STUDENT NOTE

BUILDING SOCIAL NORMS ON THE INTERNET

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This Note examines how architecture, and particularly the design and coding of software on the Internet, helps shape social norms. The Note makes two points about architecture and norms. First, architectural decisions affect what norms evolve and how they evolve. By allowing or facilitating certain types of behavior and preventing others, architecture can promote the growth of norms. On the flip side, architecture not tailored to promote certain positive norms of cooperation or compliance with the wishes of the designer (or in some cases the law) may allow the growth of antisocial norms. Second, because design decisions affect behavior directly as well as indirectly through norms, software engineers must recognize the regulatory function of the code they create. Although online architecture can promote productive social norms, design decisions can also create a backlash by fostering the development of norms that work against the sort of behavior the code is written to promote.

The Note begins by describing how architecture works to regulate behavior in the physical world, examines the leading theories of social norm development, and explores the intersection of architecture and norms. The latter part of the Note transposes the general theory of architecture and norms to the Internet world, first describing the particular features of the Internet—anonymity, dispersion, and the free flow of information—that make the process of norm development different in cyberspace than in physical space, and then turning to two examples, online auctions and digital music, to show how

software engineers have effectively and ineffectively used code to promote the development of social norms.

INTRODUCTION

Law schools, for obvious reasons, lavish attention on law as a regulator of behavior. Since the 1960s and the emergence of the law and economics movement, however, many law scholars have come to regard the basic rules of markets outlined in microeconomic theory as an equal or perhaps more important influence on human behavior than the public law of states or the private law made by individuals. Even more recently, many have come to recognize that non-legal, non-market rules defined broadly under the rubric of social norms also profoundly affect human behavior. Receiving far less attention in legal analysis are the physical constraints that limit human behavior—the architecture of the world.[1]

Lawrence Lessig, in his book *Code and Other Laws of Cyberspace*,[2] outlines the four modalities of regulation—law, markets, norms, and architecture. Law, as he describes, regulates behavior through commands of the form: If you do X (or fail to do X), you will incur penalty Y. Markets create incentives for people to behave in particular ways. Social norms threaten non-legal sanctions for certain behaviors. And, finally, architecture constrains the set of possible behaviors.

Lessig's argument focuses particularly on the architecture of cyberspace: the computer code that turns electrons, semiconductors, and miles of wire and cable into the Internet. Throughout his work, he repeatedly hammers home the point that in cyberspace, code is law.[3] Lessig does not mean that the laws of states or contractual agreements lack meaning in cyberspace, but that the decisions of programmers about

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[1] Professor Neal Katyal's recent work addresses how physical architecture can serve as a tool of crime control. Neal Kumar Katyal, *Architecture as Crime Control*, 111 YALE L.J. 1039 (2002).

[2] LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (1999).

[3] *E.g.*, *id.* at 6.

software design set the rules of the game. Just as the decisions of road planners and bridge builders control where you drive your car and where you cross the river, the decisions of software programmers determine how you receive and send e-mail, view web pages, or conduct business in cyberspace.

This Note examines how the architecture of cyberspace works to influence the development of norms. Generally speaking, when legal scholars refer to social norms they are referring to informal social rules that individuals adhere to because of an internalized sense of duty, because of a fear of external non-legal sanctions, or both.[4] Lessig's influential insight is that the programmers writing the code that runs the Internet have become lawgivers—setting the rules of permissible behavior on the Internet.[5] Neal Katyal has recently made a similar argument about the power of architecture in physical space to influence behavior and prevent crime.[6] Both authors recognize that laws can shape architectural decisions, whether in cyberspace[7] or physical space.[8] That is, while direct legal regulation of behavior can be one tool, legal regulation of architecture, which in turn shapes behavior, is another tool. This Note examines another two-step process: how architecture, in particular the design and coding of software on the Internet, helps to shape social norms. This Note makes twopoints about architecture and norms. First, architectural decisions affect what norms evolve and how they evolve. By allowing or facilitating certain types of behavior and preventing others, architecture can promote the growth of norms. On the flip side, architecture not tailored to promote certain positive norms of cooperation or compliance with the wishes of the

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[4] Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 340 (1997).

[5] LESSIG, *supra* note 2, at 5-6. Lessig recognizes that architecture can operate at a level of indirection, affecting law, markets, and norms. Lawrence Lessig, *The Law of the Horse, What Cyberlaw Might Teach*, 113 HARV. L. REV. 501, 511 (1999). This Note explores how software engineers can and do use code to influence the creation of norms in practice.

[6] Katyal, *supra* note 1.

[7] *See* LESSIG, *supra* note 2, at 90-95;

[8] *See* Katyal, *supra* note 1, at 1090-91.

designer (or in some cases the law) may allow the growth of antisocial norms. Second, because design decisions affect behavior directly as well as indirectly through norms, software engineers must recognize the regulatory function of the code they create. Although online architecture can promote productive social norms, design decisions can also create a backlash by fostering the development of norms that work against the sort of behavior the code is written to promote.

Part I of this Note describes how architecture works to regulate behavior in the physical world and examines the leading theories of social norm development. The last Section of this Part explores the intersection of architecture and norms. In Part II, I transpose the general theory of architecture and norms to the Internet world, first describing the particular features of the Internet that make the process of norm development different in cyberspace than in physical space. I then turn to two examples, online auctions and digital music, to show how software engineers have effectively and ineffectively used code to promote the development of social norms.

I. ARCHITECTURE AND NORMS

A. Understanding Architecture

Architecture can regulate behavior by itself. Once installed, bars over windows prevent entry without the continuing intervention of other individuals. Laws require police officers, prosecutors, and courts; norms require social sanctions imposed by individuals or groups. Architecture, however, once in place, constrains behavior without reliance on *ex-post* enforcement by others. This does not mean architecture is absolute. Some is, of course; bars may be cut and locks picked, but we cannot travel at light speed.[9] Some architecture may not even be intended to constrain absolutely. A two-foot wall around a public plaza channels foot traffic to specific entrances and exits, but anyone can step over the wall.[10] The unifying theme of architecture is

[9] LESSIG, *supra* note 2, at 236.
[10] *See* Katyal, *supra* note 1, at 1058-62.

that it works in the moment. If you circumvent the architecture, other regulators may constrain your behavior but the architecture will not. If you pick the lock on your neighbor's front door, laws against burglary may still constrain you, as will norms of neighborliness, but not the architectural constraint.[11] Architecture acts as an automatic buffer, but once breached, it ceases to operate as a constraint.[12] In addition to being temporally distinct from other forms of regulation (in that its effects do not generally extend beyond its breach), architecture differs from those other forms of regulation in its agency requirements. Architecture may require an agent as a builder, but no agent enforces its commands. The checks of the built environment or the code of the Internet, once in place, work automatically.[13]

This model captures the essential regulatory elements of architecture, but architecture does not operate in a vacuum. Operating by itself, architecture makes for a blunt tool but like legal regulation, which can affect what is built or how markets function, architecture too can work at a level of indirection. In particular, it can powerfully influence the development of norms. Before exploring this relationship, however, I briefly examine different theories of how social norms themselves develop. Then I turn to how architecture can influence the development of norms.

