# 5哑网络，创新和公地节日

**Dumb Networks, Innovation, and the Festival of the Commons**

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Video Link: <https://www.youtube.com/watch?v=x8FCRZ0BUCw>

At the beginning of the video, Andreas thanks O’Reilly for agreeing to publish his book, "Mastering Bitcoin", under an open-source license. He thanks the audience and the entire community who helped write the book. It’s available on github, Amazon, and at bitcoinbook.info

在视频的开头，Andreas感谢O’Reilly同意在开源许可证下出版他的书《精通比特币》，他感谢观众和帮助撰写这本书的整个社区。它可以在github、Amazon和bitcoinbook.info上获得。

Today, I want to talk about dumb networks. I want to talk about smart networks. I want to talk about the value of open source when it meets finance. And I want to talk about the festival of the commons.

今天，我想谈谈哑网络。我想谈谈智能网络。

我想谈谈金融方面的开源价值。我想说说公地节。

"Bitcoin is a currency, a network, a technology. And you can’t separate these things."

“比特币是一种货币、一种网络、一种技术。你不能把这些东西分开。”

Bitcoin is a currency. Bitcoin is a network. Bitcoin is a technology. And you can’t separate these things. A consensus network that bases its value on currency does not work without the currency. You can’t just do the blockchain without a valuable currency behind it, and the currency doesn’t work without the network. Bitcoin is both. It is the convergence of a participatory consensus network and a global, borderless currency that is fungible, fast, and secure. Today, I want to talk a bit about the bitcoin network and focus on one concept that has some parallels to the early internet.

比特币是一种货币、一种网络、一种技术。你不能把这些东西分开。

一个以货币价值为基础的共识网络不能没有货币。

区块链背后不能没有有价值的货币，这个货币不能没有网络。比特币就是这样。

这是一个参与性共识网络和全球无边界货币的融合，它是可互换的、快速的、安全的。

今天，我想对比特币网络谈一点儿东西，集中于一个概念，它与早期互联网有一些相似之处。

## 5.1智能网络和哑网络

**Smart vs. Dumb Networks**

Bitcoin is not a smart network. Bitcoin is a dumb network. It really is a dumb network. It is a dumb transaction-processing network. It’s a dumb network for verifying a very simple scripting language. It doesn’t offer a complete range of financial services and products. It doesn’t have automation and incredible features built in.

比特币并不是一个智能网络。比特币是一个哑网络。它真的是一个哑网络。它是一个哑交易处理网络。

这是一个用于验证非常简单的脚本语言的哑网络。它没有提供一系列完整的金融服务和产品。

它没有自动化和内置令人难以置信的特性。

"Bitcoin is simply a dumb network, and that is one of its strongest and most important features."

“比特币只是一个哑网络，这是它最强大和最重要的特性之一。”

Bitcoin is simply a dumb network, and that is one of its strongest and most important features. When you design networks, when you architect network systems, one of the most fundamental choices is this: do you make a dumb network that supports smart devices, or do you make a smart network that supports dumb devices?

比特币只是一个哑网络，这是它最强大和最重要的特性之一。

当你设计网络时，当你架设网络系统时，一个最基本的选择是：你要做一个支持智能设备的哑网络，还是要做一个支持哑设备的智能网络？

### 5.1.1智能网络：电话网络

**The Smart Network – Phones**

The phone network was a very smart network. The telephone at the end of that network was a very dumb device. If you had a pulse-dialing phone, that thing had maybe four electronic components inside it. It was basically a switch on a wire with a speaker attached to it. You could dial by flicking the hook up and down fast enough.

电话网络是一个非常智能的网络。网络的末端是电话，它是一个哑设备。

如果你有一个脉冲拨号电话，那东西里面可能有四个电子元件。

它基本上是一根电线上的开关，上面连着一个扬声器。你可以通过快速拨动挂钩来拨号。

The phone was a dumb device; it had no intelligence whatsoever. Everything the phone network did was in the network. Caller ID was a network feature. Call waiting was a network feature. And if you wanted to make the experience better, you had to upgrade the network but you didn’t need to upgrade the device. That was a critical design decision because, at that time, the belief was that smart networks were better because you could deliver these incredible services just by upgrading the network for everyone.

