created an environment where a car could not do the things that a car can do. If you make a car go as slow as the pedestrian who’s running ahead of it with a red flag, you lose all of the advantages of a car. If a car requires a three-person crew to operate, you lose the advantages of a car. They tried to take the car and understand it from the perspective of railroads and horses. They failed. They lost the race.

猜猜英国发生了什么事？他们失去了汽车行业的竞争，因为他们看到了技术，而不是看到潜力，他们让恐惧来定义了他们的反应。

他们创造了一种环境，在这里，汽车不能做汽车能做的事情。

如果你让一辆汽车和一个旗手一样慢，你就会失去了一辆车的所有优点。

如果一辆车需要三个人来操作，你就失去了汽车的优势。

他们试图从铁路和马的角度来理解汽车车。他们失败了。他们输掉了比赛。

What you didn’t see in this video is that until that time, they were winning. The first really practical cars were built in England. They had already won the race in the Industrial Revolution with the steam engine. At that time, England was a powerhouse of industrial innovation. They were winning, until they decided that this dirty machine should be confined to a very limited space and set of rules. They killed the goose. No more golden eggs for them.

你在这段视频中没有看到的是，直到那时，他们赢了。

第一批真正实用的汽车是在英国建造的。他们已经用蒸汽机在工业革命中赢得了比赛。

当时，英国是一个工业创新的强国。他们赢了，直到他们决定这个肮脏的机器应该限制在一个有限空间和一套规则内。他们杀了那只鹅，再也没有金蛋了。

*"The first really practical cars were built in England… At that time, England was a powerhouse of industrial innovation. They were winning, until they decided that this dirty machine should be confined to a very limited space and set of rules."*

That is instructive because this happens again and again in technology. When electricity was first domesticated and people started electrifying their homes, do you think the media announced, "This is brilliant! Edison’s a genius! This is going to change the world!”? No. What they said was that this was dangerous technology that would burn down people’s homes. They ran story after story after story about people getting electrocuted, about homes burning down.

这有些启发性，因为这种现象在技术中一再发生。

当电力首次被驯化，人们开始给家庭供电，你可能认为媒体会这样说：“这真是太棒了！爱迪生是个天才！这将改变世界！”

不，他们说这是一种危险的技术，会烧毁人们的家园。他们讲述了一个故事，讲的是人们被电击、房屋烧毁的故事。

*"When electricity was first domesticated and people started electrifying their homes, do you think the media announced, "This is brilliant! Edison’s a genius! This is going to change the world!”? No. What they said was that this was dangerous technology that would burn down people’s homes."*

Of course, you couldn’t really use electricity because it required a complete overhaul of your house. You had to put wires in your house, the wires that would burn it down. You’d have to buy special devices to connect to these wires, just before your house burned down. Only the rich could afford it. Clearly, this was a technology that was just an affectation of the rich. It was just a plaything with no practical value.

当然，你不能真正使用电力，因为需要彻底检修你的房子。

你必须把电线放在你的房子里，这些电线会烧毁房子。

在你的房子被烧毁之前，你必须购买特殊的设备来连接这些电线。

只有有钱人才能负担得起。显然，这只是一种对富人的矫揉造作的技术。这只是一个没有实际价值的玩物。

The mayor of Paris, during the World’s Fair of 1900, said, "After the fair is over, this fad of electricity will be forgotten as quickly as the lights turn off." Famous last words are very common in technology, words that in retrospect look ridiculous. Like the head of IBM who once said, "I foresee a need for no more than five computers worldwide." Like the people who said that the telephone would never succeed.

在1900年巴黎世界博览会期间，巴黎市长说：“在交易会结束后，这股电的热潮将很快退去。”

这最后一句话在技术上是很有名，回想起来很荒谬。

就像IBM的总裁曾经说过的那样，“我估计世界上不需要超过五台计算机。”

就像那些说电话永远不会成功的人一样。

*"Famous last words are very common in technology, words that in retrospect look ridiculous."*

Can you guess what people are saying about bitcoin? They’re telling you that it is a technology that is weird and complicated. A technology that caters to misfits, drug dealers, degenerates, pornographers, terrorists, thieves, swindlers. I don’t see any of those people in this room but we better be careful just in case they show up.