B. Understanding Social Norms

Understanding how architecture affects norms requires first an understanding of how norms develop. Scholars have suggested many theories of norm development, but have failed to reach any convincing consensus—most likely because norms emerge in many and varied ways in many different contexts. This Section outlines several of the leading theories of norm development. The final Section of this Part explores several

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[11] LESSIG, *supra* note 2, at 236-37.

[12] *Id.* Markets can also impose these kinds of ex ante restraints. For instance, you generally must pay first before acquiring goods.

[13] *Id*. at 237. Of course, architecture does not emerge autonomously; markets, norms, and law all influence builders (whether of physical architecture or of code).

examples of how architectural decisions affect norm development.

Norms evolve in many settings and contexts and no single theory is capable of explaining all observed norms. The following sections begin with the classic problem of cooperation between two parties and examine, even absent legal incentives, the reasons people might choose cooperative strategies. I then turn to examine esteem-based theories of norms. Finally, I briefly discuss how social meanings can affect the formation of norms.

1. The Problem of Cooperation

Rational choice theorists proceed on the assumption that people act in rational ways to maximize utility over a reasonably small set of preferences. Put more bluntly—people are wealth-seeking and act rationally to meet that objective. Rational choice in law, typified by the law and economics movement, has not shied away from using social norms as a tool to explain behavior. Unsurprisingly, economics-based theories of norms fit norms within the standard assumptions of law and economics.

In his foundational book, *The Evolution of Cooperation*, Robert Axelrod addresses the question of why people, who tend to look out selfishly for their own best interests, choose in some circumstances to cooperate with one another.[14] The problem of cooperation can be represented by the famous prisoner's dilemma game. In a simple prisoner's dilemma, two actors may either cooperate or defect and fail to cooperate. The result of the classic prisoner's dilemma is that if the game is played just once both parties defect—the worst possible outcome.

The prisoner's dilemma paradigm can be used to describe basic human interactions in any number of settings—for instance, when two people engage in a commercial transaction as buyer and seller. Assuming a fair price exists at which the seller would part with the item and the buyer would want the

[14] ROBERT AXELROD, THE EVOLUTION OF COOPERATION (1984).

item,[15] there will be a gain from trade. However, if the seller misrepresents the value of the item or fails to complete the exchange after receiving payment, she will gain more from the trade. Likewise if the buyer takes the item and never makes the payment he will gain more from the trade. If the two plan to make simply one trade, there is little incentive for them to be straight with one another. However, if the buyer and seller are repeat players engaging in multiple transactions it will serve them well to find a way out of the dilemma and cooperate.

Of course, one way out the prisoner's dilemma is law. Law can change the payoff structure for players in the game.[16] Impose criminal sanctions for fraud and the seller in a commercial transaction will become less likely to misrepresent the value of the item for sale. Likewise, theft and fraud laws will prevent a buyer from taking the item without paying or passing a bad check. But law is not the only way out of the dilemma. Laws are costly and difficult to enforce, and many real world interactions are in practice out of the reach of the law, either because the players are ignorant of the application of the laws or choose not to use them.[17]

A cottage industry has attempted to explain how individuals in the world find ways out of the dilemma without resort to law by examining when and why individuals engaged in repeated prisoner's dilemma situations cooperate. In the next two Sections, I will examine two different models, each deriving, at least in part, from Axelrod's work. These models try to explain how non-legal mechanisms, or social norms, can work to promote cooperation.

2. Reciprocity and Trust

In his study of cooperation, Axelrod discovered that the most effective strategy in an iterated prisoner's dilemma game was "tit for tat." The "tit for tat" strategy involves a player cooperating on the first move of an iterated prisoner's dilemma

[15] That is, the buyer's willingness to pay meets or exceeds the seller's willingness to accept.

[16] *See* AXELROD, *supra* note 14, at 11.

[17] *See generally*, ELLICKSON, ORDER WITHOUT LAW (1991).

and in every subsequent round doing whatever the other player did on the previous move.[18] "Tit for tat" is a strategy of reciprocity. If the other player cooperates, "tit for tat" cooperates; if the other player defects, "tit for tat" defects. If the other player defects tens times in a row, "tit for tat" will defect ten times in a row, but if on the eleventh move the other player finally cooperates, on the following move, "tit for tat" will reciprocate and cooperate.

Axelrod argued that reciprocity would emerge in the long run when conditions allowed two players, through trial and error, to learn about the possibilities for mutual reward. "The foundation of cooperation," Axelrod wrote, "is not really trust, but the durability of the relationship."[19] What matters is not the ability of the two players to trust one another, but whether the relationship will be able to endure a period of errors, until the two players come to recognize the mutual advantages that may be gained from cooperation.[20] As long as the relationship has durability, reciprocal cooperation can and will emerge.

Moving beyond the groundwork laid by Axelrod, scholars have recently begun to thicken the theory of cooperation in collective action settings by looking at problems with a high risk of defection through the lens of trust.[21] The challenge has been to expand beyond the rational-choice model of collective action worked out by Mancur Olson[22] and the two-player prisoner's dilemma game used by Axelrod, and examine how, in collective action settings, players can reach a state of reciprocal cooperation. According to this theory, individuals in collective actions settings cooperate when they trust that others will cooperate.

The new theory of collective action posits that when people perceive that others are behaving cooperatively and

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[18] AXELROD, *supra* note 14, at 13.

[19] *Id.* at 182.

[20] *Id.*

[21] *E.g.*, Symposium, *Trust Relationships*, 81 B.U. L. REV. 321 (2001).

[22] MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION (1965) (arguing that individuals will not act to promote a collective good, but will attempt to free ride on the contributions of others to that collective good).

contributing to some public good, then individuals will themselves contribute to the public good without the need for external motivation.[23] Conversely, when individuals perceive that others are shirking and failing to contribute, then they too will shirk. In short, the more people trust that others will cooperate, the more they will cooperate.[24] Those who distrust that their fellow citizens will cooperate are likely to shy away from contributing to a public good themselves. Moreover, both these situations are self-reinforcing. The more individuals cooperate and contribute to a public good, the more a norm of cooperation will emerge; and others will be inclined to follow. If individuals defect, a norm of selfish failure to cooperate will develop; and individuals will be even less likely to want to contribute in this atmosphere of distrust.