电话是一个哑设备，它没有任何智能。电话网络所做的一切都是在网络中进行。

来电显示是一种网络特性。呼叫等待是一种网络特性。

如果你想让体验更好，你必须升级网络，但你不需要升级设备。

这是一个关键的设计决定，因为当时，人们认为智能网络更好，因为你只用升级网络，就能为所有人提供这些令人难以置信的服务。

"As a result of smart network design, innovation only happens when a feature is needed by all of the subscribers of the network, when it is compelling enough to disrupt the function of the entire network to upgrade it."

智能网络设计的结果是，只有这时一个特性才会出现：所有网络用户都需要这个特性时；

有足够吸引力来颠覆整个网络的功能来升级它时。”

There is one small disadvantage with smart networks. They have to be upgraded from the center out. And that means innovation occurs at the center, by one player, and requires permission. As a result of smart network design, innovation only happens when a feature is needed by all of the subscribers of the network, when it is compelling enough to disrupt the function of the entire network to upgrade it.

智能网络有一个小缺点。他们必须从中心升级。

这意味着创新发生在中心，只有一个玩家，并且需要许可。

作为智能网络设计的结果，只有当网络的所有用户都需要一个特性时，有足够吸引力来颠覆整个网络的功能来升级它时，才会有创新。

### 5.1.2哑网络：互联网

**The Dumb Network – Internet**

The internet is a dumb network. It’s dumb as rocks. All it can do is move data from point A to point B. It doesn’t know what that data is. It can’t tell the difference between a Skype call and a web page. It doesn’t know if the device on the end is a desktop computer or a mobile phone, a vacuum cleaner, a refrigerator, or a car. It doesn’t know if that device is powerful or not. If it can do multimedia or not. It doesn’t know, it doesn’t care.

互联网是一个哑网络。像岩石一样哑。

它所能做的是把数据从A点移动到B点，它不知道数据是什么。它无法区分Skype呼叫和网页之间的区别。它不知道终端上的设备是台式电脑还是手机、吸尘器、冰箱或汽车。它不知道这个设备是否强大，它不知道是否能做多媒体。它不知道，它不在乎。

"In order to run a new application or innovate on a dumb network, all you have to do is add innovation at the edge. Because a dumb network can support smart devices, you don’t need to change anything in the network."

为了在一个哑网络上运行一个新的应用程序或创新，你要做的是在边缘添加创新。

因为哑网络可以支持智能设备，你不需要改变网络中的任何东西。

In order to run a new application or innovate on a dumb network, all you have to do is add innovation at the edge. Because a dumb network can support smart devices, you don’t need to change anything in the network. If you push intelligence to the edge of the network, an application that only has five users can be implemented so long as those five users upgrade their devices to implement that application. The dumb network will transport their data because it doesn’t know the difference and it doesn’t care.

为了在一个哑网络上运行一个新的应用程序或创新，你要做的是在边缘添加创新。

因为哑网络可以支持智能设备，你不需要改变网络中的任何东西。

如果你将智能推到网络的边缘，只要有五个用户的应用也能实现，只要这五个用户升级他们的设备来实现那些应用就行。哑网络将传输它们的数据，因为它不知道差异，也不关心。

### 5.1.3比特币的哑网络

**Bitcoin’s Dumb Network**

Bitcoin is a dumb network supporting really smart devices, and that is an incredibly powerful concept because bitcoin pushes all of the intelligence to the edge.

比特币是一个哑网络，支持真正的智能设备，这是一个非常强大的概念，因为比特币把所有智能推到了边缘。

It doesn’t care if the bitcoin address is the address of a multimillionaire, the address of a central bank, the address of a smart contract, the address of a device, or the address of a human. It doesn’t know. It doesn’t care if the transaction is carrying lots of money or not much money at all. It doesn’t care if the address is in Kuala Lumpur or downtown New York. It doesn’t know, it doesn’t care.