你能猜出人们对比特币的看法吗？

他们告诉你，这是一项奇怪而复杂的技术。

这种迎合了怪人、毒品贩子、堕落者、色情作家、恐怖分子、小偷、骗子。

这个房间里我没有看到有这样的人，但我们最好小心，以防万一他们出现。

Of course, they’re wrong. Bitcoin is none of those things. Bitcoin is simply a technology. As a technology, often the first use it finds is in the hands of criminals. The first cars were used as getaway vehicles. The first telephones were used to plot conspiracy. The first telegrams were used to run longdistance mail-fraud schemes and Ponzi schemes. The first forms of electricity were used to run medical hoaxes and scam people. These things always happen with a new technology, and they happen with bitcoin, too.

当然，他们错了。比特币并不是这些东西。比特币仅仅是一种技术。

作为一种技术，通常它的首次使用是在罪犯手中。

第一辆车被用来逃亡。第一批电话被用来策划阴谋。第一批电报被用来传送远程邮件诈骗计划和庞氏骗局。第一种形式的电力被用来运行医疗恶作剧和骗人。这些事情总是伴随着一种新技术发生，而且它们也发生在比特币上。

*"Bitcoin is simply a technology. As a technology, often the first use it finds is in the hands of criminals. The first cars were used as getaway vehicles… Criminals use the most cutting-edge technology because they operate in an environment with very high profit margins and very high risk."*

Why do you think criminals use technology like that? We could be moralistic about it and look at the actual reasons. Criminals use the most cutting-edge technology because they operate in an environment with very high profit margins and very high risk. In that environment, competition is fierce. Using the latest technology if you’re already taking enormous risks isn’t that big of a deal. And if you win, it gives you an enormous advantage. Throughout history, the most amazing technology is adopted by criminals first. I don’t think that’s necessarily what we want to put on the bitcoin marketing plan, but it’s interesting to look at what criminals do and how that ends up being mainstream technology a decade later. There’s a certain dynamic there.

你认为为什么罪犯使用这样的技术？我们可以对它讲道理，看看实际的原因。

犯罪分子使用最前沿的技术，因为他们在一个高利润和高风险的环境中工作。在这种环境下，竞争是激烈的。如果你已经承担了巨大的风险，使用最新的技术并不是什么大不了的事情。

如果你赢了，它给了你巨大的优势。纵观历史，最令人惊异的技术是罪犯首先采用的。

我不认为这是我们想对比特币营销计划提出的，但有趣的是，看看罪犯们做什么，以及几十年后，如何最终成为主流技术。那里有一定的动力。

Bitcoin is already way past its early stage and is no longer the purview of criminals. In fact, arguably it really wasn’t in the first place, despite what the media said. Now, bitcoin is hitting the mainstream and things are changing very rapidly.

比特币已经过了早期阶段，不再是罪犯的范围。

事实上，尽管媒体说过，但事实上它真的不是第一个。

现在，比特币正在成为主流，事情正在迅速发生变化。

"With bitcoin as a technology, something very exciting is happening. Something is going to shake up our financial and banking system as much as cars shook up the horse industry, as much as oil shook up the whaling industry, as much as electricity shook up the wood stove industry."

“比特币作为一种技术，正在发生一些令人兴奋的事情。

有些东西会像汽车震动马业一样震撼我们的金融和银行系统，就像石油震动了捕鲸业一样，就像电炉震动木柴火炉业一样。”

Today I’m going to talk about bitcoin as a technology because something very exciting is happening. Something is going to shake up our financial and banking system as much as cars shook up the horse industry, as much as oil shook up the whaling industry, as much as electricity shook up the wood stove industry. Banking is about to be disrupted. Arguably, it’s already being disrupted. In fact, by the time they figure out how serious this destruction already is, the game’s already over. That’s usually the case.

今天我要把比特币作为一种技术来谈，因为一些非常令人兴奋的事情正在发生。

正如汽车震撼马业一样，某些事情正在改变我们的金融和银行系统，就像石油震动了捕鲸业一样，就像电炉震动了木柴火炉业一样。银行业即将被颠覆。可以说，它已经正在被颠覆。

事实上，当他们弄清楚这种颠覆已经有多严重时，游戏已经结束了。通常就是这样。

## 4.3对创新的现有反应

**Incumbent Reactions to Innovation**

When established, entrenched industries first see a new disruptive technology, they ignore it because it can’t possibly pose a threat. From the benefit of incumbency, from the high perch of an established monopolistic business, these threats look like children playing around. To JPMorgan Chase, bitcoin is like a lemonade stand trying to take on Walmart. If the technology continues to exist, then they go into the next phase where they start mocking the technology. They suddenly see it everywhere and they start making jokes about it. So, just like with the automobile, the first people who bought cars were mocked. They were shown always on their knees with a spanner, trying to fix their machine that had broken down again. That was the image of an automobile owner for the first years.