One example of evidence for the trust model comes from observations of tax compliance. If we assume that people act to maximize their own self-interest, then we would expect people to try to evade taxes. Under traditional logic, external sanctions against tax cheating prevent widespread evasion of the tax laws. Yet compliance varies from region to region in a manner uncorrelated with expected penalties for cheating. Dan Kahan suggests that these variations can best be understood through a reciprocity model. The compliance rates, he argues, can be explained by the compliance climate of the community. When individuals believe that others are paying their taxes, and therefore contributing to the public good by filling the public coffers, then they too will pay. When it seems that many are defecting and evading taxes, they will defect and try to cheat as well.[25] In fact, external sanctions can be self-defeating. Highly publicized auditing campaigns have actually provoked higher rates of non-compliance,[26] as the public attention raises public

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[23] Dan M. Kahan, *Trust, Collective Action, and Law*, 81 B.U. L. REV. 333, 334 (2001).

[24] *Id.*

[25] *Id.* at 340-44.

[26] Stephen M. Sheffrin & Robert K. Triest, *Can Brute Deterrence Backfire? Perceptions and Attitudes in Taxpayer Compliance*, *in* WHY PEOPLE PAY TAXES 193, 211-13 (Joel Slemrod, ed. 1992).

awareness of cheating and encourages individuals to reciprocate by cheating themselves.[27] Thus, if the sense of trust and reciprocity evaporates, a norm of compliance can break down.[28]

3. Signaling

Social structures influence the evolution of cooperation. In particular, a player's reputation affects whether others will want to cooperate with him. To the extent that a player can project her good reputation to others, her ability to engage in mutually beneficial cooperation increases. In his recent book, *Law and Social Norms*, Eric Posner attempts to explain how individuals can signal their good reputations. Observed behavioral norms, Posner argues, are the result of individuals signaling their reputations in order to achieve cooperative relationships. [29] Social norms, he claims, are endogenous; they are the label we attach to this signaling behavior.[30] Posner argues that the explanation for non-legal cooperation begins with the observation that people who defect in a prisoner's dilemma situation suffer an injury to their reputations.[31] If you have a bad reputation, people will not want to cooperate with you in the future. Rational choice theory predicts that people who would fail to cooperate in a single prisoner's dilemma game will cooperate if the game is repeated. Thus, for repeat players,

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[27] Kahan, *supra* note 23, at 341-42.

[28] Another example of the trust model at work comes from a study at an Israeli daycare center. Two researchers demonstrated that the imposition of a fine on parents who arrived late to pick up their children did not decrease the incidence of lateness. In fact, lateness increased after the fine was imposed. Even more strikingly, after the fine was removed parents continued to pick up their children late at approximately the same high rate as when the fine was in place. Uri Gneezy & Aldo Rustichini, *A Fine Is a Price*, 29 J. LEGAL STUD. 1 (2000). Although the authors conjecture that the imposition of a fine effectively set a price for lateness that was previously ambiguous, Kahan argues that the persistence of lateness after the removal of the fine was due to a break down in trust. Kahan, *supra* note 23, at 339-40.

[29] ERIC A. POSNER, LAW AND SOCIAL NORMS 8 (2000). Nobel Laureate Michael Spence did important work about the idea of signaling in markets in the 1970s. *E.g.*, MICHAEL SPENCE, MARKET SIGNALING (1973); Michael Spence, *Job Market Signaling*, 87 Q.J. ECON. 355 (1973).

[30] *Id*. at 34.

[31] *Id.* at 15. *See infra* Esteem Theory of Norm Formation, Subsection I.B.4.

there is an incentive to signal that they value future cooperation. Posner argues that people want to have some way to show others that they will cooperate in collective action settings and want to be able to find others with whom to cooperate. Signaling their willingness to cooperate allows people to avoid the potential defectors. Social norms result from this signaling behavior.

There are two ways in which signaling can result in social norms. First, people can engage in costly actions, for example gift giving or shunning people with certain characteristics to signal that they value future payoffs. These actions (costly in terms of the effort or money required to engage in them) become the standard practice (the norm) for those who want to be seen as good candidates for repeat interactions. Second, when people engage in cheap actions, their deviation from the norm will be punished by others who seek to signal their "goodness" by taking the costly action of shunning the people who act in unusual ways.[32] This is the enforcement of the social norm by those who want to signal their attractiveness as good repeat players. People do not have to intend for an action to be a signal for it to be perceived as a signal, as long as people understand certain behaviors, such as gift giving, as a signal that someone values future interactions.[33] A social norm is nothing more or less than the behavior that emerges from those signaling mechanisms. People may eventually internalize these behaviors, but that alone cannot explain why people adopt norms.[34] Although Posner focuses on gifts as the predominant form of signaling behavior, he argues that essentially all behavioral regularities (at least in broadly defined transactional settings) are the result of signals people use to show they are "good."

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[32] *Id.* at 25.

[33] *Id*. at 26-27.

[34] Nor can altruism fully explain this kind of cooperation. POSNER, *supra* note 29 at 39-40.

4. Esteem Theory of Norm Formation

Axelrod explains cooperation within a rational choice framework, and Posner explains norms within a similarly narrow framework. Richard McAdams offers a theory of social norms that, while still based on the rational choice assumption that people act to maximize utility, utilizes a richer conception of preferences than Posner's theory. According to McAdams, norms arise because people derive some independent utility from having good reputations, and thus both value and seek the esteem of others.[35]

The condition for maintenance of a norm is relatively straightforward: "A norm exists as long as the sanctions imposed on violators of the norm create an expected cost for noncompliance that exceeds the expected cost for compliance."[36] The sanctions McAdams has in mind are decentralized, but this sort of nongovernmental enforcement presents a second-order collective action problem. That is, individuals will not take costly steps to enforce a norm unless their contribution is the marginal contribution that prevents the discouraged behavior. The solution to this collective action problem is for people to punish norm violators without cost by withholding the esteem they seek.[37]

McAdams posits that the initial force behind norm creation is an individual desire for respect and prestige.[38] Three conditions, however, must be satisfied before a norm can develop. First, consensus must exist about the positive or negative esteem- worthiness of engaging in a particular behavior. [39] Consensus, of course, may develop around either

[35] McAdams, *supra* note 4.
[36] *Id.* at 352.
[37] *Id*. at 364.
[38] *Id.* at 342.
[39] A difference exists between a behavioral regularity and a consensus. A behavioral regularity may exist in a community without a norm. McAdams illustrates the point with the example of smoking. For instance, most people may refrain from smoking, but there may be no norm against it. Once a consensus opinion against smoking becomes well-known, it creates cost for smokers in terms of lost respect and prestige of their compatriots. McAdams's insight is that these esteem costs have a positive feedback effect. One person's decision to refrain from smoking has the externality of raising the

good or bad behavior—behaviors that society on the whole wants to encourage or discourage. The second condition is that there must be some inherent risk of detection. Because the theory hinges on the low cost of enforcement, in order for a norm to develop around behavior X, a risk must exist that any individual who engages in X will be discovered without anyone bearing the cost of discovery.

