

The Wealth of Networks: How Social Production Transforms Markets and Freedom by Yochai Benkler, Yale University Press

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Chapter 5 Individual Freedom: Autonomy, Information, and Law

Freedom to Do More For Oneself, by Oneself, and With Others

Autonomy, Property, and Commons

Autonomy and the Information Environment

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Epigraph

"Human nature is not a machine to be built after a model, and set to do exactly the work prescribed for it, but a tree, which requires to grow and develop itself on all sides, according to the tendency of the inward forces which make it a living thing."

"Such are the differences among human beings in their sources of pleasure, their susceptibilities of pain, and the operation on them of different physical and moral agencies, that unless there is a corresponding diversity in their modes of life, they neither obtain their fair share of happiness, nor grow up to the mental, moral, and aesthetic stature of which their nature is capable."

John Stuart Mill, On Liberty (1859)

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Chapter 5

Individual Freedom: Autonomy, Information, and Law

The emergence of the networked information economy has the potential to increase individual autonomy. First, it increases the range and diversity of things that individuals can do for and by themselves. It does this by lifting, for one important domain of life, some of the central material constraints on what individuals can do that typified the industrial information economy. The majority of materials, tools, and platforms necessary for effective action in the information environment are in the hands of most individuals in advanced economies. Second, the networked information economy provides nonproprietary alternative sources of communications capacity and information, alongside the proprietary platforms of mediated communications. This decreases the extent to which individuals are subject to being acted upon by the owners of the facilities on which they depend for communications. The construction of consumers as passive objects of manipulation that typified television culture has not disappeared overnight, but it is losing its dominance in the information environment. Third, the networked information environment qualitatively increases the range and diversity of information available to individuals. It does so by enabling sources commercial and noncommercial, mainstream and fringe, domestic or foreign, to produce information and communicate with anyone. This diversity radically changes the universe of options that individuals can consider as open for them to pursue. It provides them a richer basis to form critical judgments about how they could live their lives, and, through this opportunity for critical reflection, why they should value the life they choose.

Freedom to Do More For Oneself, by Oneself, and With Others

Rory Cejas was a twenty-six-year-old firefighter/paramedic with the Miami Fire Department in 2003, when he enlisted the help of his brother, wife, and a friend to make a *Star Wars* - like fan film. Using a simple camcorder and tripod, and widely available film and image generation and editing software on his computer, he made a twenty-minute film he called *The Jedi Saga*. The film is not a parody. It is not social criticism. It is a straightforward effort to make a movie in the genre of *Star Wars*, using the same type of characters and story lines. In the predigital world, it would have been impossible, as a practical matter, for Cejas to do this. It would have been an implausible part of his life plan to cast his wife as a dark femme fatale, or his brother as a Jedi Knight, so they could battle shoulder-to-shoulder, light sabers drawn, against a platoon of Imperial clone soldiers. And it would have been impossible for him to distribute the film he had made to friends and strangers. The material conditions of cultural production have changed, so that it has now become part of his feasible set of options. He needs no help from government to do so. He needs no media access rules that give him access to fancy film studios. He needs no cable access rules to allow him to distribute his fantasy to anyone who wants to watch it. The new set of feasible options open to him includes not only the option passively to sit in the theatre or in front of the television and watch the images created by George Lucas, but also the option of trying his hand at making this type of film by himself.

Jedi Saga will not be a blockbuster. It is not likely to be watched by many people. Those who do watch it are not likely to enjoy it in the same way that they enjoyed any of Lucas's films, but that is not its point. When someone like Cejas makes such a film, he is not displacing what Lucas does. He is changing what he himself does - from sitting in front of a screen that is painted by another to painting his own screen. Those who watch it will enjoy it in the same way that friends and family enjoy speaking to each other or singing together, rather than watching talking heads or listening to

Talking Heads. Television culture, the epitome of the industrial information economy, structured the role of consumers as highly passive. While media scholars like John Fiske noted the continuing role of viewers in construing and interpreting the messages they receive, the role of the consumer in this model is well defined. The media product is a finished good that they consume, not one that they make. Nowhere is this clearer than in the movie theatre, where the absence of light, the enveloping sound, and the size of the screen are all designed to remove the viewer as agent, leaving only a set of receptors - eyes, ears - through which to receive the finished good that is the movie. There is nothing wrong with the movies as one mode of entertainment. The problem emerges, however, when the movie theatre becomes an apt metaphor for the relationship the majority of people have with most of the information environment they occupy. That increasing passivity of television culture came to be a hallmark of life for most people in the late stages of the industrial information economy. The couch potato, the eyeball bought and sold by Madison Avenue, has no part in making the information environment he or she occupies.

Perhaps no single entertainment product better symbolizes the shift that the networked information economy makes possible from television culture than the massive multiplayer online game. These games are typified by two central characteristics. First, they offer a persistent game environment. That is, any action taken or "object" created anywhere in the game world persists over time, unless and until it is destroyed by some agent in the game; and it exists to the same extent for all players. Second, the games are effectively massive collaboration platforms for thousands, tens of thousands - or in the case of Lineage, the most popular game in South Korea, more than four million-users. These platforms therefore provide individual players with various contexts in which to match their wits and skills with other human players. The computer gaming environment provides a persistent relational database of the actions and social interactions of players. The first games that became mass phenomena, like Ultima Online or Everquest, started with an already richly instantiated context. Designers of these games continue to play a large role in defining the range of actions and relations feasible for players. The basic medieval themes, the role of magic and weapons, and the types and ranges of actions that are possible create much of the context, and therefore the types of relationships pursued. Still, these games leave qualitatively greater room for individual effort and personal taste in producing the experience, the relationships, and hence the story line, relative to a television or movie experience. Second Life, a newer game by Linden Labs, offers us a glimpse into the next step in this genre of immersive entertainment. Like other massively multiplayer online games, Second Life is a persistent collaboration platform for its users. Unlike other games, however, Second Life offers only tools, with no story line, stock objects, or any cultural or meaning-oriented context whatsoever. Its users have created 99 percent of the objects in the game environment. The medieval village was nothing but blank space when they started. So was the flying vehicle design shop, the futuristic outpost, or the university, where some of the users are offering courses in basic programming skills and in-game design. Linden Labs charges a flat monthly subscription fee. Its employees focus on building tools that enable users to do everything from basic story concept down to the finest details of their own appearance and of objects they use in the game world. The in-game human relationships are those made by the users as they interact with each other in this immersive entertainment experience. The game's relationship to its users is fundamentally different from that of the movie or television studio. Movies and television seek to control the entire experience - rendering the viewer inert, but satisfied. Second Life sees the users as active makers of the entertainment environment that they occupy, and seeks to provide them with the tools they need to be so. The two models assume fundamentally different conceptions of play. Whereas in front of the television, the consumer is a passive receptacle, limited to selecting which finished good he or she will consume from a relatively narrow range of options, in the world of Second Life, the individual is treated as a fundamentally active, creative human being, capable of building his or her own fantasies, alone and in affiliation with others.

Second Life and *Jedi Saga* are merely examples, perhaps trivial ones, within the entertainment domain. They represent a shift in possibilities open both to human beings in the networked information economy and to the firms that sell them the tools for becoming active creators and users of their information environment. They are stark examples because of the centrality of the couch potato as the image of human action in television culture. Their characteristics are representative of the shift in the individual's role that is typical of the networked information economy in general and of peer production in particular. Linus Torvalds, the original creator of the Linux kernel development community, was, to use Eric Raymond's characterization, a designer with an itch to scratch. Peer-production projects often are composed of people who want to do something in the world and turn to the network to find a community of peers willing to work together to make that wish a reality. Michael Hart had been working in various contexts for more than thirty years when he - at first gradually, and more recently with increasing speed - harnessed the contributions of hundreds of volunteers to Project Gutenberg in pursuit of his goal to create a globally accessible library of public domain e-texts. Charles Franks was a computer programmer from Las Vegas when he decided he had a more efficient way to proofread those e-texts, and built an interface that allowed volunteers to compare scanned images of original texts with the e-texts available on Project Gutenberg. After working independently for a couple of years, he joined forces with Hart. Franks's facility now clears the volunteer work of more than one thousand proofreaders, who proof between two hundred and three hundred books a month. Each of the thousands of volunteers who participate in free software development projects, in *Wikipedia*, in the Open Directory Project, or in any of the many other peer-production projects, is living some version, as a major or minor part of their lives, of the possibilities captured by the stories of a Linus Torvalds, a Michael Hart, or *The Jedi Saga*. Each has decided to take advantage of some combination of technical, organizational, and social conditions within which we have come to live, and to become an active creator in his or her world, rather than merely to accept what was already there. The belief that it is possible to make something valuable happen in the world, and the practice of actually acting on that belief, represent a qualitative improvement in the condition of individual freedom. They mark the emergence of new practices of self-directed agency as a lived experience, going beyond mere formal permissibility and theoretical possibility.

Our conception of autonomy has not only been forged in the context of the rise of the democratic, civil rights-respecting state over its major competitors as a political system. In parallel, we have occupied the context of the increasing dominance of market-based industrial economy over its competitors. The culture we have developed over the past century is suffused with images that speak of the loss of agency imposed by that industrial economy. No cultural image better captures the way that mass industrial production reduced workers to cogs and consumers to receptacles than the one-dimensional curves typical of welfare economics - those that render human beings as mere production and demand functions. Their cultural, if not intellectual, roots are in Fredrick Taylor's *Theory of Scientific Management*: the idea of abstracting and defining all motions and actions of employees in the production process so that all the knowledge was in the system, while the employees were barely more than its replaceable parts. Taylorism, ironically, was a vast improvement over the depredations of the first industrial age, with its sweatshops and child labor. It nonetheless resolved into the kind of mechanical existence depicted in Charlie Chaplin's tragic-comic portrait, *Modern Times*. While the grind of industrial Taylorism seems far from the core of the advanced economies, shunted as it is now to poorer economies, the basic sense of alienation and lack of effective agency persists. Scott Adams's *Dilbert* comic strip, devoted to the life of a white-collar employee in a nameless U.S. corporation, thoroughly alienated from the enterprise, crimped by corporate hierarchy, resisting in all sorts of ways - but trapped in a cubicle - powerfully captures this sense for the industrial information economy in much the same way that Chaplin's *Modern Times* did for the industrial economy itself.