它不在乎比特币地址是否是千万富翁的地址、中央银行的地址、智能合同的地址、设备的地址、人的地址。

它不知道。它不关心交易是否携带大量的金钱或没有多少钱。它不在乎地址是在吉隆坡还是在纽约市中心。它不知道，它不在乎。

It moves money from one address to another based on a simple locking script. And that means that if you want to build a new application on top of bitcoin, you can upgrade the devices and you can build an application. You don’t need to ask for anyone’s permission to innovate. Write the app, launch it on your endpoint, and bitcoin will route it, because bitcoin is a dumb network.

它基于一个简单的锁定脚本将钱从一个地址转移到另一个地址。

这意味着，如果你想在比特币之上建立一个新的应用程序，你可以升级设备，你可以构建一个应用程序。

你不需要征求任何人的许可就可以去创新。编写应用程序，在你的终端上启动它，比特币将路由它，因为比特币是一个哑网络。

That is the power of innovation on the internet. It’s innovation without permission. It’s innovation without central approval. It’s innovation without a broad network upgrade. And that means bitcoin is not a specific financial network. It’s not a financial network for large transactions or small transactions, fast transactions or slow transactions. It’s whatever you want to use it for, based upon what you choose to do at the endpoint.

这就是互联网上创新的力量。不需要经许可能创新。没有中央批准就能创新。不要广泛网络升级就能创新。这意味着，比特币不是一个特定的金融网络。它不是用于大交易或小交易、快交易或慢交易的金融网络。

根据你选择在终端上做什么，它是你想要使用它的任何东西。

Compare that to the current banking system. The current banking system is built around very smart networks, absolutely and tightly controlled to deliver very specific applications to very dumb endpoints. Even with your most sophisticated online banking, all you can do with your bank is access some HTML that delivers a set of services that they decided they were going to give you. You get no APIs, no ability to run additional applications, no ability to upgrade or innovate or change anything unless the entire network changes to support your new application. The current system has networks for large payments, small payments, or fast payments, but it’s not all of the above. Bitcoin is all of those things because it’s not discriminating, it’s neutral, it doesn’t care, it’s dumb.

与目前的银行体系进行比较。目前的银行系统是围绕非常智能的网络建立的，给非常哑的终端提供绝对和严格控制的非常具体的应用。

即使有了最先进的网上银行，你能做的一切也只是访问一些网页，它提供了一套服务，那是他们决定要给你的服务。你没有API，没有能力运行额外的应用程序，没有能力升级或创新或改变任何事情，除非整个网络改变来支持你的新应用程序。

目前的系统有大额支付网络、小额支付网络、快速支付网络，但不是所有这些东西。

比特币是所有这些东西，因为它不歧视，它是中立的，它不在乎，它是哑的。

*"The current system has networks for large payments, small payments, or fast payments, but it’s not all of the above. Bitcoin is all of those things because it’s not discriminating, it’s neutral, it doesn’t care, it’s dumb."*

The power of pushing intelligence to the edge, of not making decisions in the center, moves the innovation into the hands of its end users and gives those end users the ability to build applications that are so niche that only a handful of people around the world need them. And they can build those applications without asking for anyone’s permission.

将智能推向边缘的力量，不是由中心做决定的力量，将创新转移到终端用户的手中，并给那些最终用户提供了构建应用程序的能力，对于这个世界上只有少数人需要某些应用程序来说，这是如此的利基。

他们可以构建这些应用，不要求任何人许可。

## 5.2公地悲剧

**Tragedy of the Commons**

But there’s one more thing that’s really unique about bitcoin, and it’s one of the reasons that it continues to survive and continues to win over the centralized, closed networks of the past, and that is that bitcoin is open source, open standard, and open network.

但还有一件事是比特币真正独特的，这也是它继续生存并继续战胜集中、封闭网络的原因之一，那就是：比特币是开源的、开放的标准、和开放的网络。

One of the key concepts in economics is the idea of a tragedy of the commons. This is when you have a common resource that can be consumed, without limits, by all those who participate until the resource is depleted and the entire system collapses. It’s a form of market failure called “the tragedy of the commons.” The most common example of it is the commons, in the old British sense, of a large grassy area. Here you have a field that everyone can graze their cattle on, and if everybody goes and grazes their cattle with reckless abandon, before long, you have a big muddy pit and no cattle. Because everybody overgrazes it, the resource is depleted.