刚出现时，根深蒂固的产业首先看到一种新的颠覆性技术，他们忽视它，因为它不可能构成威胁。

从现任职位的好处来看，从一个已建立的垄断行业的高位来看，这些威胁看起来像儿童游戏。

对于摩根大通来说，比特币就像一个柠檬饮料摊，试图收购沃尔玛。

如果技术继续存在，那么他们进入下一阶段，开始嘲笑技术。他们突然看到到处都是，他们开始开玩笑。

所以，就像汽车一样，买汽车的第一批人被嘲笑了。他们总是拿着扳手跪在地上，试图修理他们的机器，它又坏了。这是第一年汽车所有者的形象。

While they mock it, bitcoin continues to grow and improve. After a while, you see a change. At first, some of the incumbents in the industry say, "Hey, maybe we need to experiment with this. Maybe we need to start looking at this." Then there’s a stampede because suddenly they realize this is going to change our industry forever.

当他们嘲笑它时，比特币继续增长和改善。不就以后，你看到了变化。

起初，一些业内人士说：“嘿，也许我们需要试验一下它。也许我们需要开始关注它。”

然后是惊慌失措，因为他们突然意识到这将永远改变我们的行业。

By that time, it’s too late. By that time, they’re Kodak: going from number one in the world to, within three years, losing a $12 billion industry right out from under their feet to a company they had never even heard of before. A company that didn’t even make cameras. Do you know who destroyed Kodak? A little Finnish company they had never heard of called Nokia. A company that didn’t make cameras—until they did. Within three years they made half a billion cameras and destroyed Kodak. Tower Records dominated the music industry. Within four years they disappeared. Why? Because MP3s gave people choice.

到那时，已经太迟了。到那时，他们是柯达：从世界排名第一，到三年之内，失去了一个120亿美元的产业，从他们的脚下，到一个他们甚至从来没有听说过的公司。

一个甚至不是做相机的公司。你知道是谁毁了柯达吗？一个他们从未听说过的芬兰小公司，叫诺基亚。

这个一个公司在这个之前没有做过相机。三年之内，他们制造了十亿个照相机，摧毁了柯达。

Tower Records主导音乐产业。不到四年，他们就消失了。为什么？因为MP3给了人们选择。

IBM used to be the most unshakable company in computers. They guaranteed quality. In fact, buying anything but IBM was a sure sign that you were a loser. Then Linux happened. Linux shook IBM to the core because it subverted the very basic idea that in order to deliver quality engineering, in order to deliver the best computers possible for the serious work of banking, engineering, and government operations, you needed IBM. You needed a closed, controlled, carefully organized system built by serious Ph.D.engineers.

IBM曾经是计算机中最不可动摇的公司。他们保证质量。

事实上，购买IBM以外的东西表明你肯定是一个失败者。

然后Linux出现了。Linux震撼了IBM的核心，因为它破坏了一个非常基本的想法，即为了提供高质量的工程，为了为银行，工程和政府运营的严肃工作提供最好的计算机，你需要IBM。你需要一个由严肃的博士工程师建造的封闭、控制、精心组织的系统。

Back in 1992 when Linus Torvalds said, "I’m going to build an operating system in my dorm room because I can’t afford to buy an operating system,” that idea seemed completely preposterous. Operating systems were enormous edifices of complexity that took thousands of engineers to build. Linus Torvalds started simple; he started building an operating system. Six years later, Linux had started dominating the computing industry and Sun Microsystems was beginning to feel the pain. Eight years later, Sun Microsystems was heading into bankruptcy, HP was getting bought, their computer division was shutting down, and IBM stepped out of the personalcomputing business.

1992年，Linus Torvalds说：“我打算在宿舍里做一个操作系统，因为我买不起一个操作系统。”

这个想法似乎很荒诞。操作系统是复杂的巨大建筑，需要成千上万的工程师要构建。

Linus Torvalds起步很简单，他开始构建一个操作系统。

六年后，Linux开始主导计算行业，SUN开始感受到了痛苦。

八年后，SUN走向破产，被惠普收购，他们的计算机部门被关闭，IBM退出个人计算业务。

Now, 80 percent of the cell phones on the planet run Android — which, by the way, is Linux. The servers they connect to run Linux. The banks we use run Linux. The entertainment systems we use run Linux. The cars we drive run Linux. You can always tell if they stop running Linux: the little blue screen that greets you that says, Bleh. Sorry. Crashed. Wrong choice of operating system. You get into a plane, the entertainment system boots up, it’s running Linux. If you said to an IBM engineer 15 years ago, "You are about to be destroyed by an operating system built by a Finnish student in their dorm,” they would have laughed at you.