In the industrial economy and its information adjunct, most people live most of their lives within hierarchical relations of production, and within relatively tightly scripted possibilities after work, as consumers. It did not necessarily have to be this way. Michael Piore and Charles Sabel's *Second Industrial Divide* and Roberto Mangabeira Unger's *False Necessity* were central to the emergence of a "third way" literature that developed in the 1980s and 1990s to explore the possible alternative paths to production processes that did not depend so completely on the displacement of individual agency by hierarchical production systems. The emergence of radically decentralized, nonmarket production provides a new outlet for the attenuation of the constrained and constraining roles of employees and consumers. It is not limited to Northern Italian artisan industries or imagined for emerging economies, but is at the very heart of the most advanced market economies. Peer production and otherwise decentralized nonmarket production can alter the producer/consumer relationship with regard to culture, entertainment, and information. We are seeing the emergence of the user as a new category of relationship to information production and exchange. Users are individuals who are sometimes consumers and sometimes producers. They are substantially more engaged participants, both in defining the terms of their productive activity and in defining what they consume and how they consume it. In these two great domains of life - production and consumption, work and play - the networked information economy promises to enrich individual autonomy substantively by creating an environment built less around control and more around facilitating action.

The emergence of radically decentralized nonmarket production in general and of peer production in particular as feasible forms of action opens new classes of behaviors to individuals. Individuals can now justifiably believe that they can in fact do things that they want to do, and build things that they want to build in the digitally networked environment, and that this pursuit of their will need not, perhaps even cannot, be frustrated by insurmountable cost or an alien bureaucracy. Whether their actions are in the domain of political organization (like the organizers of MoveOn.org), or of education and professional attainment (as with the case of Jim Cornish, who decided to create a worldwide center of information on the Vikings from his fifth-grade schoolroom in Gander, Newfoundland), the networked information environment opens new domains for productive life that simply were not there before. In doing so, it has provided us with new ways to imagine our lives as productive human beings. Writing a free operating system or publishing a free encyclopedia may have seemed quixotic a mere few years ago, but these are now far from delusional. Human beings who live in a material and social context that lets them aspire to such things as possible for them to do, in their own lives, by themselves and in loose affiliation with others, are human beings who have a greater realm for their agency. We can live a life more authored by our own will and imagination than by the material and social conditions in which we find ourselves. At least we can do so more effectively than we could until the last decade of the twentieth century.

This new practical individual freedom, made feasible by the digital environment, is at the root of the improvements I describe here for political participation, for justice and human development, for the creation of a more critical culture, and for the emergence of the networked individual as a more fluid member of community. In each of these domains, the improvements in the degree to which these liberal commitments are honored and practiced emerge from new behaviors made possible and effective by the networked information economy. These behaviors emerge now precisely because individuals have a greater degree of freedom to act effectively, unconstrained by a need to ask permission from anyone. It is this freedom that increases the salience of nonmonetizable motivations as drivers of production. It is this freedom to seek out whatever information we wish, to write about it, and to join and leave various projects and associations with others that underlies the new efficiencies we see in the networked information economy. These behaviors underlie the cooperative news and commentary production that form the basis of the networked public sphere,

and in turn enable us to look at the world as potential participants in discourse, rather than as potential viewers only. They are at the root of making a more transparent and reflective culture. They make possible the strategies I suggest as feasible avenues to assure equitable access to opportunities for economic participation and to improve human development globally.

Treating these new practical opportunities for action as improvements in autonomy is not a theoretically unproblematic proposition. For all its intuitive appeal and centrality, autonomy is a notoriously nebulous concept. In particular, there are deep divisions within the literature as to whether it is appropriate to conceive of autonomy in substantive terms - as Gerald Dworkin, Joseph Raz, and Joel Feinberg most prominently have, and as I have here - or in formal terms. Formal conceptions of autonomy are committed to assuming that all people have the capacity for autonomous choice, and do not go further in attempting to measure the degree of freedom people actually exercise in the world in which they are in fact constrained by circumstances, both natural and human. This commitment is not rooted in some stubborn unwillingness to recognize the slings and arrows of outrageous fortune that actually constrain our choices. Rather, it comes from the sense that only by treating people as having these capacities and abilities can we accord them adequate respect as free, rational beings, and avoid sliding into overbearing paternalism. As Robert Post put it, while autonomy may well be something that needs to be "achieved" as a descriptive matter, the "structures of social authority" will be designed differently depending on whether or not individuals are treated as autonomous. "From the point of view of the designer of the structure, therefore, the presence or absence of autonomy functions as an axiomatic and foundational principle."¹ Autonomy theory that too closely aims to understand the degree of autonomy people actually exercise under different institutional arrangements threatens to form the basis of an overbearing benevolence that would undermine the very possibility of autonomous action.

While the fear of an overbearing bureaucracy benevolently guiding us through life toward becoming more autonomous is justifiable, the formal conception of autonomy pays a high price in its bluntness as a tool to diagnose the autonomy implications of policy. Given how we are: situated, context-bound, messy individuals, it would be a high price to pay to lose the ability to understand how law and policy actually affect whatever capacity we do have to be the authors of our own life choices in some meaningful sense. We are individuals who have the capacity to form beliefs and to change them, to form opinions and plans and defend them - but also to listen to arguments and revise our beliefs. We experience some decisions as being more free than others; we mock or lament ourselves when we find ourselves trapped by the machine or the cubicle, and we do so in terms of a sense of helplessness, a negation of freedom, not only, or even primarily, in terms of lack of welfare; and we cherish whatever conditions those are that we experience as "free" precisely for that freedom, not for other reasons. Certainly, the concerns with an overbearing state, whether professing benevolence or not, are real and immediate. No one who lives with the near past of the totalitarianism of the twentieth century or with contemporary authoritarianism and fundamentalism can belittle these. But the great evils that the state can impose through formal law should not cause us to adopt methodological commitments that would limit our ability to see the many ways in which ordinary life in democratic societies can nonetheless be more or less free, more or less conducive to individual self-authorship.

If we take our question to be one concerned with diagnosing the condition of freedom of individuals, we must observe the conditions of life from a first-person, practical perspective - that is, from the perspective of the person whose autonomy we are considering. If we accept that all individuals are always constrained by personal circumstances both physical and social, then the way to think about autonomy of human agents is to inquire into the relative capacity of individuals to be the authors of their lives within the constraints of context. From this perspective, whether the

sources of constraint are private actors or public law is irrelevant. What matters is the extent to which a particular configuration of material, social, and institutional conditions allows an individual to be the author of his or her life, and to what extent these conditions allow others to act upon the individual as an object of manipulation. As a means of diagnosing the conditions of individual freedom in a given society and context, we must seek to observe the extent to which people are, in fact, able to plan and pursue a life that can reasonably be described as a product of their own choices. It allows us to compare different conditions, and determine that a certain condition allows individuals to do more for themselves, without asking permission from anyone. In this sense, we can say that the conditions that enabled Cejas to make *Jedi Saga* are conditions that made him more autonomous than he would have been without the tools that made that movie possible. It is in this sense that the increased range of actions we can imagine for ourselves in loose affiliation with others - like creating a Project Gutenberg - increases our ability to imagine and pursue life plans that would have been impossible in the recent past.

From the perspective of the implications of autonomy for how people act in the digital environment, and therefore how they are changing the conditions of freedom and justice along the various dimensions explored in these chapters, this kind of freedom to act is central. It is a practical freedom sufficient to sustain the behaviors that underlie the improvements in these other domains. From an internal perspective of the theory of autonomy, however, this basic observation that people can do more by themselves, alone or in loose affiliation with others, is only part of the contribution of the networked information economy to autonomy, and a part that will only be considered an improvement by those who conceive of autonomy as a substantive concept. The implications of the networked information economy for autonomy are, however, broader, in ways that make them attractive across many conceptions of autonomy. To make that point, however, we must focus more specifically on law as the source of constraint, a concern common to both substantive and formal conceptions of autonomy. As a means of analyzing the implications of law to autonomy, the perspective offered here requires that we broaden our analysis beyond laws that directly limit autonomy. We must also look to laws that structure the conditions of action for individuals living within the ambit of their effect. In particular, where we have an opportunity to structure a set of core resources necessary for individuals to perceive the state of the world and the range of possible actions, and to communicate their intentions to others, we must consider whether the way we regulate these resources will create systematic limitations on the capacity of individuals to control their own lives, and in their susceptibility to manipulation and control by others. Once we recognize that there cannot be a person who is ideally "free," in the sense of being unconstrained or uncaused by the decisions of others, we are left to measure the effects of all sorts of constraints that predictably flow from a particular legal arrangement, in terms of the effect they have on the relative role that individuals play in authoring their own lives.

Autonomy, Property, and Commons

The first legal framework whose role is altered by the emergence of the networked information economy is the property-like regulatory structure of patents, copyrights, and similar exclusion mechanisms applicable to information, knowledge, and culture. Property is usually thought in liberal theory to enhance, rather than constrain, individual freedom, in two quite distinct ways. First, it provides security of material context - that is, it allows one to know with some certainty that some set of resources, those that belong to her, will be available for her to use to execute her plans over time. This is the core of Kant's theory of property, which relies on a notion of positive liberty, the freedom to do things successfully based on life plans we can lay for ourselves. Second, property and markets provide greater freedom of action for the individual owner as compared both, as Marx diagnosed, to the feudal arrangements that preceded them, and, as he decidedly did not but Hayek

did, to the models of state ownership and regulation that competed with them throughout most of the twentieth century.