经济学中的一个关键概念是公地悲剧。

当你有一个共同的资源，它可以被参与的人无限制地消费，最终，资源耗尽，整个系统崩溃。

这是一种市场失灵的形式，称为“公地悲剧”。

最常见的例子是，英国传统意义上的公地，一个大草地。这里有一块田地，每个人都可以放牧，如果每个人都不顾一切地放牧，不久你就会有一个大泥坑，没有牛。因为每个人都滥用资源，资源就枯竭了。

## 5.3公地节日

**Festival of the Commons**

Bitcoin doesn’t suffer from a tragedy of the commons like most financial networks do. I can’t innovate on somebody else’s network. When Visa innovates, only Visa wins. When MasterCard innovates, only MasterCard wins. If a feature is deployed on SWIFT, I don’t get it as a consumer. If Bank of America makes something new and snazzy, they do it competitively and at the exclusion of every other bank that didn’t implement that feature.

比特币不像大多数金融网络一样遭受公地悲剧。我不能在别人的网络上创新。

当Visa创新时，只有Visa赢了。当万事达卡创新时，只有万事达卡获胜。

如果在SWIFT上部署了一个功能，作为消费者，我没有得到它。

如果美国银行做出一些新的、时髦的事情，他们会做得很有竞争力，并且排除其他没有实现这一特性的银行。

Bitcoin is a common resource whose use increases the value of that resource, at the exclusion of no one. If a company builds a new feature that can be used on bitcoin under an open-source license, that feature can then be used by everyone in the ecosystem. That means the innovation enriches everyone in the network. If a company invests money in bitcoin, the protocol, they benefit, but so does everybody else. When they play in the bitcoin sphere, they get to benefit from everybody else’s investment in that space. So, it returns multiple times. You get this wonderful synergy where each company that invests in this amazing technology makes it better for everybody else. It’s not an exclusionary principle; instead of a tragedy of the commons, you have a festival of the commons. A commons that gets better when more companies use it.

比特币是一种公共资源，它的使用增加了该资源的价值，不排除任何人。

如果一个公司构建了一个新的功能，可以在开源许可下在比特币上使用它，那么这个概念就可以被这个生态系统中的每个人使用。这意味着创新丰富了网络中的每个人。

如果一家公司在比特币和协议上投资钱，他们受益，但其他人也受益。

当他们在比特币领域玩游戏时，他们会受益于其他人在那个空间的投资。因此，它返回多倍。

你得到了这种奇妙的协同作用，投资这项惊人技术的每家公司都让它对其他人更好。

它不是一个排外的原则，不是公地悲剧，你有一个公地节日。当更多公司使用它时，公地会变得更好。

### 5.3.1公地节日2012-2014

**Festival of the Commons 2012-2014**

Just look at some of the examples. 2014 was supposed to be the worst year in bitcoin. But that’s only if you’re focused on price, because in 2014 we saw the deployment of two incredible technologies. The first is multisig, which required a tiny change to the core protocol but then allowed an enormous amount of services and products to be built at the edge. The second is hierarchical deterministic wallets, which didn’t require any changes to the core and allowed us to have these incredibly complex and rich experiences in the wallet space. The companies that invented and deployed those two features did so in 2012 and we reap the benefits today. An entire ecosystem of new products and services have been built from those two inventions. The value invested by one company two years ago blows up and creates an entire range of products in a new industry two years later.