Finally, conditions one and two must be widely known—this constitutes a third condition McAdams calls publicity. Within the relevant community of people, both the existence of consensus about the desirability of behavior X and the inherent risk of detection must be well known.[40] According to McAdams, esteem-based norms develop when, for most individuals, the cost in terms of lost esteem of not following the consensus outweighs the actual cost of doing so, and thus most individuals take the less costly route of adhering to the consensus.[41]

5. Social Meaning

Social norm discussions generally focus on behavioral regularities. Some scholars have added another dimension to this discussion by addressing the social meanings of various behaviors.[42] Social meaning theory attempts to add a layer of complexity to behavior-focused norms, and to point out the limitations in simply addressing behavioral regularities without looking at the broader social context.[43] As Lessig puts it:

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cost for others who smoke. That is, the fewer people who follow the norm the more of a pariah a deviant becomes. McAdams argues that individuals value esteem relatively. Thus, the fewer people who engage in a behavior X the more it negatively distinguishes individuals who do X, making X more costly. *See* McAdams, *supra* note 4, at 404-07.

[40] *Id.* at 358.

[41] *Id.* at 364.

[42] *E.g.* Lawrence Lessig, *Social Meaning and Social Norms*, 144 U. PA. L. REV. 2181 (1996); Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903 (1996).

[43] Just what defines a social meaning has been the subject of some debate. To begin with there is a question of whether it denotes an actor's intended meaning or rather the message received by those who perceive another's act. Robert Ellickson has attempted to introduce a clarifying label "social reception" for the latter concept but it does not seem to have stuck. Generally when commentators refer to the social meaning of an action they

"Norm-talk is behavior focused. It asks what a community does. It shares with its frugal father economics the desire to just observe behavior, without the need to understand it. The perspective is external, and from this external perspective, it describes prices, or costs associated with deviating from this regularity. Ordinary behavior is thought to be cheapest; deviance costly."[44]

Incorporating the idea of social meaning into a discussion of social norms offers both descriptive and prescriptive utility. From a descriptive standpoint, understanding the context in which a behavior occurs and the meaning of the behavior in that context will help clarify the social cost or benefit of the behavior. Meaning talk incorporates the expressive nature of the action—that is, it takes account of both the act and the context.

By helping us contextualize behavior and understand that actions carry social meaning, expressive theories can lead to richer descriptions of social norms. But the real benefit, according to proponents of a social meaning approach, is that meaning-centered accounts of norms offer a mechanism to change norms as well as a lens through which to observe them. Once again, Lessig champions the utility of this approach:

> When one is norm-focused, the idea of changing a social norm appears extremely difficult. The rhetoric is always about "evolving customs" and the slow rate of behavioral change. The picture is one of exhorting a group to act differently, and the sense is always of some blob that must be pushed from all sides if it is to be moved at all.[45]

When one focuses on meanings, one is not trapped in a slow evolutionary framework. Understanding the meanings of

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use the term in the outward looking sense. *See* Robert C. Ellickson, *Law and Economics Discovers Social Norms*, 27 J. LEGAL STUD. 537, 549 (1996).

[44] Lessig, *supra* note 42, at 2182-83.

[45] Lessig, *supra* note 42, at 2186.

actions may be the key to understanding how to change behavior.

Most social norm theories suggest that actions carry social costs or benefits. If part of that cost or benefit is tied into not just the act itself, but the contextualized meaning of that act, and meanings can be malleable, this presents an avenue to change the cost or benefit of a particular behavior. For example, fines have an ambiguous social meaning. They can be seen both as a punishment and a price.[46] The former meaning may do more to deter crime than the latter. Dan Kahan has suggested that by tying fines to sanctions with clear meaning, for instance short prison terms or shaming penalties, the state could clarify the meaning of fines as a form of punishment. Fines, of course, are a far less expensive form of punishment than incarceration, and thus potentially a more efficient form of deterrence and retribution (assuming that fines carry a retributive meaning) than prison.[47]

C. The Perverse and Complementary Relationship Between Architecture and Norms

Architecture and norms each work to constrain behavior. So far we have viewed them independently, but this is a mistake as they do not function so. The simplest way to conceptualize the relationship between architecture and norms is to understand architecture as defining the universe of possible behavior. Within the boundaries set by the architecture, norms (as well as law and markets) will regulate which behaviors predominate. Your neighbor's backyard may be easily accessible from the street, but even though architecture allows you to enter the backyard, certain norms against nosiness and invasiveness prevent most people from venturing into others' backyards (the laws of trespass may operate as well).

But this is still too simple. Architecture does more than just define the universe of possible actions. Architecture can

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[46] *Id*. at 2187; Gneezy & Rustichini, *supra* note 28.

[47] *See* Dan M. Kahan, *What Do Alternative Sanctions Mean?*, 63 U. CHI. L. REV. 591 (1996).

facilitate and encourage certain behaviors. A low fence may not keep a determined trespasser out of a backyard, but it may deter trespassers by sending a message about the wishes of the property owner or the acceptable sphere of behavior in the neighborhood.[48] Not every course of action possible within any architecture is equally easy to accomplish. In particular, architecture can facilitate or encourage behaviors that encourage norm formation. For example, signaling may be more or less effective depending on physical constraints. If physical boundaries make it difficult to send and receive gifts for instance or to know from whom the gift came, then individuals are less likely to attempt to signal their intention to be cooperative players.[49] Or, in the case of trust networks, transparency or lack of transparency is critically important.[50]

Architecture can foster the formation of bad norms for all the same reasons that it can aid the formation of positive norms. Behavior must be visible in order for people to earn esteem (in other words, if no one knows what you are doing, you can't earn any esteem points). Thus, transparent architecture, by allowing easy monitoring, can help to promote esteem-based norms. Opaque architecture can hinder development of these norms and, to the extent that transparency allows people to see widespread *bad* behavior, a transparent architecture will allow a consensus to develop around the appropriateness of this bad behavior. Similarly, transparency may lead to the formation of good or bad trust-based norms. What matters in the trust model is what people *think* others are doing. That is, if everyone is defecting, but people believe that everyone is cooperating, then a trust model predicts cooperation. In this case, an architecture of transparency will hinder the formation of a norm of cooperation and likely lead to widespread noncompliance. If everyone is cooperating but people believe that defection is

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[48] *See* Katyal, *supra* note 1, 1058-62 (discussing territoriality); *id*. at 1083-86 (discussing the social meaning of architecture).

[49] *See supra* Signaling, Subsection I.B.3.

[50] *See supra* Esteem Theory of Norm Formation, Subsection I.B.4.

commonplace, then a transparent architecture will foster a norm of cooperation.