Markets are indeed institutional spaces that enable a substantial degree of free choice. "Free," however, does not mean "anything goes." If John possesses a car and Jane possesses a gun, a market will develop only if John is prohibited from running Jane over and taking her gun, and also if Jane is prohibited from shooting at John or threatening to shoot him if he does not give her his car. A market that is more or less efficient will develop only if many other things are prohibited to, or required of, one or both sides - like monopolization or disclosure. Markets are, in other words, structured relationships intended to elicit a particular datum - the comparative willingness and ability of agents to pay for goods or resources. The most basic set of constraints that structure behavior in order to enable markets are those we usually call property. Property is a cluster of background rules that determine what resources each of us has when we come into relations with others, and, no less important, what "having" or "lacking" a resource entails in our relations with these others. These rules impose constraints on who can do what in the domain of actions that require access to resources that are the subjects of property law. They are aimed to crystallize asymmetries of power over resources, which then form the basis for exchanges - I will allow you to do X, which I am asymmetrically empowered to do (for example, watch television using this cable system), and you, in turn, will allow me to do Y, which you are asymmetrically empowered to do (for example, receive payment from your bank account). While a necessary precondition for markets, property also means that choice in markets is itself not free of constraints, but is instead constrained in a particular pattern. It makes some people more powerful with regard to some things, and must constrain the freedom of action of others in order to achieve this asymmetry.²

Commons are an alternative form of institutional space, where human agents can act free of the particular constraints required for markets, and where they have some degree of confidence that the resources they need for their plans will be available to them. Both freedom of action and security of resource availability are achieved in very different patterns than they are in property-based markets. As with markets, commons do not mean that anything goes. Managing resources as commons does, however, mean that individuals and groups can use those resources under different types of constraints than those imposed by property law. These constraints may be social, physical, or regulatory. They may make individuals more free or less so, in the sense of permitting a greater or lesser freedom of action to choose among a range of actions that require access to resources governed by them than would property rules in the same resources. Whether having a particular type of resource subject to a commons, rather than a property-based market, enhances freedom of action and security, or harms them, is a context-specific question. It depends on how the commons is structured, and how property rights in the resource would have been structured in the absence of a commons. The public spaces in New York City, like Central Park, Union Square, or any sidewalk, afford more people greater freedom than does a private backyard - certainly to all but its owner. Given the diversity of options that these public spaces make possible as compared to the social norms that neighbors enforce against each other, they probably offer more freedom of action than a backyard offers even to its owner in many loosely urban and suburban communities. Swiss pastures or irrigation districts of the type that Elinor Ostrom described as classic cases of long-standing sustainable commons offer their participants security of holdings at least as stable as any property system, but place substantial traditional constraints on who can use the resources, how they can use them, and how, if at all, they can transfer their rights and do something completely different. These types of commons likely afford their participants less, rather than more, freedom of action than would have been afforded had they owned the same resource in a market-alienable property arrangement, although they retain security in much the same way. Commons, like the air, the sidewalk, the road and highway, the ocean, or the public beach, achieve security on a very

different model. I can rely on the resources so managed in a probabilistic, rather than deterministic sense. I can plan to meet my friends for a picnic in the park, not because I own the park and can direct that it be used for my picnic, but because I know there will be a park, that it is free for me to use, and that there will be enough space for us to find a corner to sit in. This is also the sort of security that allows me to plan to leave my house at some hour, and plan to be at work at some other hour, relying not on owning the transportation path, but on the availability to me of the roads and highways on symmetric terms to its availability to everyone else. If we look more closely, we will see that property and markets also offer only a probabilistic security of context, whose parameters are different - for example, the degree of certainty we have as to whether the resource we rely on as our property will be stolen or damaged, whether it will be sufficient for what we need, or if we need more, whether it will be available for sale and whether we will be able to afford it.

Like property and markets, then, commons provide both freedom of action and security of context. They do so, however, through the imposition of different constraints than do property and market rules. In particular, what typifies all these commons in contradistinction to property is that no actor is empowered by law to act upon another as an object of his or her will. I can impose conditions on your behavior when you are walking on my garden path, but I have no authority to impose on you when you walk down the sidewalk. Whether one or the other of the two systems, used exclusively, will provide "greater freedom" in some aggregate sense is not a priori determinable. It will depend on the technical characteristics of the resource, the precise contours of the rules of, respectively, the proprietary market and the commons, and the distribution of wealth in society. Given the diversity of resources and contexts, and the impossibility of a purely "anything goes" absence of rules for either system, some mix of the two different institutional frameworks is likely to provide the greatest diversity of freedom to act in a material context. This diversity, in turn, enables the greatest freedom to plan action within material contexts, allowing individuals to trade off the availabilities of, and constraints on, different resources to forge a context sufficiently provisioned to enable them to execute their plans, while being sufficiently unregulated to permit them to do so. Freedom inheres in diversity of constraint, not in the optimality of the balance of freedom and constraint represented by any single institutional arrangement. It is the diversity of constraint that allows individuals to plan to live out different portions and aspects of their lives in different institutional contexts, taking advantage of the different degrees of freedom and security they make possible.

In the context of information, knowledge, and culture, because of the nonrivalry of information and its characteristic as input as well as output of the production process, the commons provides substantially greater security of context than it does when material resources, like parks or roadways, are at stake. Moreover, peer production and the networked information economy provide an increasingly robust source of new information inputs. This reduces the risk of lacking resources necessary to create new expressions or find out new things, and renders more robust the freedom to act without being susceptible to constraint from someone who holds asymmetrically greater power over the information resources one needs. As to information, then, we can say with a high degree of confidence that a more expansive commons improves individual autonomy, while enclosure of the public domain undermines it. This is less determinate with communications systems. Because computers and network connections are rival goods, there is less certainty that a commons will deliver the required resources. Under present conditions, a mixture of commons-based and proprietary communications systems is likely to improve autonomy. If, however, technological and social conditions change so that, for example, sharing on the model of peer-to-peer networks, distributed computation, or wireless mesh networks will be able to offer as dependable a set of communications and computation resources as the Web offers information and

knowledge resources, the relative attractiveness of commons-oriented communications policies will increase from the perspective of autonomy.

Autonomy and the Information Environment

The structure of our information environment is constitutive of our autonomy, not only functionally significant to it. While the capacity to act free of constraints is most immediately and clearly changed by the networked information economy, information plays an even more foundational role in our very capacity to make and pursue life plans that can properly be called our own. A fundamental requirement of self-direction is the capacity to perceive the state of the world, to conceive of available options for action, to connect actions to consequences, to evaluate alternative outcomes, and to decide upon and pursue an action accordingly. Without these, no action, even if mechanically self-directed in the sense that my brain consciously directs my body to act, can be understood as autonomous in any normatively interesting sense. All of the components of decision making prior to action, and those actions that are themselves communicative moves or require communication as a precondition to efficacy, are constituted by the information and communications environment we, as agents, occupy. Conditions that cause failures at any of these junctures, which place bottlenecks, failures of communication, or provide opportunities for manipulation by a gatekeeper in the information environment, create threats to the autonomy of individuals in that environment. The shape of the information environment, and the distribution of power within it to control information flows to and from individuals, are, as we have seen, the contingent product of a combination of technology, economic behavior, social patterns, and institutional structure or law.

In 1999, Cisco Systems issued a technical white paper, which described a new router that the company planned to sell to cable broadband providers. In describing advantages that these new "policy routers" offer cable providers, the paper explained that if the provider's users want to subscribe to a service that "pushes" information to their computer: "You could restrict the incoming push broadcasts as well as subscribers' outgoing access to the push site to discourage its use. At the same time, you could promote your own or a partner's services with full speed features to encourage adoption of your services." [/3](#)

In plain English, the broadband provider could inspect the packets flowing to and from a customer, and decide which packets would go through faster and more reliably, and which would slow down or be lost. Its engineering purpose was to improve quality of service. However, it could readily be used to make it harder for individual users to receive information that they want to subscribe to, and easier for them to receive information from sites preferred by the provider - for example, the provider's own site, or sites of those who pay the cable operator for using this function to help "encourage" users to adopt their services. There are no reports of broadband providers using these capabilities systematically. But occasional events, such as when Canada's second largest telecommunications company blocked access for all its subscribers and those of smaller Internet service providers that relied on its network to the website of the Telecommunications Workers Union in 2005, suggest that the concern is far from imaginary.

It is fairly clear that the new router increases the capacity of cable operators to treat their subscribers as objects, and to manipulate their actions in order to make them act as the provider wills, rather than as they would have had they had perfect information. It is less obvious whether this is a violation of, or a decrease in, the autonomy of the users. At one extreme, imagine the home as a black box with no communications capabilities save one - the cable broadband connection. Whatever comes through that cable is, for all practical purposes, "the state of the world," as far as

the inhabitants of that home know. In this extreme situation, the difference between a completely neutral pipe that carries large amounts of information indiscriminately, and a pipe finely controlled by the cable operator is a large one, in terms of the autonomy of the home's inhabitants. If the pipe is indiscriminate, then the choices of the users determine what they know; decisions based on that knowledge can be said to be autonomous, at least to the extent that whether they are or are not autonomous is a function of the state of the agent's knowledge when forming a decision. If the pipe is finely controlled and purposefully manipulated by the cable operator, by contrast, then decisions that individuals make based on the knowledge they acquire through that pipe are substantially a function of the choices of the controller of the pipe, not of the users. At the other extreme, if each agent has dozens of alternative channels of communication to the home, and knows how the information flow of each one is managed, then the introduction of policy routers into one or some of those channels has no real implications for the agent's autonomy. While it may render one or more channels manipulable by their provider, the presence of alternative, indiscriminate channels, on the one hand, and of competition and choice among various manipulated channels, on the other hand, attenuates the extent to which the choices of the provider structure the universe of information within which the individual agent operates. The provider no longer can be said to shape the individual's choices, even if it tries to shape the information environment observable through its channel with the specific intent of manipulating the actions of users who view the world through its pipe. With sufficient choice among pipes, and sufficient knowledge about the differences between pipes, the very choice to use the manipulated pipe can be seen as an autonomous act. The resulting state of knowledge is self-selected by the user. Even if that state of knowledge then is partial and future actions constrained by it, the limited range of options is itself an expression of the user's autonomy, not a hindrance on it. For example, consider the following: Odysseus and his men mix different forms of freedom and constraint in the face of the Sirens. Odysseus maintains his capacity to acquire new information by leaving his ears unplugged, but binds himself to stay on the ship by having his men tie him to the mast. His men choose the same course at the same time, but bind themselves to the ship by having Odysseus stop their ears with wax, so that they do not get the new information - the siren songs - that might change their minds and cause them not to stay the course. Both are autonomous when they pass by the Sirens, though both are free only because of their current incapacity. Odysseus's incapacity to jump into the water and swim to the Sirens and his men's incapacity to hear the siren songs are a result of their autonomously chosen past actions.