现在，地球上80％的手机都运行Android，顺便说一下，它是Linux。它们连接的服务器也运行Linux。

我们使用的银行运行Linux。我们使用的娱乐系统运行Linux。我们驾驶的汽车运行Linux。

你可以随时告诉它们是否停止运行Linux：那个问候你的小蓝屏，Ble，抱歉。坠毁。

错误的操作系统选择。你进入了飞机，娱乐系统启动，它正在运行Linux。

如果你在15年前对一位IBM工程师说：“你将要被一个芬兰学生在宿舍里建造的操作系统摧毁”，他们会嘲笑你。

*"If you said to an IBM engineer 15 years ago, "You are about to be destroyed by an operating system built by a Finnish student in their dorm,” they would have laughed at you."*

Here we are today, and bitcoin is taking on the entire banking system, the most powerful industry in the world. Guess what? Bitcoin’s going to win. It’s going to win for a very simple reason. It’s not just going to win because it’s better. It’s not just going to win because the banking system is run by gangsters, crooks, and some of the most immoral empty suits in the world. It’s not just going to win because the banking system has spent the last 50 years delivering just two consumer innovations?—?ATMs and credit cards — and then spent the rest of the time trying to figure out how to fleece you. It’s going to win because it’s open. In a world of tinkers, of experimenters, of makers, open wins. The reason it wins is that it allows innovation to flourish at the edges.

今天我们就是这样，比特币正在占领整个银行体系，这是世界上最强大的行业。

你猜怎么样？比特币要赢了，原因非常简单。

赢得胜利，不仅仅是因为，这个银行业系统是由歹徒、骗子和世界上一些最不道德的人管理的。

赢得胜利，是因为银行系统在过去50年中只提供了两项消费者创新：ATM和信用卡，而其它时间都在试图想办法如何抓住你。

赢得胜利，是因为它是开放的。在一个由修补匠、实验者、制造者组成世界里，开放能够胜利。

它赢的原因是它允许创新在边缘蓬勃发展。

*"Bitcoin is going to win because it’s open. In a world of tinkers, of experimenters, of makers, open wins. The reason it wins is that it allows innovation to flourish at the edges."*

## 4.4开放式创新和选择加入系统

**Open Innovation and Opt-In Systems**

Let me explain what I mean by that. Every single financial system in the world has a security and trust model that requires excluding bad actors. I can’t connect to the Visa network and program it because doing so would endanger the security of the Visa network. I can’t connect to the SWIFT network, the worldwide interbank wire transfer network, because doing so would endanger the security of that network. All of these networks are designed to be closed because their primary security relies on access control. Very carefully vetting every single person who has access and touches the code. Very carefully vetting all of the applications that run on that system, because if they allow one bad actor into the heart of the system, that security is gone. That one bad actor can take over and do whatever they want. Of course, in 2008 we discovered that the bad actors owned the banks. And they did take over. They destroyed millions of homeowners, millions of retirees, and millions of savers all around the world with their greed.

我解释一下我的意思。

世界上的每一个金融系统都有一个安全和信任模型，它要排除不良参与者。

我无法连接到Visa网络和对它编程，因为这样做会危及Visa网络的安全。

我无法连接到SWIFT网络，它是全球银行间的有线传输网络，因为这样做会危及该网络的安全。

所有这些网络都被设计为封闭的，因为它们的主要安全性依赖于访问控制。

非常仔细地审查每个有访问权限并接触代码的人。

非常仔细地检查在系统上运行的所有应用程序，因为如果它们允许一个坏人进入系统的核心，那么安全就不存在了。一个坏人可以做他们想做的任何事情。

当然，在2008年，我们发现坏人拥有银行。他们确实接管了。他们贪婪地摧毁了数以百万计的房主、数百万退休人员和全世界数百万的储户。

*"Bitcoin is different because it doesn’t depend on access control to remain secure. It depends on a simple mathematical formula of incentives and rewards."*

“比特币不是这样，因为它不依赖于访问控制来保持安全。这取决于一个简单的激励和奖励的数学公式。”

Bitcoin is different. The reason it’s different is not because we’ve suddenly found the most honest people in the world. Or because there are no quirks in bitcoin. Or because the network doesn’t get attacked. Bitcoin is different because there are plenty of crooks in bitcoin — the network gets attacked all the time?—?but it doesn’t depend on access control to remain secure. It depends on a simple mathematical formula of incentives and rewards. In order to participate in the bitcoin network and secure the network as a miner, which is a special function in bitcoin, you have to use a lot of computing power and spend a lot of electricity. If you win that competition, you get bitcoin as a reward. That simple equation creates a system of incentives where it’s far better to play with the rules than against the rules. It’s game theory. It’s like a giant game of Sudoku.