The most complex possible relationship between architecture and norms is when the social meaning of the architecture conveys a message directly contrary to the purpose of architecture itself. The purpose of bars or boards on windows is to prevent entry. But, as James Q. Wilson and George Kelling's broken windows theory suggests, the expressive meaning of those bars is "I don't trust people" or "I believe this is a high crime area".[51] Boarding up windows will make criminally entering a building more difficult, but it may add to the overall crime rate of the neighborhood. The purpose of the architecture, to reduce crime, is at odds with the effect the meaning of the architecture has on the norm of law-abidingness in the neighborhood.[52]

This is different from the architecture fostering good or bad norms. Architecture can act as a facilitator of certain behaviors, or it can make certain preconditions for good norm formation difficult to attain, but in both these roles the architecture does not have an independent meaning. Architecture, like action, in many instances carries a social meaning. This social meaning can work toward the creation of a norm that endorses precisely the behavior the architecture itself is designed to restrict.

Of course, the architectural meaning and purpose do not have to have counter effects. An architectural decision can be made with its meaning in mind. Both a barbed wire chain link fence and a decorative brick wall can protect property from intruders—their architectural purpose is essentially the same. But the decorative brick wall is more likely to send a social meaning of wealth or law-abidingness, while the barbed wire fence may send a message of fear of crime.[53] The latter could negatively affect a norm of compliance of the law in the neighborhood. When individuals design architecture that will

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[51] James Q. Wilson & George L. Kelling, *Broken Windows*, THE ATLANTIC MONTHLY, Mar. 1982.

[52] *See generally* JANE JACOBS, THE DEATH AND LIFE OF GREAT AMERICAN CITIES (1961) (describing the effects of architecture and urban planning on life in cities).

[53] *See* Katyal, *supra* note 1, at 1084-85.

regulate behavior, they must bear in mind not only the purpose of the architecture but its meaning as well.

II. CYBERSPACE

Larry Lessig argues that computer code, the architecture of cyberspace, works as a powerful regulator of behavior. Lessig, however, is deeply skeptical about the prospect of a cyberspace regulated purely by code. He bristles against the possibility of perfect control over intellectual property, in which authors through code can control who has access to their works, how and when they can copy the intellectual property, and even how often they themselves may view the work.[54] Lessig describes the prospect of "trusted systems," computer systems that use encryption to control intellectual property rights online. "[S]ystems would exchange information only with others that could be trusted, and the protocols of trust would be built into the architecture of the systems"[55]

Lessig fears these kinds of trusted systems will erode the doctrine of fair use in copyright law and the possibility of an intellectual "commons."[56] But he believes that they may become our future. That is, code has the potential to be a complete regulator of human behavior. Although trust networks in the physical world evolve through complicated non-legal systems, in cyberspace trust can be coded. In physical space, people may cooperate when they think others cooperate; in the most extreme vision of cyberspace, people will cooperate only when the code builds that trust into the environment. With the code-centric vision, the question becomes how we can manage code. The central message of the trusted system, which Lessig and others describes as a potential future for intellectual property on the web, is that code can govern behavior completely.[57]

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[54] LESSIG, *supra* note 2, at 127.
[55] *Id.* at 129.
[56] *Id.* at 130, 141.
[57] *Id.* at 130.

But code cannot carry the regulatory burden alone, even in cyberspace. As cyberspace has developed, and as I will illustrate with several examples, regulation in cyberspace has evolved not simply through clever engineers imposing ironclad rules on users—coding trust, for instance—but also through clever engineers using code to influence the development of social norms of cooperation. To be sure, engineers can in some cases use code to regulate behavior in cyberspace directly,[58] just as builders can use physical architecture to control behavior.[59] But my claim is that, as in the physical world, Internet code as a direct regulator of behavior is only the first step. In some cases, it is simply ineffective;[60] in other cases, it is either less effective or more costly than another technique that calls for using software design to foster particular norms. Using architecture to create norms is difficult business. Sometimes designers may be able to consciously harness design to promote certain behaviors, but in other cases the effect of the architecture on norms may be unanticipated or contrary to the designer's intentions.[61] To understand how code can be used not only to regulate behavior directly but to influence and manage how cyberspace norms develop, I first examine how particular features of cyberspace affect norm formation. I then address through two examples, online auctions and digital music, how code-design decisions affect the formation and perpetuation of norms in cyberspace.

A. Norms in Cyberspace

Within the world of legal scholarship, a debate has percolated over the validity of studying cyberspace. Judge Easterbrook has likened the law of cyberspace to the law of the

[58] Lessig's strong claim is that code is a hyper-effective regulator (and that its writers are largely unregulated and commerce-driven). *Id.* at 6.

[59] *See* Katyal, *supra* note 1.

[60] *See infra* notes 101-108 and accompanying text (describing the difficulty of using encryption technology to protect against unauthorized copying of digital music files).

[61] *See supra* notes 51-53 and accompanying text (describing how architecture and norms can have contrary effects).

horse.[62] And perhaps as the ubiquity of the Internet has spread over the last half decade, the argument for Internet exceptionalism has shrunk. The Internet may be just another revolutionary technological innovation like the telephone, and maybe there should not be a separate law of cyberspace any more than a separate law of the horse. In some respects this is no doubt true, and increasingly so as the Internet has ceased to be a separate community of like-minded computer aficionados and has become a tool for the general population. But cyberspace differs in several critical way from *terra firma*, and these differences have a profound effect on the formation and maintenance of norms. Most importantly, to a far greater degree than in the physical world, cyberspace can foster anonymity.[63] Secondly, while the traditional notion of a community contemplates people living or working or interacting in close proximity, in cyberspace members of a community may live and work at great distance from each other and may share no interactions outside of the Internet. Finally, information in cyberspace flows more quickly, more widely, and at lower cost than information transmitted by other means. These three features—anonymity, dispersion, and information flow—influence how norms develop in cyberspace.

1. Anonymity

Anonymity exists at several levels in cyberspace. Complete anonymity hides all meaningful information about the Internet user from all other users. When the University of Chicago began to offer Internet service, it granted access to users in a completely anonymous fashion. Anybody with a computer and an Ethernet connection could plug into any jack located across

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[62] *See* Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207. The point is that while there are many cases involving horses studied in law school, there is no law of the horse.

[63] *See* Ian C. Ballon, *The Law of the Internet: Developing a Framework for Making New Law*, 2 CYBERSPACE LAWYER 63 (1998); April Mara Major, *Norm Origin and Development in Cyberspace: Models of Cybernorm Evolution*, 78 WASH. U. L.Q. 59, 97 (2000). The Internet is a venue for anonymity in the traditional sense of a lack of personal identification, but it can also in certain contexts promote nonanonymity. *See infra* note 67.

the university and obtain access to the Internet. Network administrators at the university had no information about the user.[64] Lessig uses the example to show the repercussions of an architecture decision by university network administrators and the difficulty of rule or legal regulation of a network inhabited by completely anonymous users. However, this form of completely anonymous access to or use of the Internet is shrinking. In general, obtaining Internet access from universities, corporations, or commercial Internet service providers requires disclosure of a good deal of personal information.[65] Very few users roam the Internet in total anonymity.