The world we live in is neither black box nor cornucopia of well-specified communications channels. However, characterizing the range of possible configurations of the communications environment we occupy as lying on a spectrum from one to the other provides us with a framework for describing the degree to which actual conditions of a communications environment are conducive to individual autonomy. More important perhaps, it allows us to characterize policy and law that affects the communications environment as improving or undermining individual autonomy. Law can affect the range of channels of communications available to individuals, as well as the rules under which they are used. How many communications channels and sources of information can an individual receive? How many are available for him or her to communicate with others? Who controls these communications channels? What does control over the communications channels to an agent entail? What can the controller do, and what can it not? All of these questions are the subject of various forms of policy and law. Their implications affect the degree of autonomy possessed by individuals operating with the institutional-technical-economic framework thus created.

There are two primary types of effects that information law can have on personal autonomy. The first type is concerned with the relative capacity of some people systematically to constrain the

perceptions or shape the preferences of others. A law that systematically gives some people the power to control the options perceived by, or the preferences of, others, is a law that harms autonomy. Government regulation of the press and its propaganda that attempts to shape its subjects' lives is a special case of this more general concern. This concern is in some measure quantitative, in the sense that a greater degree of control to which one is subject is a greater offense to autonomy. More fundamentally, a law that systematically makes one adult susceptible to the control of another offends the autonomy of the former. Law has created the conditions for one person to act upon another as an object. This is the nonpragmatic offense to autonomy committed by abortion regulations upheld in *Planned Parenthood v. Casey* - such as requirements that women who seek abortions listen to lectures designed to dissuade them. These were justified by the plurality there, not by the claim that they did not impinge on a woman's autonomy, but that the state's interest in the potential life of a child trumps the autonomy of the pregnant woman.

The second type of effect that law can have on autonomy is to reduce significantly the range and variety of options open to people in society generally, or to certain classes of people. This is different from the concern with government intervention generally. It is not focused on whether the state prohibits these options, but only on whether the effect of the law is to remove options. It is less important whether this effect is through prohibition or through a set of predictable or observable behavioral adaptations among individuals and organizations that, as a practical matter, remove these options. I do not mean to argue for the imposition of restraints, in the name of autonomy, on any lawmaking that results in a removal of any single option, irrespective of the quantity and variety of options still open. Much of law does that. Rather, the autonomy concern is implicated by laws that systematically and significantly reduce the number, and more important, impoverish the variety, of options open to people in the society for which the law is passed.

"Number and variety" is intended to suggest two dimensions of effect on the options open to an individual. The first is quantitative. For an individual to author her own life, she must have a significant set of options from which to choose; otherwise, it is the choice set - or whoever, if anyone, made it so - and not the individual, that is governing her life. This quantitative dimension, however, does not mean that more choices are always better, from the individual's perspective. It is sufficient that the individual have some adequate threshold level of options in order for him or her to exercise substantive self-authorship, rather than being authored by circumstances. Beyond that threshold level, additional options may affect one's welfare and success as an autonomous agent, but they do not so constrain an individual's choices as to make one not autonomous. Beyond quantitative adequacy, the options available to an individual must represent meaningfully different paths, not merely slight variations on a theme. Qualitatively, autonomy requires the availability of options in whose adoption or rejection the individual can practice critical reflection and life choices. In order to sustain the autonomy of a person born and raised in a culture with a set of socially embedded conventions about what a good life is, one would want a choice set that included at least some unconventional, non-mainstream, if you will, critical options. If all the options one has - even if, in a purely quantitative sense, they are "adequate" - are conventional or mainstream, then one loses an important dimension of self-creation. The point is not that to be truly autonomous one necessarily must be unconventional. Rather, if self-governance for an individual consists in critical reflection and re-creation by making choices over the course of his life, then some of the options open must be different from what he would choose simply by drifting through life, adopting a life plan for no reason other than that it is accepted by most others. A person who chooses a conventional life in the presence of the option to live otherwise makes that conventional life his or her own in a way that a person who lives a conventional life without knowing about alternatives does not.

As long as our autonomy analysis of information law is sensitive to these two effects on information flow to, from, and among individuals and organizations in the regulated society, it need not conflict with the concerns of those who adopt the formal conception of autonomy. It calls for no therapeutic agenda to educate adults in a wide range of options. It calls for no one to sit in front of educational programs. It merely focuses on two core effects that law can have through the way it structures the relationships among people with regard to the information environment they occupy. If a law - passed for any reason that may or may not be related to autonomy concerns - creates systematic shifts of power among groups in society, so that some have a greater ability to shape the perceptions of others with regard to available options, consequences of action, or the value of preferences, then that law is suspect from an autonomy perspective. It makes the choices of some people less their own and more subject to manipulation by those to whom the law gives the power to control perceptions. Furthermore, a law that systematically and severely limits the range of options known to individuals is one that imposes a normative price, in terms of autonomy, for whatever value it is intended to deliver. As long as the focus of autonomy as an institutional design desideratum is on securing the best possible information flow to the individual, the designer of the legal structure need not assume that individuals are not autonomous, or have failures of autonomy, in order to serve autonomy. All the designer need assume is that individuals will not act in order to optimize the autonomy of their neighbors. Law then responds by avoiding institutional designs that facilitate the capacity of some groups of individuals to act on others in ways that are systematically at the expense of the ability of those others to control their own lives, and by implementing policies that predictably diversify the set of options that all individuals are able to see as open to them.

Throughout most of the 1990s and currently, communications and information policy around the globe was guided by a wish to "let the private sector lead," interpreted in large measure to mean that various property and property-like regulatory frameworks should be strengthened, while various regulatory constraints on property-like rights should be eased. The drive toward proprietary, market-based provisioning of communications and information came from disillusionment with regulatory systems and state-owned communications networks. It saw the privatization of national postal, telephone, and telegraph authorities (PTTs) around the world. Even a country with a long tradition of state-centric communications policy, like France, privatized much of its telecommunications systems. In the United States, this model translated into efforts to shift telecommunications from the regulated monopoly model it followed throughout most of the twentieth century to a competitive market, and to shift Internet development from being primarily a government-funded exercise, as it had been from the late 1960s to the mid 1990s, to being purely private property, market based. This model was declared in the Clinton administration's 1993 *National Information Infrastructure: Agenda for Action*, which pushed for privatization of Internet deployment and development. It was the basis of that administration's 1995 *White Paper on Intellectual Property*, which mapped the most aggressive agenda ever put forward by any American administration in favor of perfect enclosure of the public domain; and it was in those years when the Federal Communications Commission (FCC) first implemented spectrum auctions aimed at more thorough privatization of wireless communications in the United States. The general push for stronger intellectual property rights and more marketcentric telecommunications systems also became a central tenet of international trade regimes, pushing similar policies in smaller and developing economies.

The result of the push toward private provisioning and deregulation has led to the emergence of a near-monopolistic market structure for wired physical broadband services. By the end of 2003, more than 96 percent of homes and small offices in the United States that had any kind of "high-speed" Internet services received their service from either their incumbent cable operator or their incumbent local telephone company. If one focuses on the subset of these homes and offices

that get service that provides more substantial room for autonomous communicative action - that is, those that have upstream service at high-speed, enabling them to publish and participate in online production efforts and not simply to receive information at high speeds - the picture is even more dismal. Less than 2 percent of homes and small offices receive their broadband connectivity from someone other than their cable carrier or incumbent telephone carrier. More than 83 percent of these users get their access from their cable operator. Moreover, the growth rate in adoption of cable broadband and local telephone digital subscriber line (DSL) has been high and positive, whereas the growth rate of the few competing platforms, like satellite broadband, has been stagnant or shrinking. The proprietary wired environment is gravitating toward a high-speed connectivity platform that will be either a lopsided duopoly, or eventually resolve into a monopoly platform.⁴ These owners are capable, both technically and legally, of installing the kind of policy routers with which I opened the discussion of autonomy and information law - routers that would allow them to speed up some packets and slow down or reject others in ways intended to shape the universe of information available to users of their networks.

The alternative of building some portions of our telecommunications and information production and exchange systems as commons was not understood in the mid-1990s, when the policy that resulted in this market structure for communications was developed. As we saw in chapter 3, however, wireless communications technology has progressed to the point where it is now possible for users to own equipment that cooperates in mesh networks to form a "last-mile" infrastructure that no one other than the users own. Radio networks can now be designed so that their capital structure more closely approximates the Internet and personal computer markets, bringing with it a greater scope for commons-based peer production of telecommunications infrastructure. Throughout most of the twentieth century, wireless communications combined high-cost capital goods (radio transmitters and antennae towers) with cheaper consumer goods (radio receivers), using regulated proprietary infrastructure, to deliver a finished good of wireless communications on an industrial model. Now WiFi is marking the possibility of an inversion of the capital structure of wireless communication. We see end-user equipment manufacturers like Intel, Cisco, and others producing and selling radio "transceivers" that are shareable goods. By using ad hoc mesh networking techniques, some early versions of which are already being deployed, these transceivers allow their individual owners to cooperate and coprovision their own wireless communications network, without depending on any cable carrier or other wired provider as a carrier of last resort. Almost the entire debate around spectrum policy and the relative merits of markets and commons in wireless policy is conducted today in terms of efficiency and innovation. A common question these days is which of the two approaches will lead to greater growth of wireless communications capacity and will more efficiently allocate the capacity we already have. I have contributed my fair share of this form of analysis, but the question that concerns us here is different. We must ask what, if any, are the implications of the emergence of a feasible, sustainable model of a commons-based physical infrastructure for the first and last mile of the communications environment, in terms of individual autonomy?

The choice between proprietary and commons-based wireless data networks takes on new significance in light of the market structure of the wired network, and the power it gives owners of broadband networks to control the information flow into the vast majority of homes. Commons-based wireless systems become the primary legal form of communications capacity that does not systematically subject its users to manipulation by an infrastructure owner.

Imagine a world with four agents - A, B, C, and D - connected to each other by a communications network. Each component, or route, of the network could be owned or unowned. If all components are unowned, that is, are organized as a commons, each agent has an equal privilege to

use any component of the network to communicate with any other agent. If all components are owned, the owner of any network component can deny to any other agent use of that network component to communicate with anyone else. This translates in the real world into whether or not there is a "spectrum owner" who "owns" the link between any two users, or whether the link is simply a consequence of the fact that two users are communicating with each other in a way that no one has a right to prevent them from doing.