比特币不是这样。不同的原因不是因为我们突然发现了世界上最诚实的人。

或者因为比特币没有怪癖。或者因为网络没有受到攻击。

比特币不同，是因为比特币中有很多骗子，网络一直受到攻击，但是它不依赖于访问控制来保持安全。

它取决于一个简单的激励和奖励的数学公式。

矿工参与比特币网络和保证网络安全，矿工是比特币的一个特殊的功能，你必须使用大量的算力，并花费大量的电力。如果你赢了那场比赛，你会得到比特币作为奖励。这个简单的公式创造了一个激励机制，使用规则比违反规则要好得多。这是博弈论。这就像一个数独游戏。

If you look at that as a computer scientist, or even more as a banker, you say, "That can’t possibly work. What do you mean it’s a giant game of Sudoku and everybody is competing against each other? That’s not the basis of a security system. That would bring chaos." It’s kind of like "What do you mean it’s an encyclopedia that anyone can edit? That would bring chaos” — said the Encyclopedia Britannica. If you’re under 40, you’ve never heard of it.

如果你是一个计算机科学家，或一个银行家，你会说，“那不可能有效。你是什么意思，一场巨大的数独游戏，每个人都在相互竞争？这不是安全系统的基础。这会带来混乱。”

它有点像“你是什么意思，它是一本百科全书，任何人都可以编辑？这会带来混乱。”大不列颠百科全书这样说。如果你不到40岁，你从来没有听说过。

Bitcoin is a completely open network. Anyone can connect to it. You can write an application right now, connect to the bitcoin network, and teach it to do something new. You can write a new financial service. You can write a new financial instrument. When you do so, you don’t have to identity yourself to the network, you don’t have to get permission from anyone. You don’t have to be vetted. You don’t have to be secured. The network doesn’t fear you because its security doesn’t depend on keeping bad actors out. In fact, bitcoin works fine with plenty of bad actors right in the core of the system because there is no core of the system; there is no center. It’s a completely decentralized system. What happens when you create a network where open access to financial services is possible? Where, for the first time in history, anyone can connect and write an application?

比特币是一个完全开放的网络。任何人都可以连接到它。

你现在可以编写应用程序，连接到比特币网络，并教它做一些新事情。

你可以编写新的金融服务。你可以写一个新的金融工具。

当你这样做时，你不必向网络透漏你的身份，你无需获得任何人的许可。你不必经过审查。您不必被担保。

你不必是安全的。网络不会害怕你，因为它的安全性并不依赖于排除坏人。

事实上，比特币在系统的核心部分有大量的坏人，但它工作正常，因为系统没有核心， 没有中心。

这是一个完全去中心化的系统。

当你创建了一个可以开放访问金融服务的网络时，会发生什么？

历史上第一次，任何人都可以连接并编写应用？

"Bitcoin is the internet of money, and currency is just the first application."

“比特币是货币互联网，货币只是第一个应用。”

Bitcoin isn’t currency. That’s a really important thing to realize. Currency is an app that runs on the bitcoin network. Bitcoin is the internet of money, and currency is just the first application. Today, there are a thousand companies writing the next app. Those companies are hiring tens of thousands of people in one of the most vibrant industries we have seen in the last two decades. In 2014, bitcoin startups will receive more than $250 million of investment. What’s remarkable about that is that it’s faster than the rate of investment in the internet in 1995. We are ahead of the curve. Bitcoin is growing faster than Twitter did in the first three years. Bitcoin is growing faster than Facebook grew in the first few years. The reason for that is because every misfit, weirdo, freak, or programmer from anywhere in the world can now connect to bitcoin without asking anyone’s permission and take their weirdo misfit idea and build a new financial service. A new banking application. A new shopping application. A new escrow application. And that’s exactly what people are doing. They are building things that are innovative, new, and brilliant. Things that we’ve never seen in banking before. Things that wouldn’t get past the first planning meeting in your average bank because they’d get shot down.