Breaches of anonymity also occur at a higher level of interaction than Internet access providers. Many web sites require some form of registration to gain admission. A user may be able to provide false information to protect her true identity, but she will lose the complete veil of anonymity. Many web sites also track visitors by placing a "cookie," a small file, on the user's hard drive. The cookie allows the website owner to keep track of when the user visits the site.[66]

Complete anonymity may be nearing extinction in cyberspace,[67] yet a more important form of anonymity persists in cyberspace—pseudonymity. While a user's true identity may be safely ensconced in the database of the Internet service provider, this information is not easily available to most people with whom a user interacts online, because most users adopt pseudonyms for various tasks in cyberspace. E-mail constitutes an obvious example. Although some systems assign e-mail

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[64] LESSIG, *supra* note 2, at 26.

[65] Universities including Yale require users to register their machine with network administrators before receiving an Ethernet address necessary to access the Internet. Commercial Internet service providers collect personal information for billing and marketing purposes. Even free Internet service providers assemble a good deal of personal information about their users.

[66] Web browsers like Internet Explorer allow users to change their settings to decline cookies. Users who do not adjust the default settings will receive cookies, and some websites will not function properly if the browser is set to reject cookies.

[67] In fact, the ability to keep track of users activities may be one cyberspace's most invasive features into personal privacy. *See* LESSIG, *supra* note 2.

addresses or aliases based on a user's real name, most commercial e-mail services allow users to choose an e-mail pseudonym. Determining the source of an e-mail from "britney554@aol.com" would be immensely difficult.[68] In addition to e-mail, users may use aliases in chat rooms, mailing lists, and for registration at e-commerce sites from eBay to the *New York Times* online.[69]

Anonymity is not an inherent feature of cyberspace. Like many other facets of the Internet, it results from conscious design decisions in the code of basic Internet protocols, of Internet service providers, and of websites. This design has implications for the development of norms online. Social norms develop when individuals anticipate repeated interactions with others in the community (whether a close knit community or not[70]). If identities are malleable, communities will be unable to track individuals and enforce social sanctions on norm violators (or bestow social benefits on norm compliers).[71]

If individuals are able repeatedly to assume new identities, enforcement of social norm obligations will become impossible. If the code makes Internet pseudonyms difficult to alter, the problems of anonymity will dissolve to some extent. People may operate under assumed identities in cyberspace, but as long as they must continue to operate under the same assumed identity, and as long as they value being ongoing members of that community, they will adhere to the obligations imposed by the norms of the community (AOL, eBay, a USENET

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[68] Major, *supra* note 63, at 98.

[69] *Id*. at 99. Information linking the aliases with a true identity is available to courts or to some people through legal mechanisms (for instance, the Digital Millennium Copyright Act, gives copyright holder the right to ask a court to force the revelation of the identity of users allegedly infringing a copyright, 17 U.S.C.A. § 512(h)(i) (West Supp. 2000)) but that does not change the basic fact that for most users in most interactions an alias provides a good deal of anonymity.

[70] Ellickson believes social norms tend to develop and dominate legal controls in close knit communities. *See* ELLICKSON, *supra* note 17. Richard McAdams argues that esteem-based norms can develop even in much broader communities. *See* McAdams, *supra* note 4.

[71] *See* Helen Nissenbaum, *Securing Trust Online: Wisdom or Oxymoron*, 81 B.U. L. REV. 635, 647 (arguing that the lack of information about online identities will hinder the creation of trust).

newsgroup, and so forth). However, to the extent that Internet norms spill over into the outside world, the anonymity or pseudonymity available in cyberspace will hinder the formation and perpetuation of norms. As long as individuals are able to maintain separate cyberspace personas, the norms of the Internet are likely to remain indigenous to the 'Net. Internet-based norms are most likely to spill over into the outside world when actions online and in the physical world are very similar and individuals maintain the same personas in both worlds.

2.Dispersion

Anonymity is the result of particular design choices in the creation of the Internet. The fact that users of the Internet live in widely dispersed areas is a feature of physical reality. Different code design could change that feature of the Internet: designers could have built the Internet or set up basic protocols only to allow communication between computers in fixed geographic regions, or more Internet service providers could provide anonymous access, like the University of Chicago, instead of regulated access like America Online, without changing the essential features of the Internet. But a geographically confined network, although it could be built (and indeed many businesses build internal networks confined to a single building or set of buildings), would mean a very different notion of cyberspace than what we have today.

Dispersion is at once important and irrelevant to norm formation in cyberspace. On one hand, to the extent that norms evolve among communities on the Internet itself, the fact that users may live across the country or across the world from one another is unimportant. It has become a cliché to say the Internet breaks down barriers, but by allowing a widely dispersed set of people to interact with one another, the Internet does just that. Scholars debate the extent to which communities must be closely knit to support strong social norms. For instance, Ellickson argues that non-legal rules will predominate only in close knit communities,[72] while McAdams contends

[72] ELLICKSON, *supra* note 17.

that esteem-based norms can act across much broader communities.[73] To the extent, however, that certain norms exist solely on the Internet, the fact that individuals may physically reside far from one another makes little difference. Users of chat rooms participate in the community of that chat room regardless of where they live. However, if Internet norms reflect or affect norms in the physical world, the physical separation of users may impede the development of norms, particularly if the norms in question depend on tightly knit communities.

Dispersion also reinforces the notion of anonymity online. Not only may an individual conceal her identity behind a user name, but others who interact with the individual have no idea whether the user lives next door or in another state or country.[74] "Britney554@aol.com" could be anywhere.

3. Free Flow of Information

The Internet allows information to flow cheaply and quickly between users. This rapid dissemination of information can enhance norm formation. Esteem-based norms rely on the development of consensus about the value of certain behaviors. The ease of dissemination could enhance the formation of a consensus,[75] and it may also help to publicize the existence of consensus.[76] This should lead to a more rapid evolution of norms on the Internet. Free flow of information, however, is a double-edged sword. Too much information can obscure a consensus, make publicization of the consensus difficult, or prevent detection of deviants whose actions will be lost in the mass of information.

While some have pointed to the free flow of information as a linchpin of Internet norm formation,[77] the Internet is really only another incremental step in a long series of technological innovations that have increased the availability of information, from the telegraph and telephone to television. Nonetheless, the

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[73] McAdams, *supra* note 4.
[74] *See* Ballon, *supra* note 63, at 65-66.
[75] Major, *supra* note 63, at 102.
[76] *See* McAdams, *supra* note 4, at 358.
[77] *See* Major, *supra* note 63, at 103.

ability to send and receive vast amounts of information cheaply and easily forms one of the basic contours of the architecture of the Internet and thus must be reckoned with in any theory of norm development online.