In this simple model, if the network is unowned, then for any communication all that is required is a willing sender and a willing recipient. No third agent gets a say as to whether any other pair will communicate with each other. Each agent determines independently of the others whether to participate in a communicative exchange, and communication occurs whenever all its participants, and only they, agree to communicate with each other. For example, A can exchange information with B, as long as B consents. The only person who has a right to prevent A from receiving information from, or sending information to, B, is B, in the exercise of B's own autonomous choice whether to change her information environment. Under these conditions, neither A nor B is subject to control of her information environment by others, except where such control results from denying her the capacity to control the information environment of another. If all network components are owned, on the other hand, then for any communication there must be a willing sender, a willing recipient, and a willing infrastructure owner. In a pure property regime, infrastructure owners have a say over whether, and the conditions under which, others in their society will communicate with each other. It is precisely the power to prevent others from communicating that makes infrastructure ownership a valuable enterprise: One can charge for granting one's permission to communicate. For example, imagine that D owns all lines connecting A to B directly or through D, and C owns all lines connecting A or B to C. As in the previous scenario, A wishes to exchange information with B. Now, in addition to B, A must obtain either C's or D's consent. A now functions under two distinct types of constraint. The first, as before, is a constraint imposed by B's autonomy: A cannot change B's information environment (by exchanging information with her) without B's consent. The second constraint is that A must persuade an owner of whatever carriage medium connects A to B to permit A and B to communicate. The communication is not sent to or from C or D. It does not change C's or D's information environment, and that is not A's intention. C and D's ability to consent or withhold consent is not based on the autonomy principle. It is based, instead, on an instrumental calculus: namely, that creating such property rights in infrastructure will lead to the right incentives for the deployment of infrastructure necessary for A and B to communicate in the first place.

Now imagine that D owns the entire infrastructure. If A wants to get information from B or to communicate to C in order to persuade C to act in a way that is beneficial to A, A needs D's permission. D may grant or withhold permission, and may do so either for a fee or upon the imposition of conditions on the communication. Most significantly, D can choose to prevent anyone from communicating with anyone else, or to expose each participant to the communications of only some, but not all, members of society. This characteristic of her ownership gives D the power to shape A's information environment by selectively exposing A to information in the form of communications from others. Most commonly, we might see this where D decides that B will pay more if all infrastructure is devoted to permitting B to communicate her information to A and C, rather than any of it used to convey A's statements to C. D might then refuse to carry A's message to C and permit only B to communicate to A and C. The point is that from A's perspective, A is dependent upon D's decisions as to what information can be carried on the infrastructure, among whom, and in what directions. To the extent of that dependence, A's autonomy is compromised. We might call the requirement that D can place on A as a precondition to using the infrastructure an "influence exaction."

The magnitude of the negative effect on autonomy, or of the influence exaction, depends primarily on (a) the degree to which it is hard or easy to get around D's facility, and (b) the degree of transparency of the exaction. Compare, for example, Cisco's policy router for cable broadband, which allows the cable operator to speed up and slow down packets based on its preferences, to Amazon's brief experiment in 1998-1999 with accepting undisclosed payments from publishers in exchange for recommending their books. If a cable operator programs its routers to slow down packets of competitors, or of information providers that do not pay, this practice places a significant exaction on users. First, the exaction is entirely nontransparent. There are many reasons that different sites load at different speeds, or even fail to load altogether. Users, the vast majority of whom are unaware that the provider could, if it chose, regulate the flow of information to them, will assume that it is the target site that is failing, not that their own service provider is manipulating what they can see. Second, there is no genuine work-around. Cable broadband covers roughly two-thirds of the home market, in many places without alternative; and where there is an alternative, there is only one - the incumbent telephone company. Without one of these noncompetitive infrastructure owners, the home user has no broadband access to the Internet. In Amazon's case, the consumer outrage when the practice was revealed focused on the lack of transparency. Users had little objection to clearly demarcated advertisement. The resistance was to the nontransparent manipulation of the recommendation system aimed at causing the consumers to act in ways consistent with Amazon's goals, rather than their own. In that case, however, there were alternatives. There are many different places from which to find book reviews and recommendations, and at the time, barnesandnoble.com was already available as an online bookseller - and had not significantly adopted similar practices. The exaction was therefore less significant. Moreover, once the practice was revealed, Amazon publicly renounced it and began to place advertisements in a clearly recognizable separate category. The lesson was not lost on others. When Google began at roughly the same time as a search engine, it broke with the then-common practice of selling search-result location. When the company later introduced advertised links, it designed its interface to separate out clearly the advertisements from the algorithm-based results, and to give the latter more prominent placement than the former. This does not necessarily mean that any search engine that accepts payments for linking is necessarily bad. A search engine like Overture, which explicitly and publicly returns results ranked according to which, among the sites retrieved, paid Overture the most, has its own value for consumers looking for commercial sites. A transparent, nonmonopolistic option of this sort increases, rather than decreases, the freedom of users to find the information they want and act on it. The problem would be with search engines that mix the two strategies and hide the mix, or with a monopolistic search engine.

Because of the importance of the possibility to work around the owned infrastructure, the degree of competitiveness of any market in such infrastructure is important. Before considering the limits of even competitive markets by comparison to commons, however, it is important to recognize that a concern with autonomy provides a distinct justification for the policy concern with media concentration. To understand the effects of concentration, we can think of freedom from constraint as a dimension of welfare. Just as we have no reason to think that in a concentrated market, total welfare, let alone consumer welfare, will be optimal, we also have no reason to think that a component of welfare - freedom from constraint as a condition to access one's communicative environment - will be optimal. Moreover, when we use a "welfare" calculus as a metaphor for the degree of autonomy users have in the system, we must optimize not total welfare, as we do in economic analysis, but only what in the metaphorical calculus would count as "consumer surplus." In the domain of influence and autonomy, only "consumer surplus" counts as autonomy enhancing. "Producer surplus," the degree of successful imposition of influence on others as a condition of service, translates in an autonomy calculus into control exerted by some people (providers) over others (consumers). It reflects the successful negation of autonomy. The

monopoly case therefore presents a new normative dimension of the well-known critiques of media concentration. Why, however, is this not solely an analysis of media concentration? Why does a competitive market in infrastructure not solve the autonomy deficit of property?

If we make standard assumptions of perfectly competitive markets and apply them to our A-B-D example, one would think that the analysis must change. D no longer has monopoly power. We would presume that the owners of infrastructure would be driven by competition to allocate infrastructure to uses that users value most highly. If one owner "charges" a high price in terms of conditions imposed on users, say to forgo receiving certain kinds of speech uncongenial to the owner, then the users will go to a competitor who does not impose that condition. This standard market response is far from morally irrelevant if one is concerned with autonomy. If, in fact, every individual can choose precisely the package of influence exactions and the cash-to-influence trade-off under which he or she is willing to communicate, then the autonomy deficit that I suggest is created by property rights in communications infrastructure is minimal. If all possible degrees of freedom from the influence of others are available to autonomous individuals, then respecting their choices, including their decisions to subject themselves to the influence of others in exchange for releasing some funds so they are available for other pursuits, respects their autonomy.

Actual competition, however, will not eliminate the autonomy deficit of privately owned communications infrastructure, for familiar reasons. The most familiar constraint on the "market will solve it" hunch is imposed by transaction costs - in particular, information-gathering and negotiation costs. Influence exactions are less easily homogenized than prices expressed in currency. They will therefore be more expensive to eliminate through transactions. Some people value certain kinds of information lobbed at them positively; others negatively. Some people are more immune to suggestion, others less. The content and context of an exaction will have a large effect on its efficacy as a device for affecting the choices of the person subject to its influence, and these could change from communication to communication for the same person, let alone for different individuals. Both users and providers have imperfect information about the users' susceptibility to manipulated information flows; they have imperfect information about the value that each user would place on being free of particular exactions. Obtaining the information necessary to provide a good fit for each consumer's preferences regarding the right influence-to-cash ratio for a given service would be prohibitively expensive. Even if the information were obtained, negotiating the precise cash-to-influence trade-off would be costly. Negotiation also may fail because of strategic behavior. The consumer's ideal outcome is to labor under an exaction that is ineffective. If the consumer can reduce the price by submitting to constraints on communication that would affect an average consumer, but will not change her agenda or subvert her capacity to author her life, she has increased her welfare without compromising her autonomy. The vendor's ideal outcome, however, is that the influence exaction be effective - that it succeed in changing the recipient's preferences or her agenda to fit those of the vendor. The parties, therefore, will hide their true beliefs about whether a particular condition to using proprietary infrastructure is of a type that is likely to be effective at influencing the particular recipient. Under anything less than a hypothetical and practically unattainable perfect market in communications infrastructure services, users of a proprietary infrastructure will face a less-than-perfect menu of influence exactions that they must accept before they can communicate using owned infrastructure.

Adopting a regulatory framework under which all physical means of communication are based on private property rights in the infrastructure will therefore create a cost for users, in terms of autonomy. This cost is the autonomy deficit of exclusive reliance on proprietary models. If ownership of infrastructure is concentrated, or if owners can benefit from exerting political, personal, cultural, or social influence over others who seek access to their infrastructure, they will

impose conditions on use of the infrastructure that will satisfy their will to exert influence. If agents other than owners (advertisers, tobacco companies, the U.S. drug czar) value the ability to influence users of the infrastructure, then the influence-exaction component of the price of using the infrastructure will be sold to serve the interests of these third parties. To the extent that these influence exactions are effective, a pure private-property regime for infrastructure allows owners to constrain the autonomy of users. The owners can do this by controlling and manipulating the users' information environment to shape how they perceive their life choices in ways that make them more likely to act in a manner that the owners prefer.