比特币不是货币。要意识到，这是一件非常重要的事情。货币是在比特币网络上运行的一个应用。

比特币是货币互联网，货币只是第一个应用。

今天，有一千家公司在写下一个应用。这些公司正在招聘数万人，这是我们在过去二十年中所见过的最具活力的行业之一。

2014年，比特币初创公司将获得超过2.5亿美元的投资。

值得注意的是，它比1995年的互联网投资速度更快。我们处于领先位置。

比特币在前三年的增长速度超过Twitter。在最初的几年里，比特币的增长速度超过了Facebook。

之所以这样，是因为世界上任何地方的每一个怪人、怪异、怪胎或程序员现在都可以连接到比特币，而无需征得任何人的同意，采用他们怪异的想法，建立新的金融服务。

一个新的银行应用。一个新的购物应用。一个新的托管应用。这正是人们正在做的事情。

他们正在构建具有创新性，新颖性和卓越性的东西。我们之前从未在银行业见过的这些事情。

这些事情不会跨过普通银行第一次计划会议，因为它们会被毙掉。

When you have these two environments running side by side — the banking environment where everything requires permission, which is most certainly not granted, and a system which is completely open, where innovation happens at the edge without permission — guess who wins. Guess where all of the exciting things happen. Guess where all of the innovation happens. This is innovation that serves consumers.

当你有两个并排运行的环境时，猜猜谁会赢：

* 银行业环境：每件事都要求许可，这当然是不允许的。
* 完全开发的系统：在没有许可的情况下，创新发生在边缘。

猜猜所有令人兴奋的事情发生在哪里。

这是为消费者服务的创新。

"Bitcoin is an opt-in system. You choose to use it. You choose what apps you’re going to run. You choose who you’re going to interact with. You choose the rules of the game by which you’re going to interact. That’s why bitcoin is going to win. It delivers innovation that consumers want and need."

比特币是一种选择进入系统。你选择使用它。你选择你要运行的应用程序。你选择你要和谁互动。

你选择你要互动的游戏规则。这就是比特币会赢的原因。它提供了消费者想要和需要的创新。

No one is sitting on bitcoin and trying to find a way to front run a highfrequency trading algorithm so they can squeeze 3 microcents about four microseconds faster than the other giant bank that’s playing with algorithms. No one’s trying to find a way to screw you out of your overdraft facility, an innovation that was pioneered by one of the big banks, I think in 2007. They realized that if you were close to the overdraft limit, if instead of running the big transaction first they flipped the order of the transactions and ran a lot of small ones, you’d pay a 25-dollar fee for every one of them, and they could maximize their fees. That’s the kind of innovation they were focused on. So, they innovated more ways to screw their customers.

没有人坐在比特币上，试图找到一种方法来先行运行高频交易算法，这样他们就可以比正在玩算法的另一个巨型银行更快地挤压3微分约4微秒。

没有人试图找到一种方法来把你从透支工具中解脱出来，这是一个由大银行首创的创新，2007年我这么想。

他们意识到，如果你接近透支限额，如果不是先运行大交易，他们就翻转了交易的顺序，并运行了很多小的交易，你会为每个人支付25美元的费用，并且他们可以最大化他们的费用。这就是他们关注的创新。

因此，他们创新了欺骗顾客的更多方法。

In bitcoin, nobody’s doing that kind of innovation. The reason they’re not doing that kind of innovation is because in bitcoin you can’t force someone to take your app. If you bank with a big bank, it’s their network, it’s their policy, you’re using their debit card, playing by their rules, and if you don’t like it, you can go elsewhere and discover that they’re all the same. Bitcoin is an opt-in system. You choose to use it. You choose what apps you’re going to run. You choose who you’re going to interact with. You choose the rules of the game by which you’re going to interact. If you don’t like an app, you don’t download it. If you love an app, you download it and you tell all your friends about it. That’s why bitcoin is going to win. It delivers innovation that consumers want and need.