B. The Internet Community: Norm Formation in Cyberspace Through Code

This Section looks at two concrete examples of how architecture and norms interact in cyberspace. The first example is the online auction site eBay, which uses code design to facilitate the creation of norms that foster compliance with contracts. The second case, digital music, serves as an example of architecture that fails to promote norms of compliance with copyright law, and, in fact, in the void, fosters norms of noncompliance.

1. Online Auctions

The architecture of online auction sites fosters the development of norms of compliance with contracts made online by allowing users to translate norm creation methods from the physical world into cyberspace. One of the most important and pervasive types of social norms are those that facilitate economic production, including compliance with contracts.[78] The problem confronting software designers is how to translate such general compliance norms to cyberspace. eBay, as well as other online auction sites,[79] attempt to solve this problem through architecture by writing code that facilitates the kind of communications between individuals that leads to the development and enforcement of norms.[80]

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[78] William K. Jones, *A Theory of Social Norms*, 1994 U. ILL. L. REV. 545, 545.

[79] Most major online auction sites employ design strategies similar to eBay's that emphasize fostering accountability and community among users. *See, e.g.*, Yahoo, Yahoo Auctions, *at* http://auctions.yahoo.com (last visited Mar. 3, 2002); Amazon.com, Amazon.com Auctions, *at* http://www.amazon.com/auctions (last visited Mar. 3, 2002).

[80] Of course the designers of sites such as eBay do not operate in a vacuum. Code designers operate under the norms of software engineering and the demands of the market. But those demands, particularly the market demands, simply call for designing a site that facilitates successful online auctions. The features employed reflect a decision to use the design to foster norms of cooperation in transactions.

Commentators have noted that individuals comply with contractual obligations even in the absence of formal mechanisms to enforce agreements and often without reliance on formal mechanisms when they do exist.[81] Some who suggest that in the legal realm, little differs between cyberspace and physical space,[82] might also suggest that norms governing compliance with agreements apply equally well in cyberspace. I disagree. Whatever theory or theories of norm development you adopt, the particular features of Internet communities—anonymity and dispersion of individuals—make norm development and enforcement difficult.

Online anonymity frustrates the development of the norms that emerge when people sense the possibility of long-term cooperation and have a way of punishing defectors. If there is no way to track who defects, the problem of cooperation will revert to a one time prisoner's dilemma problem where the rational choice is defection. If participants have no idea who their trading partner is or whether she deserves trust, people may be unlikely to reciprocate good behavior and an environment of trust will not develop.[83] Similarly, if individuals who participate in auctions have no way of accruing esteem, they will have no incentive to forego short term gains of defection for the long-term gains in esteem.[84]

One model for enforcement would be a code-centric model. Code designers could build in mechanisms that would allow only reputable or trustworthy people to trade on eBay. Or they could build controls into individual transactions that would prevent fraud (such as requiring escrow payments).[85] However,

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[81] Jones, *supra* note 78, at 550.

[82] *See* Easterbrook, *supra* note 62, at 207 (suggesting that general legal rules apply equally well to cyberspace and that there is no need to develop a separate legal structure for cyberspace just as there is no need to develop a separate set of legal rules to govern things involving horses).

[83] *See supra* notes 18-28 and accompanying text.

[84] *See supra* notes 35-41 and accompanying text.

[85] EBay does offer insurance to buyers for fraud. Transactions are insured against fraud for up to $200 (minus a $25 deductible). A buyer who proves fraud by a seller for a $500 item will receive $175. EBay, Fraud Protection Program, *at* http://pages.eBay.com/help/community/insurance.html (last visited Mar. 29, 2002). This

eBay and similar auction sites have addressed the problem of defection less through code than by trying to incentivize or encourage good behavior through code design choices that facilitate norms of cooperation in transactions.

Trading on eBay requires several steps. First a potential user must register. eBay is a pseudonymous community, so a user must select a user ID—her eBay identity—and create a profile for that user ID that includes her real name. eBay has responded to the problem of pseudonymity in two ways. First, users can pay $5 to obtain "verified" user IDs. These users receive a special symbol next to their name, which verifies that the user is who she says she is and therefore denotes trustworthiness to potential trading partners.[86] Second, to address the problem of malleability, eBay has instituted a creative solution designed to deter, but not prohibit frequent changes. Users may change user IDs, but if they do so an icon of a pair of "shades," dark sunglasses, appear next to the new user ID for thirty days.[87] This is an example of a code feature of the site that carries what I have described as architectural purpose and architectural meaning. The purpose of this code design is to mark users who change their IDs, "to help you tell other eBay users about your new look."[88] But the choice of icon also carries a social meaning. By selecting a pair of sunglasses and referring to them as "shades," the designers send a message that a user bearing the symbol has something to hide. The icon sends a message to other users, giving them fair warning that the individual they are dealing with has changed identities.

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insurance program, however, does not aim to prevent fraud (it does not have any deterrent effect on sellers), but to offer buyers some degree of protection (and thereby encourage them to buy through eBay).

[86] eBay, ID Verify, *at* http://pages.eBay.com/services/buyandsell/idverify-login.html (last visited Mar. 29, 2002).

[87] eBay, Change User ID, *at* http://cgi3.eBay.com/aw-cgi/eBayISAPI.dll?ChangeUserId (last visited Mar. 3, 2002). A user could, of course, reregister completely as different person as long as they had a new e-mail address and mailing address.

[88] EBay, Change User ID, *at* http://cgi3.eBay.com/aw-cgi/eBayISAPI.dll?ChangeUserId (last visited Mar. 3, 2002).

eBay has responded to the malleability of identity in cyberspace not by a code decision that attempts to make identity change impossible, but by a code decision that attempts to use informal social mechanisms to control identity change. The "shades" icon works in two ways. First it carries some kind of negative social meaning—the wearer is a shady fellow. This deters the disfavored behavior of ID changing. Second, it works at a level of indirection, by facilitating norm development. Under a trust theory of norms, the shades denote untrustworthiness or, in a McAdams framework, they might suggest negative esteem. Users will want to avoid changing IDs unless necessary in order to avoid losing esteem or incurring potential sanctions against untrustworthy individuals.

The user ID control is one clever use of architecture to influence behavior. But the most important feature of the eBay architecture that seeks to control behavior through norms is the elaborate feedback system.[89] Under the feedback system, once they have completed a transaction, the buyer and seller can rate one another.[90] When a user receives a positive feedback comment, she accrues one point; when she receives a negative feedback comment she loses one point. When users accrue more than ten points they receive a star icon next to their user IDs. This icon appears when they are bidding on or selling an item on the system. Users who accrue even more points get different colored stars to show that they have been particularly well received by trading partners.[91] Users may also elect to allow others to view their feedback profiles. These profiles include not only the number of points they have accrued, but

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[89] Most major auction sites, including Yahoo, Excite, and Amazon.com auctions employ some sort of feedback system similar to the eBay system described here. *See, e.g.*, Amazon.com, *supra* note 79; Excite, Excite Auctions, *at* http://www.excite.com/?PG=home&SEC=feat (last visited Apr. 10,2001); Yahoo, *supra* note 79.