The traditional progressive or social-democratic response to failures of property-based markets has been administrative regulation. In the area of communications, these responses have taken the form of access regulations - ranging from common carriage to more limited right-of-reply, fairness doctrine-type regulations. Perfect access regulation - in particular, common-carrier obligations - like a perfectly competitive market, could in principle alleviate the autonomy deficit of property. Like markets, however, actual regulation that limits the powers that go with property in infrastructure suffers from a number of limitations. First, the institutional details of the common-carriage regime can skew incentives for what types of communications will be available, and with what degree of freedom. If we learned one thing from the history of American communications policy in the twentieth century, it is that regulated entities are adept at shaping their services, pricing, and business models to take advantage of every weakness in the common-carriage regulatory system. They are even more adept at influencing the regulatory process to introduce lucrative weaknesses into the regulatory system. At present, cable broadband has succeeded in achieving a status almost entirely exempt from access requirements that might mitigate its power to control how the platform is used, and broadband over legacy telephone systems is increasingly winning a parallel status of unregulated semimonopoly. Second, the organization that owns the infrastructure retains the same internal incentives to control content as it would in the absence of common carriage and will do so to the extent that it can sneak by any imperfections in either the carriage regulations or their enforcement. Third, as long as the network is built to run through a central organizational clearinghouse, that center remains a potential point at which regulators can reassert control or delegate to owners the power to prevent unwanted speech by purposefully limiting the scope of the common-carriage requirements.

As a practical matter, then, if all wireless systems are based on property, just like the wired systems are, then wireless will offer some benefits through the introduction of some, albeit imperfect, competition. However, it will not offer the autonomy-enhancing effects that a genuine diversity of constraint can offer. If, on the other hand, policies currently being experimented with in the United States do result in the emergence of a robust, sustainable wireless communications infrastructure, owned and shared by its users and freely available to all under symmetric technical constraints, it will offer a genuinely alternative communications platform. It may be as technically good as the wired platforms for all users and uses, or it may not. Nevertheless, because of its radically distributed capitalization, and its reliance on commons rendered sustainable by equipment-embedded technical protocols, rather than on markets that depend on institutionally created asymmetric power over communications, a commons-based wireless system will offer an infrastructure that operates under genuinely different institutional constraints. Such a system can become an infrastructure of first and last resort for uses that would not fit the constraints of the proprietary market, or for users who find the price-to-influence exaction bundles offered in the market too threatening to their autonomy.

The emerging viability of commons-based strategies for the provisioning of communications, storage, and computation capacity enables us to take a practical, real world look at the autonomy

deficit of a purely property-based communications system. As we compare property to commons, we see that property, by design, introduces a series of legal powers that asymmetrically enable owners of infrastructure to exert influence over users of their systems. This asymmetry is necessary for the functioning of markets. Predictably and systematically, however, it allows one group of actors - owners - to act upon another group of actors - consumers - as objects of manipulation. No single idiom in contemporary culture captures this characteristic better than the term "the market in eyeballs," used to describe the market in advertising slots. Commons, on the other hand, do not rely on asymmetric constraints. They eliminate points of asymmetric control over the resources necessary for effective communication, thereby eliminating the legal bases of the objectification of others. These are not spaces of perfect freedom from all constraints. However, the constraints they impose are substantively different from those generated by either the property system or by an administrative regulatory system. Their introduction alongside proprietary networks therefore diversifies the constraints under which individuals operate. By offering alternative transactional frameworks for alternative information flows, these networks substantially and qualitatively increase the freedom of individuals to perceive the world through their own eyes, and to form their own perceptions of what options are open to them and how they might evaluate alternative courses of action.

Autonomy, Mass Media, and Nonmarket Information Producers

The autonomy deficit of private communications and information systems is a result of the formal structure of property as an institutional device and the role of communications and information systems as basic requirements in the ability of individuals to formulate purposes and plan actions to fit their lives. The gains flow directly from the institutional characteristics of commons. The emergence of the networked information economy makes one other important contribution to autonomy. It qualitatively diversifies the information available to individuals. Information, knowledge, and culture are now produced by sources that respond to a myriad of motivations, rather than primarily the motivation to sell into mass markets. Production is organized in any one of a myriad of productive organizational forms, rather than solely the for-profit business firm. The supplementation of the profit motive and the business organization by other motivations and organizational forms - ranging from individual play to large-scale peer-production projects - provides not only a discontinuously dramatic increase in the number of available information sources but, more significantly, an increase in available information sources that are qualitatively different from others.

Imagine three storytelling societies: the Reds, the Blues, and the Greens. Each society follows a set of customs as to how they live and how they tell stories. Among the Reds and the Blues, everyone is busy all day, and no one tells stories except in the evening. In the evening, in both of these societies, everyone gathers in a big tent, and there is one designated storyteller who sits in front of the audience and tells stories. It is not that no one is allowed to tell stories elsewhere. However, in these societies, given the time constraints people face, if anyone were to sit down in the shade in the middle of the day and start to tell a story, no one else would stop to listen. Among the Reds, the storyteller is a hereditary position, and he or she alone decides which stories to tell. Among the Blues, the storyteller is elected every night by simple majority vote. Every member of the community is eligible to offer him- or herself as that night's storyteller, and every member is eligible to vote. Among the Greens, people tell stories all day, and everywhere. Everyone tells stories. People stop and listen if they wish, sometimes in small groups of two or three, sometimes in very large groups. Stories in each of these societies play a very important role in understanding and evaluating the world. They are the way people describe the world as they know it. They serve as testing grounds to imagine how the world might be, and as a way to work out what is good and

desirable and what is bad and undesirable. The societies are isolated from each other and from any other source of information.

Now consider Ron, Bob, and Gertrude, individual members of the Reds, Blues, and Greens, respectively. Ron's perception of the options open to him and his evaluation of these options are largely controlled by the hereditary storyteller. He can try to contact the storyteller to persuade him to tell different stories, but the storyteller is the figure who determines what stories are told. To the extent that these stories describe the universe of options Ron knows about, the storyteller defines the options Ron has. The storyteller's perception of the range of options largely will determine the size and diversity of the range of options open to Ron. This not only limits the range of known options significantly, but it also prevents Ron from choosing to become a storyteller himself. Ron is subjected to the storyteller's control to the extent that, by selecting which stories to tell and how to tell them, the storyteller can shape Ron's aspirations and actions. In other words, both the freedom to be an active producer and the freedom from the control of another are constrained. Bob's autonomy is constrained not by the storyteller, but by the majority of voters among the Blues. These voters select the storyteller, and the way they choose will affect Bob's access to stories profoundly. If the majority selects only a small group of entertaining, popular, pleasing, or powerful (in some other dimension, like wealth or political power) storytellers, then Bob's perception of the range of options will be only slightly wider than Ron's, if at all. The locus of power to control Bob's sense of what he can and cannot do has shifted. It is not the hereditary storyteller, but rather the majority. Bob can participate in deciding which stories can be told. He can offer himself as a storyteller every night. He cannot, however, decide to become a storyteller independently of the choices of a majority of Blues, nor can he decide for himself what stories he will hear. He is significantly constrained by the preferences of a simple majority. Gertrude is in a very different position. First, she can decide to tell a story whenever she wants to, subject only to whether there is any other Green who wants to listen. She is free to become an active producer except as constrained by the autonomy of other individual Greens. Second, she can select from the stories that any other Green wishes to tell, because she and all those surrounding her can sit in the shade and tell a story. No one person, and no majority, determines for her whether she can or cannot tell a story. No one can unilaterally control whose stories Gertrude can listen to. And no one can determine for her the range and diversity of stories that will be available to her from any other member of the Greens who wishes to tell a story.

The difference between the Reds, on the one hand, and the Blues or Greens, on the other hand, is formal. Among the Reds, only the storyteller may tell the story as a matter of formal right, and listeners only have a choice of whether to listen to this story or to no story at all. Among the Blues and the Greens anyone may tell a story as a matter of formal right, and listeners, as a matter of formal right, may choose from whom they will hear. The difference between the Reds and the Blues, on the one hand, and the Greens, on the other hand, is economic. In the former, opportunities for storytelling are scarce. The social cost is higher, in terms of stories unavailable for hearing, or of choosing one storyteller over another. The difference between the Blues and the Greens, then, is not formal, but practical. The high cost of communication created by the Blues' custom of listening to stories only in the evening, in a big tent, together with everyone else, makes it practically necessary to select "a storyteller" who occupies an evening. Since the stories play a substantive role in individuals' perceptions of how they might live their lives, that practical difference alters the capacity of individual Blues and Greens to perceive a wide and diverse set of options, as well as to exercise control over their perceptions and evaluations of options open for living their lives and to exercise the freedom themselves to be storytellers. The range of stories Bob is likely to listen to, and the degree to which he can choose unilaterally whether he will tell or listen, and to which story, are closer, as a practical matter, to those of Ron than to those of Gertrude.

Gertrude has many more stories and storytelling settings to choose from, and many more instances where she can offer her own stories to others in her society. She, and everyone else in her society, can be exposed to a wider variety of conceptions of how life can and ought to be lived. This wider diversity of perceptions gives her greater choice and increases her ability to compose her own life story out of the more varied materials at her disposal. She can be more self-authored than either Ron or Bob. This diversity replicates, in large measure, the range of perceptions of how one might live a life that can be found among all Greens, precisely because the storytelling customs make every Green a potential storyteller, a potential source of information and inspiration about how one might live one's life.

All this could sound like a morality tale about how wonderfully the market maximizes autonomy. The Greens easily could sound like Greenbacks, rather than like environmentalists staking out public parks as information commons. However, this is not the case in the industrial information economy, where media markets have high entry barriers and large economies of scale. It is costly to start up a television station, not to speak of a network, a newspaper, a cable company, or a movie distribution system. It is costly to produce the kind of content delivered over these systems. Once production costs or the costs of laying a network are incurred, the additional marginal cost of making information available to many users, or of adding users to the network, is much smaller than the initial cost. This is what gives information and cultural products and communications facilities supply-side economies of scale and underlies the industrial model of producing them. The result is that the industrial information economy is better stylized by the Reds and Blues rather than by the Greens. While there is no formal limitation on anyone producing and disseminating information products, the economic realities limit the opportunities for storytelling in the mass-mediated environment and make storytelling opportunities a scarce good. It is very costly to tell stories in the mass-mediated environment. Therefore, most storytellers are commercial entities that seek to sell their stories to the audience. Given the discussion earlier in this chapter, it is fairly straightforward to see how the Greens represent greater freedom to choose to become an active producer of one's own information environment. It is similarly clear that they make it exceedingly difficult for any single actor to control the information flow to any other actor. We can now focus on how the story provides a way of understanding the justification and contours of the third focus of autonomy - respecting policy: the requirement that government not limit the quantity and diversity of information available.