在比特币中，没有人在做那种创新。

他们不做那种创新的原因是，在比特币中，你不能强迫别人拿你的应用程序。

如果你用一家大银行，那是他们的网络，那是他们的政策，你使用他们的借记卡，按照他们的规则玩，如果你不喜欢它，你可以去别的地方，发现他们都是一样。

比特币是一个选择进入系统。你选择使用它。 你可以选择要运行的应用程序。你您可以选择要与之互动的人。你可以选择要与之互动的游戏规则。如果你不喜欢某个应用，则不下载它。如果你喜欢一个应用程序，就下载它，然后告诉你的朋友。这就是比特币获胜的原因。它提供消费者想要和需要的创新。

## 4.5把65亿人口包括在全球经济中

**Including 6.5 Billion People in a Global Economy**

There’s another reason bitcoin will win. There is a massive imbalance that most people here don’t notice. Every person in this room has access to a bank account without currency controls. A bank account from which they can buy and sell any currency in the world. A bank account from which they can wire money anywhere in the world. A bank account from which they can access international markets like the Tokyo Stock Exchange or the German stock exchange. A market from which they can access credit and liquidity. Auto loans and mortgages. A bank account which is powerful. That power is available to about a billion people on this planet. A billion people who have access to full-fledged, international, high-liquidity banking facilities.

比特币会赢还有另一个原因。

这里大多数人都没有注意到一个巨大的不平衡。这个房间的每个人都可以使用没有外汇控制的银行账户。

你们可以买卖世界上的任何一种货币。你们可以在世界任何地方汇款。

你们可以访问东京证券交易所或德国证券交易所等国际市场。

你们可以获得信贷和流动性的市场，汽车贷款和抵押贷款。

你有一个强大的银行账户。这个力量在这个星球上大约有十亿人可用。

十亿人有权获得成熟、国际、高流动性的银行设施。

There are 2 billion people who have no bank accounts at all. There are another 4 billion people who have very limited access to banking. Banking without international currencies, banking without international markets, banking without liquidity. Bitcoin isn’t about the 1 billion. Bitcoin is all about the other 6 1/2. The people who are currently cut off from international banking. What do you think happens when you suddenly are able to turn a simple text-messaging phone in the middle of a rural area in Nigeria, connected to a solar panel, into a bank terminal? Into a Western Union remittance terminal? Into an international loan-origination system? A stock market? An IPO engine? At first, nothing, but give it a few years.

有20亿人根本没有银行账户。另外还有40亿人对银行业务的准入非常有限。

没有国际货币的银行业，没有国际市场的银行业，没有流动性的银行业。

比特币不是给10亿人用的，比特币是给65亿人用的。那些目前被国际银行拒之门外的人。

当你突然能够在尼日利亚农村地区连接太阳能电池板，将一个手机变成银行终端时，你会怎么想？

变成西部联盟汇款终端？变成一个国际贷款来源系统？一个股票市场？一个IPO引擎？

起初，什么也没有，但给它几年时间。

We’ve seen what happens with the development of the cell-phone technology that was deployed in Africa faster than any other technology ever in the history of humanity. We see small villages, where they have no running water, wood fires to cook with, and no electricity — yet there’s one little solar panel on top of a mud hut and that solar panel is not there for light. It’s there to charge a Nokia 1000 feature phone. That phone gives them weather reports, grain prices at the local market, and connects them to the world. What happens when that phone becomes a bank? Because with bitcoin, it can be a bank. What happens when you connect 6 1/2 billion people to a global economy without any barriers to access?

我们已经看到，非洲部署的手机技术的发展比人类历史上任何其它技术都要快。

我们看到小村庄，他们没有自来水，用木柴做饭，没有电，但是在泥屋顶上有一个小太阳能电池板，太阳能电池板不是用于照明。那是为诺基亚1000功能手机充电。那部手机给他们提供了天气报告、当地市场的谷物价格，并将他们连接到世界各地。

当手机成为银行时会发生什么？ 有了比特币，它就可以是银行。

当你将65亿人与一个没有任何进入障碍的全球经济联系起来时，会发生什么？

*"What happens when you connect 6 1/2 billion people to a global economy without any barriers to access?"*

“当你将65亿人与一个没有任何进入障碍的全球经济联系起来时，会发生什么？”

## 4.6汇款，影响世界各地的生活

**Remittances, Impacting Lives around the World**

Bitcoin is not a currency. Bitcoin is the internet of money. As a technology, it can bring economic inclusion and empowerment to billions of people in the world. I’ll give you one example of a specific application that is going to fundamentally change the lives of more than a billion people in the next five to ten years.