看一些例子。2014被认为是比特币最糟糕的一年。

但这仅仅是因为你关注价格，因为在2014，我们看到了两项不可思议的技术的部署。

第一个是multisig（多签名），它需要对核心协议进行微小更改，但允许在边缘处建立大量的服务和产品。

第二个是分层确定性的钱包，它不需要对核心进行任何更改，并且允许我们在钱包空间中拥有这些难以置信的复杂和丰富的体验。

发明和部署这两个特性的公司在2012年做到了这一点，我们今天获益匪浅。

新的产品和服务的整个生态系统是从这两项发明构建的。

两年前，一家公司投资的价值爆发了，两年后在一个新的行业创造了一系列产品。

In 2014, during the worst year of bitcoin, 500 startups received $500 million in investment, generating tens of thousands of jobs, and none of that innovation has come back yet because they just started. All of the incredible technology advancements we saw in 2014 grew from inventions in 2012. Now, what happens when you throw 500 companies and 10,000 developers at the problem? Give us two years and you will see some pretty amazing things in bitcoin. And that is the advantage of the festival of the commons.

2014年，在比特币最糟糕的一年里，500家初创公司获得了5亿美元的投资，创造了数万个工作岗位，而创新还没有出现，因为他们刚刚起步。

我们在2014年看到的所有难以置信的技术进步，都源于2012年的发明。

现在，当你抛出500家公司和10000名开发人员来解决这个问题时，会发生什么？

给我们两年，你会在比特币中看到一些非常惊人的事情。这就是公地节日的优势。

## 5.4加速创新

**Accelerating Innovation**

While journalists are writing yet another obituary for bitcoin, I see an ecosystem of openness. I see an ecosystem that is generating jobs in an economy that is mostly dead. I see an ecosystem that has some of the smartest people I have ever met creating the most amazing innovations. And the really amazing thing about this is that we all benefit from all of this. We’re not really competing against each other. We are participating in the festival of the commons, and as a result we’re seeing a rate of innovation that is accelerating. It’s already at breakneck speed, and it’s accelerating.

当记者们为比特币写下另一个讣告时，我看到了一个开放的生态系统。

我看到了一个生态系统，它在一个几乎已经死亡的经济体中创造就业机会。

我看到了一个生态系统，有一些我见过的最聪明的人创造出最令人惊异的创新。

真正令人惊奇的是我们都从中受益。我们不是真地在互相竞争。

我们正在参加公地节日，因此我们看到了正在加速的创新速度。

它已经处于非常危险的速度，而且正在加速。

Take an open, decentralized ecosystem with a festival of the commons — open source, open standards, open networking — and the intelligence and innovation pushed all the way to the edge so the users have control over what they innovate and how they invest their time and money and spirit into this technology. Put that against a closed system, controlled by a central provider, whose permission you need in order to innovate and who will only innovate at the exclusion and competition of all of the other companies. We will crush them.

采用一个有公地方的开放的、去中心化的生态系统（开放源代码、开放标准、开放联网），智能和创新一直推到边缘，这样用户就可以控制他们的创新，以及他们如何把时间、金钱和经历投入到这项技术。

如果放在一个封闭的系统中，由一个中央提供者控制，你需要他的许可才能创新，他只有在所有其它公司的排斥和竞争中才会创新。我们要粉碎他们。

People ask me, "Well, what happens if Goldman Sachs builds GoldmanSachsCoin?” I say, let them build it. If it’s really open and decentralized, they just proved the whole point of this and we can all go home declaring victory. If it’s closed and doesn’t allow open innovation, it will become stagnant in just a few months while we continue accelerating ahead with more and more innovation feeding off each other’s invention.

人们问我：“如果Goldman Sachs建造了GoangMachsachin，会发生什么？”

我说，让他们造吧。如果它真的是开放和去中心化，他们就证明了这一点，我们都可以回家宣布胜利。

如果它是封闭的，不允许开放的创新，它将在几个月内变得停滞，而我们继续加速前进，越来越多的创新养育了彼此的发明。

You cannot stop this. That’s why I’m excited to be in the bitcoin space: a dumb network that puts all of the intelligence and innovation at the edge so that we can innovate without asking anyone’s permission, and we can participate in this incredible festival of the commons.

你不能阻止这个。

这就是我为什么对比特币空间感到兴奋的原因：它是一个哑网络，把所有的智力和创新推到了边缘，这样，我们就可以在不征求任何人许可的情况下进行创新，我们可以参加这个令人难以置信的公地节日。

Thank you.