The fact that our mass-mediated environment is mostly commercial makes it more like the Blues than the Reds. These outlets serve the tastes of the majority - expressed in some combination of cash payment and attention to advertising. I do not offer here a full analysis - covered so well by Baker in *Media, Markets, and Democracy* - as to why mass-media markets do not reflect the preferences of their audiences very well. Presented here is a tweak of an older set of analyses of whether monopoly or competition is better in mass-media markets to illustrate the relationship between markets, channels, and diversity of content. In chapter 6, I describe in greater detail the Steiner-Beebe model of diversity and number of channels. For our purposes here, it is enough to note that this model shows how advertiser-supported media tend to program lowest-common-denominator programs, intended to "capture the eyeballs" of the largest possible number of viewers. These media do not seek to identify what viewers intensely want to watch, but tend to clear programs that are tolerable enough to viewers so that they do not switch off their television. The presence or absence of smaller-segment oriented television depends on the shape of demand in an audience, the number of channels available to serve that audience, and the ownership structure. The relationship between diversity of content and diversity of structure or ownership is not smooth. It occurs in leaps. Small increases in the number of outlets continue to serve large clusters of low-intensity preferences - that is, what people find acceptable. A new channel that is

added will more often try to take a bite out of a large pie represented by some lowest-common-denominator audience segment than to try to serve a new niche market. Only after a relatively high threshold number of outlets are reached do advertiser-supported media have sufficient reason to try to capture much smaller and higher-intensity preference clusters - what people are really interested in. The upshot is that if all storytellers in society are profit maximizing and operate in a market, the number of storytellers and venues matters tremendously for the diversity of stories told in a society. It is quite possible to have very active market competition in how well the same narrow set of stories are told, as opposed to what stories are told, even though there are many people who would rather hear different stories altogether, but who are in clusters too small, too poor, or too uncoordinated to persuade the storytellers to change their stories rather than their props.

The networked information economy is departing from the industrial information economy along two dimensions that suggest a radical increase in the number of storytellers and the qualitative diversity of stories told. At the simplest level, the cost of a channel is so low that some publication capacity is becoming available to practically every person in society. Ranging from an e-mail account, to a few megabytes of hosting capacity to host a subscriber's Web site, to space on a peer-to-peer distribution network available for any kind of file (like FreeNet or eDonkey), individuals are now increasingly in possession of the basic means necessary to have an outlet for their stories. The number of channels is therefore in the process of jumping from some infinitesimally small fraction of the population - whether this fraction is three networks or five hundred channels almost does not matter by comparison - to a number of channels roughly equal to the number of users. This dramatic increase in the number of channels is matched by the fact that the low costs of communications and production enable anyone who wishes to tell a story to do so, whether or not the story they tell will predictably capture enough of a paying (or advertising-susceptible) audience to recoup production costs. Self-expression, religious fervor, hobby, community seeking, political mobilization, any one of the many and diverse reasons that might drive us to want to speak to others is now a sufficient reason to enable us to do so in mediated form to people both distant and close. The basic filter of marketability has been removed, allowing anything that emerges out of the great diversity of human experience, interest, taste, and expressive motivation to flow to and from everyone connected to everyone else. Given that all diversity within the industrial information economy needed to flow through the marketability filter, the removal of that filter marks a qualitative increase in the range and diversity of life options, opinions, tastes, and possible life plans available to users of the networked information economy.

The image of everyone being equally able to tell stories brings, perhaps more crisply than any other image, two critical objections to the attractiveness of the networked information economy: quality and cacophony. The problem of quality is easily grasped, but is less directly connected to autonomy. Having many high school plays and pickup basketball games is not the same as having Hollywood movies or the National Basketball Association (NBA). The problem of quality understood in these terms, to the extent that the shift from industrial to networked information production in fact causes it, does not represent a threat to autonomy as much as a welfare cost of making the autonomy-enhancing change. More troubling from the perspective of autonomy is the problem of information overload, which is related to, but distinct from, production quality. The cornucopia of stories out of which each of us can author our own will only enhance autonomy if it does not resolve into a cacophony of meaningless noise. How, one might worry, can a system of information production enhance the ability of an individual to author his or her life, if it is impossible to tell whether this or that particular story or piece of information is credible, or whether it is relevant to the individual's particular experience? Will individuals spend all their time sifting through mounds of inane stories and fairy tales, instead of evaluating which life is best for them based on a small and

manageable set of credible and relevant stories? None of the philosophical accounts of substantive autonomy suggests that there is a linearly increasing relationship between the number of options open to an individual - or in this case, perceivable by an individual - and that person's autonomy. Information overload and decision costs can get in the way of actually living one's autonomously selected life.

The quality problem is often raised in public discussions of the Internet, and takes the form of a question: Where will high-quality information products, like movies, come from? This form of the objection, while common, is underspecified normatively and overstated descriptively. First, it is not at all clear what might be meant by "quality," insofar as it is a characteristic of information, knowledge, and cultural production that is negatively affected by the shift from an industrial to a networked information economy. Chapter 2 explains that information has always been produced in various modalities, not only in market-oriented organizations and certainly not in proprietary strategies. Political theory is not "better" along any interesting dimension when written by someone aiming to maximize her own or her publisher's commercial profits. Most of the commercial, proprietary online encyclopedias are not better than *Wikipedia* along any clearly observable dimension. Moreover, many information and cultural goods are produced on a relational model, rather than a packaged-goods model. The emergence of the digitally networked environment does not much change their economics or sustainability. Professional theatre that depends on live performances is an example, as are musical performances. To the extent, therefore, that the emergence of substantial scope for nonmarket, distributed production in a networked information economy places pressure on "quality," it is quality of a certain kind. The threatened desiderata are those that are uniquely attractive about industrially produced mass-market products. The high-production-cost Hollywood movie or television series are the threatened species. Even that species is not entirely endangered, and the threat varies for different industries, as explained in some detail in chapter 11. Some movies, particularly those currently made for video release only, may well, in fact, recede. However, truly high-production-value movies will continue to have a business model through release windows other than home video distribution. Independently, the pressure on advertising-supported television from multichannel video - cable and satellite - on the other hand, is pushing for more low-cost productions like reality TV. That internal development in mass media, rather than the networked information economy, is already pushing industrial producers toward low-cost, low-quality productions. Moreover, as a large section of chapter 7 illustrates, peer production and nonmarket production are producing desirable public information - news and commentary - that offer qualities central to democratic discourse. Chapter 8 discusses how these two forms of production provide a more transparent and plastic cultural environment - both central to the individual's capacity for defining his or her goals and options. What emerges in the networked information environment, therefore, will not be a system for low-quality amateur mimicry of existing commercial products. What will emerge is space for much more expression, from diverse sources and of diverse qualities. Freedom - the freedom to speak, but also to be free from manipulation and to be cognizant of many and diverse options - inheres in this radically greater diversity of information, knowledge, and culture through which to understand the world and imagine how one could be.

Rejecting the notion that there will be an appreciable loss of quality in some absolute sense does not solve the deeper problem of information overload, or having too much information to be able to focus or act upon it. Having too much information with no real way of separating the wheat from the chaff forms what we might call the Babel objection. Individuals must have access to some mechanism that sifts through the universe of information, knowledge, and cultural moves in order to whittle them down to a manageable and usable scope. The question then becomes whether the networked information economy, given the human need for filtration, actually improves the

information environment of individuals relative to the industrial information economy. There are three elements to the answer: First, as a baseline, it is important to recognize the power that inheres in the editorial function. The extent to which information overload inhibits autonomy relative to the autonomy of an individual exposed to a well-edited information flow depends on how much the editor who whittles down the information flow thereby gains power over the life of the user of the editorial function, and how he or she uses that power. Second, there is the question of whether users can select and change their editor freely, or whether the editorial function is bundled with other communicative functions and sold by service providers among which users have little choice. Finally, there is the understanding that filtration and accreditation are themselves information goods, like any other, and that they too can be produced on a commons-based, nonmarket model, and therefore without incurring the autonomy deficit that a reintroduction of property to solve the Babel objection would impose.

Relevance filtration and accreditation are integral parts of all communications. A communication must be relevant for a given sender to send to a given recipient and relevant for the recipient to receive. Accreditation further filters relevant information for credibility. Decisions of filtration for purposes of relevance and accreditation are made with reference to the values of the person filtering the information, not the values of the person receiving the information. For instance, the editor of a cable network newsmagazine decides whether a given story is relevant to send out. The owner of the cable system decides whether it is, in the aggregate, relevant to its viewers to see that newsmagazine on its system. Only if both so decide, does each viewer get the residual choice of whether to view the story. Of the three decisions that must coincide to mark the newsmagazine as relevant to the viewer, only one is under the control of the individual recipient. And, while the editor's choice might be perceived in some sense as inherent to the production of the information, the cable operator's choice is purely a function of its role as proprietor of the infrastructure. The point to focus on is that the recipient's judgment is dependent on the cable operator's decision as to whether to release the program. The primary benefit of proprietary systems as mechanisms of avoiding the problem of information overload or the Babel objection is precisely the fact that the individual cannot exercise his own judgment as to all the programs that the cable operator - or other commercial intermediary between someone who makes a statement and someone who might receive it - has decided not to release.

As with any flow, control over a necessary passageway or bottleneck in the course of a communication gives the person controlling that point the power to direct the entire flow downstream from it. This power enables the provision of a valuable filtration service, which promises the recipient that he or she will not spend hours gazing at irrelevant materials. However, filtration only enhances the autonomy of users if the editor's notions of relevance and quality resemble those of the sender and the recipient. Imagine a recipient who really wants to be educated about African politics, but also likes sports. Under perfect conditions, he would seek out information on African politics most of the time, with occasional searches for information on sports. The editor, however, makes her money by selling advertising. For her, the relevant information is whatever will keep the viewer's attention most closely on the screen while maintaining a pleasantly acquisitive mood. Given a choice between transmitting information about famine in Sudan, which she worries will make viewers feel charitable rather than acquisitive, and transmitting a football game that has no similar adverse effects, she will prefer the latter. The general point should be obvious. For purposes of enhancing the autonomy of the user, the filtering and accreditation function suffers from an agency problem. To the extent that the values of the editor diverge from those of the user, an editor who selects relevant information based on her values and plans for the users does not facilitate user autonomy, but rather imposes her own preferences regarding what should be relevant to users given her decisions about their life choices.