比特币不是货币。比特币是货币互联网。

作为一项技术，它可以为世界上数十亿人带来经济包容和赋权。

我要举一个具体应用的例子，它将在未来五到十年内从根本上改变超过十亿人的生活。

Every day, an immigrant somewhere cashes their paycheck and stands in line to wire 50 percent of that paycheck back to their home country to feed their extended family. Here in the US, 60 million people have no bank accounts, yet they cash their paychecks and send them abroad. Overall in the world, $550 billion is transmitted every year as remittances from first-world countries. Much of that money is sent to five major destinations: Mexico, India, the Philippines, Indonesia, and China. In some of these places, remittances represent up to 40 percent of the local economy. Sitting on top of that flow of $550 billion are companies like Western Union, and they take, on average, a cut of 9 percent of every single one of these transactions out of the pockets of the poorest people of the world.

每天，某地的一个移民兑现他的薪水，并排队将50％的薪水汇回他的祖国，为他的家庭提供食物。

在美国，有6千万人没有银行账户，但他们将薪水兑现，并汇往国外。

全世界，每年从第一世界国家汇出的资金为5500亿美元。

大部分资金被送往五个主要目的地：墨西哥、印度、菲律宾、印度尼西亚、中国。

在其中一些地方，汇款占当地经济的40％。

坐拥5500亿美元资金的公司，例如西部联合公司，平均而言，从世界上最贫困人口的口袋中拿走9％。

"Imagine what happens when one day one of these immigrants figures out that they can send money back to their home country with bitcoin — not for 15 percent, not 10 percent, not 5 percent, but for 5 cents. Not a percentage; a flat fee."

Imagine what happens when one day one of these immigrants figures out they can do the same thing with bitcoin — not for 15 percent, not 10 percent, not 5 percent, but for 5 cents. Not a percentage; a flat fee. What happens when they can do that? They can, right now. There is a startup company that is handling remittances between the US and the Philippines. They’re doing a few million dollars right now, but they’re going to start growing. There’s $500 billion sitting behind that dam. When you’re an immigrant and you can change your financial future by not paying 9 percent to send money home, imagine what happens if every month, instead of sending 91 dollars home, you send 100 dollars home. That makes a difference. There are a billion people, right now, with access to the internet and feature phones who could use bitcoin as an international wire-transfer service.

想象一下，有一天这些移民发现，他们可以用比特币做同样的事情时，会发生什么？不是15％，不是10％，不是5％，而是5美分。不是百分比，固定费用。

当他们能做到这一点会发生什么？他们现在可以。有一家初创公司负责处理美国和菲律宾之间的汇款。

他们现在正在做几百万美元，但他们将要开始成长。那座大坝后面坐着5000亿美元。

如果你是一个移民，你可以通过不支付9％汇款费来改变你的财务未来，想象一下如果每个月发生的事情，不是汇91美元回家，你就汇100美元回家。差别有多大。

目前，有十亿人可以使用互联网，以及可以使用比特币作为国际电汇服务的功能手机。

## 4.7比特币将改变世界

**Bitcoin Will Change the World**

To sum up, bitcoin is the most exciting technology I have seen. I was on the internet in 1989 as a young kid. I knew it was going to change the world long before most people figured it out. I told everyone around me, "We’re going to be shopping on this. We’re going to do banking on this thing." People’s reactions were quite predictable: "Yeah, Andreas, go do your homework, clean up your room." When I first saw Linux, I said, "Man, this is going to change operating systems forever. IBM is going down." Everybody laughed at me. When I saw the first web browser and the first website, I said, “Every single company in America is going to have a website within a decade.” Everyone laughed at me. Well, let me tell you something. I don’t know what’s going to happen with bitcoin, but I do know that the underlying invention — a system of digital currencies that has no banks, no governments, no central control and is available for anyone to use without asking permission — will change the world.

总而言之，比特币是我见过的最令人兴奋的技术。

我1989岁时上互联网，那是还是一个小孩儿。我知道在大多数人明白之前它将改变世界。

我告诉我身边的每个人，“我们要在这里购物，我们要做这上面做银行业。”

人们的反应是相当可预测的：“是的，去做你的作业，清理你的房间。”

当我第一次见到Linux时，我说：“伙计，这将永远改变操作系统，IBM公司要倒闭了。”每个人都嘲笑我。

当我看到第一个网络浏览器和第一个网站时，我说：“美国的每家公司都将在十年内拥有一个网站。”每个人都嘲笑我。

好吧，让我告诉你一些事情。我不知道比特币会发生什么事情，但我知道这个基础发明将改变世界，一种没有银行、没有政府、没有中央控制、任何人都可以在不用许可的情况下使用的数字货币系统。

Thank you.