A parallel effect occurs with accreditation. An editor might choose to treat as credible a person whose views or manner of presentation draw audiences, rather than necessarily the wisest or best-informed of commentators. The wide range in quality of talking heads on television should suffice as an example. The Babel objection may give us good reason to pause before we celebrate the networked information economy, but it does not provide us with reasons to celebrate the autonomy effects of the industrial information economy.

The second component of the response to the Babel objection has to do with the organization of filtration and accreditation in the industrial information economy. The cable operator owns its cable system by virtue of capital investment and (perhaps) expertise in laying cables, hooking up homes, and selling video services. However, it is control over the pipeline into the home that gives it the editorial role in the materials that reach the home. Given the concentrated economics of cable systems, this editorial power is not easy to replace and is not subject to open competition. The same phenomenon occurs with other media that are concentrated and where the information production and distribution functions are integrated with relevance filtration and accreditation: from one-newspaper towns to broadcasters or cable broadband service providers. An edited environment that frees the individual to think about and choose from a small selection of information inputs becomes less attractive when the editor takes on that role as a result of the ownership of carriage media, a large printing press, or copyrights in existing content, rather than as a result of selection by the user as a preferred editor or filter. The existence of an editor means that there is less information for an individual to process. It does not mean that the values according to which the information was pared down are those that the user would have chosen absent the tied relationship between editing and either proprietary content production or carriage.

Finally, and most important, just like any other form of information, knowledge, and culture, relevance and accreditation can be, and are, produced in a distributed fashion. Instead of relying on the judgment of a record label and a DJ of a commercial radio station for what music is worth listening to, users can compare notes as to what they like, and give music to friends whom they think will like it. This is the virtue of music file-sharing systems as distribution systems. Moreover, some of the most interesting experiments in peer production described in chapter 3 are focused on filtration. From the discussions of *Wikipedia* to the moderation and metamoderation scheme of Slashdot, and from the sixty thousand volunteers that make up the Open Directory Project to the PageRank system used by Google, the means of filtering data are being produced within the networked information economy using peer production and the coordinate patterns of nonproprietary production more generally. The presence of these filters provides the most important answer to the Babel objection. The presence of filters that do not depend on proprietary control, and that do not bundle proprietary content production and carriage services with filtering, offers a genuinely distinct approach toward presenting autonomous individuals with a choice among different filters that reflect genuinely diverse motivations and organizational forms of the providers.

Beyond the specific efforts at commons-based accreditation and relevance filtration, we are beginning to observe empirically that patterns of use of the Internet and the World Wide Web exhibit a significant degree of order. In chapter 7, I describe in detail and apply the literature that has explored network topology to the Babel objection in the context of democracy and the emerging networked public sphere, but its basic lesson applies here as well. In brief, the structure of linking on the Internet suggests that, even without quasi-formal collaborative filtering, the coordinate behavior of many autonomous individuals settles on an order that permits us to make sense of the tremendous flow of information that results from universal practical ability to speak and create. We observe the Web developing an order - with high-visibility nodes, and clusters of thickly connected "regions" where groups of Web sites accredit each other by mutual referencing.

The high-visibility Web sites provide points of condensation for informing individual choices, every bit as much as they form points of condensation for public discourse. The enormous diversity of topical and context-dependent clustering, whose content is nonetheless available for anyone to reach from anywhere, provides both a way of slicing through the information and rendering it comprehensible, and a way of searching for new sources of information beyond those that one interacts with as a matter of course. The Babel objection is partly solved, then, by the fact that people tend to congregate around common choices. We do this not as a result of purposeful manipulation, but rather because in choosing whether or not to read something, we probably give some weight to whether or not other people have chosen to read it. Unless one assumes that individual human beings are entirely dissimilar from each other, then the fact that many others have chosen to read something is a reasonable signal that it may be worthwhile for me to read. This phenomenon is both universal - as we see with the fact that Google successfully provides useful ranking by aggregating all judgments around the Web as to the relevance of any given Web site - and recursively present within interest-based and context-based clusters or groups. The clustering and actual degree distribution in the Web suggests, however, that people do not simply follow the herd - they will not read whatever a majority reads. Rather, they will make additional rough judgments about which other people's preferences are most likely to predict their own, or which topics to look in. From these very simple rules - other people share something with me in their tastes, and some sets of other people share more with me than others - we see the Babel objection solved on a distributed model, without anyone exerting formal legal control or practical economic power.

Why, however, is this not a simple reintroduction of heteronomy, of dependence on the judgment of others that subjects individuals to their control? The answer is that, unlike with proprietary filters imposed at bottlenecks or gateways, attention-distribution patterns emerge from many small-scale, independent choices where free choice exists. They are not easily manipulable by anyone. Significantly, the millions of Web sites that do not have high traffic do not "go out of business." As Clay Shirky puts it, while my thoughts about the weekend are unlikely to be interesting to three random users, they may well be interesting, and a basis for conversation, for three of my close friends. The fact that power law distributions of attention to Web sites result from random distributions of interests, not from formal or practical bottlenecks that cannot be worked around, means that whenever an individual chooses to search based on some mechanism other than the simplest, thinnest belief that individuals are all equally similar and dissimilar, a different type of site will emerge as highly visible. Topical sites cluster, unsurprisingly, around topical preference groups; one site does not account for all readers irrespective of their interests. We, as individuals, also go through an iterative process of assigning a likely relevance to the judgments of others. Through this process, we limit the information overload that would threaten to swamp our capacity to know; we diversify the sources of information to which we expose ourselves; and we avoid a stifling dependence on an editor whose judgments we cannot circumvent. We might spend some of our time using the most general, "human interest has some overlap" algorithm represented by Google for some things, but use political common interest, geographic or local interest, hobbyist, subject matter, or the like, to slice the universe of potential others with whose judgments we will choose to affiliate for any given search. By a combination of random searching and purposeful deployment of social mapping - who is likely to be interested in what is relevant to me now - we can solve the Babel objection while subjecting ourselves neither to the legal and market power of proprietors of communications infrastructure or media products nor to the simple judgments of the undifferentiated herd. These observations have the virtue of being not only based on rigorous mathematical and empirical studies, as we see in chapter 7, but also being more consistent with intuitive experience of anyone who has used the Internet for any decent length of time. We do not degenerate into mindless meandering through a cacophonous din. We find things we want quite

well. We stumble across things others suggest to us. When we do go on an unplanned walk, within a very short number of steps we either find something interesting or go back to looking in ways that are more self-conscious and ordered.

The core response to the Babel objection is, then, to accept that filtration is crucial to an autonomous individual. Nonetheless, that acknowledgement does not suggest that the filtration and accreditation systems that the industrial information economy has in fact produced, tied to proprietary control over content production and exchange, are the best means to protect autonomous individuals from the threat of paralysis due to information overload. Property in infrastructure and content affords control that can be used to provide filtration. To that extent, property provides the power for some people to shape the will-formation processes of others. The adoption of distributed information-production systems - both structured as cooperative peer-production enterprises and unstructured coordinate results of individual behavior, like the clustering of preferences around Web sites - does not mean that filtration and accreditation lose their importance. It only means that autonomy is better served when these communicative functions, like others, are available from a nonproprietary, open model of production alongside the proprietary mechanisms of filtration. Being autonomous in this context does not mean that we have to make all the information, read it all, and sift through it all by ourselves. It means that the combination of institutional and practical constraints on who can produce information, who can access it, and who can determine what is worth reading leaves each individual with a substantial role in determining what he shall read, and whose judgment he shall adhere to in sifting through the information environment, for what purposes, and under what circumstances. As always in the case of autonomy for context-bound individuals, the question is the relative role that individuals play, not some absolute, context-independent role that could be defined as being the condition of freedom.

The increasing feasibility of nonmarket, nonproprietary production of information, knowledge, and culture, and of communications and computation capacity holds the promise of increasing the degree of autonomy for individuals in the networked information economy. By removing basic capital and organizational constraints on individual action and effective cooperation, the networked information economy allows individuals to do more for and by themselves, and to form associations with others whose help they require in pursuing their plans. We are beginning to see a shift from the highly constrained roles of employee and consumer in the industrial economy, to more flexible, self-authored roles of user and peer participant in cooperative ventures, at least for some part of life. By providing as commons a set of core resources necessary for perceiving the state of the world, constructing one's own perceptions of it and one's own contributions to the information environment we all occupy, the networked information economy diversifies the set of constraints under which individuals can view the world and attenuates the extent to which users are subject to manipulation and control by the owners of core communications and information systems they rely on. By making it possible for many more diversely motivated and organized individuals and groups to communicate with each other, the emerging model of information production provides individuals with radically different sources and types of stories, out of which we can work to author our own lives. Information, knowledge, and culture can now be produced not only by many more people than could do so in the industrial information economy, but also by individuals and in subjects and styles that could not pass the filter of marketability in the mass-media environment. The result is a proliferation of strands of stories and of means of scanning the universe of potential stories about how the world is and how it might become, leaving individuals with much greater leeway to choose, and therefore a much greater role in weaving their own life tapestry.

Notes

1. Robert Post, "Meiklejohn's Mistake: Individual Autonomy and the Reform of Public Discourse," *University of Colorado Law Review* 64 (1993): 1109, 1130-1132.
2. This conception of property was first introduced and developed systematically by Robert Lee Hale in the 1920s and 1930s, and was more recently integrated with contemporary postmodern critiques of power by Duncan Kennedy, *Sexy Dressing Etc.: Essays on the Power and Politics of Cultural Identity* (Cambridge, MA: Harvard University Press, 1993).
3. White Paper, "Controlling Your Network, A Must for Cable Operators" (1999), <http://www.cptech.org/ecom/openaccess/cisco1.html> .
4. Data are all based on FCC Report on High Speed Services, Appendix to Fourth 706 Report NOI (Washington, DC: Federal Communications Commission, December 2003).