[90] *See* eBay, The Feedback Forum, *at* http://pages.eBay.com/services/forum/feedback.html (last visited Mar. 3, 2002). That is, you may not give feedback to another user unless you complete a transaction with that user by placing the winning bid on an item she is selling or receiving the winning bid from her on your own item. A user may also respond to other's comments about her.

[91] *Id.*

also all the feedback comments made about a user and any responses to that feedback posted by the user herself. eBay explains the purpose of the feedback forum in its user agreement: "Because user authentication on the Internet is difficult, eBay cannot and does not confirm each user's purported identity. Thus, we have established a user-initiated feedback system to help you evaluate with whom you are dealing."[92] The feedback system is an architectural solution to the inherent problem of anonymity in cyberspace.[93] Rather than using code to address the problem directly, eBay uses code to facilitate social norms that develop in transactional settings outside cyberspace.

The feedback system is simply a mechanism for conveying information about past behavior. Axelrod emphasizes the importance of knowledge of past behavior. "It is essential that the players are able to observe and respond to each other's prior choices. Without this ability to use the past, defections could not be punished, and the incentive to cooperate would disappear."[94] Axelrod emphasizes the importance of a durable relationship in which, over time, the players could gather information about one another. The star system makes that information more transparent and readily available, and allows a buyer or seller to gather information about her potential trading partner from past trading relationships with different partners.

If you develop a positive reputation within the eBay community as someone who cooperates in transactions, people will want to do business with you in the future. In addition, acquiring a star becomes an independent way to gather esteem. People will want to cooperate in order to build points in their feedback accounts. And because unhappy traders can sanction their partners, users who care about their feedback rating have

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[92] EBay, User Agreement § 3.2, Safe Trading, *at* http://pages.eBay.com/help/community/png-user.html (last visited Mar. 3, 2002).

[93] *Id.*; *see also* Sirkka L. Jarvenpaa & Emerson H. Tiller, *Customer Trust in Virtual Environments: A Managerial Perspective*, 81 B.U. L. REV. 665, 683 (2001) (noting eBay's use of a reputational system as a control and deterrent device).

[94] AXELROD, *supra* note 14, at 182.

an incentive to cooperate. In addition, individuals who browse through auctions on the eBay site are likely to see colored stars (denoting positive feedback received) next to most of the sellers. Many of the sellers have aqua, purple, or red stars, denoting over 100, over 500, or over 1000 positive feedback points respectively.[95] A user who visits an auction site and is bombarded by stars receives a message that she has entered a community where people cooperate in transactions. Just as the taxpayer who feels that others are paying their taxes and contributing to a common good will pay her taxes,[96] the potential buyer who sees that others in the community have played fair and cooperated in other transactions is likely to reciprocate and play fair when she engages in a transaction within the community. eBay recognizes the importance of the community aspect of the feedback by preventing importation of feedback from other web auction sites.[97] By doing this, eBay isolates its community from other web communities. This architectural decision may be a double-edged sword, as it may prevent the formation of wider norms of compliance in online private transactions, but it also ensures users that reputations, as expressed in a user's feedback profile, were earned on the eBay system.

eBay also offers more formal mechanisms, such as an escrow service, to protect buyers and sellers, but the primary means of regulation is social. If you defect, you receive negative feedback. Other users see your negative feedback and may refuse to trade with you. In addition, eBay suspends users who

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[95] EBay, The Star Chart, *at* http://pages.eBay.com/help/myinfo/star-chart.html (last visited Mar 4, 2002).

[96] *See* Kahan, *supra* note 23.

[97] The User Agreement explains that "[b]ecause feedback ratings are not designed for any purpose other than for facilitating trading between eBay users, you agree that you shall not market or export your eBay feedback rating in any venue other than eBay. EBay User Agreement § 8.1, Export, *supra* note 92. Similarly, eBay explains, "We do not provide the technical ability to allow you to import feedback from other websites to eBay because a composite number, without corresponding feedback does not reflect your true online reputation within our community." EBay User Agreement § 8.2, Import, *supra* note 92.

reach a feedback rating of negative four,[98] meaning that four separate transactions have resulted in negative feedback. Imposing a top- down sanction in those extreme cases where informal social sanctions fail constitutes a form of rule-based regulation. I do not intend to suggest that informal social norms are the only effective means of regulation in cyberspace. Legal or code-based rules can also be effective. I simply point out that, rather than use code as *law*, code designers can foster the creation of norms that can effectively regulate behavior. The code does not prevent bad behavior, it merely gives users a way to create a social system that disfavors it.

Online auctions represent a successful use of code working at a level of indirection to create necessary conditions for the evolution of positive social norms. The next Subsection, on digital music, discusses both the limits of code as a direct means of control and the seeming intractability of social norms condoning the widespread copying of copyrighted music and argues (1) that code solutions, even if they fail to enforce compliance with copyright rules, may foster the development of positive social norms, and (2) that this norm of noncompliance with copyright law may not be as sticky as it might seem.

3. Digital Music and File Sharing

This Subsection explores two norm problems relating to digital music and file sharing, the first involves the lack of a norm against illegal file copying, and the second involves the behavior of individuals who share music online. Both cases demonstrate how particular design features of code affect norm development.

The recent litigation over Napster and MP3.com has made the regulation of digital music a hot topic.[99] Napster and other file sharing services flourished because the architecture of the Internet and the design of digital music files (as well as most other file types) permit users to easily copy and distribute the

[98] User Agreement § 8, Feedback, *supra* note 92.

[99] A&M Records v. Napster, Inc., 239 F.3d 1004 (9th Cir. 2001); UMG Recordings, Inc. v. MP3.com, Inc., 92 F. Supp. 2d 349 (S.D.N.Y. 2000).

files. Legal disputes arise when people take advantage of the ease of copying and distribution facilitated by the Internet's architecture and violate copyright law by giving away copies of music (or other copyrighted material) without paying royalties.

In physical spaces, of course, architecture does not always preclude illegal behavior, but it can work in more restrictive ways than it does in the context of cyberspace. In the physical record store, architecture makes stealing music difficult but not impossible. CDs sit in bulky plastic cases, and are often magnetized to set off a store alarm if taken out the door. Video cameras may survey aisles. These architectural features of the store deter criminal activity. Legal enforcement is also a threat. Laws prohibit shoplifting and the probability of being caught is very real especially when the architecture includes detectors and vides cameras. Additionally, norms operate in the physical world that encourage compliance with the criminal law. People may refrain from stealing CDs not necessarily because they fear detection but because they have an internalized sense of right and wrong that makes them averse to shoplifting.[100]

In the realm of digital music as currently designed, architecture has not proven an effective means of regulation. Nor has the law functioned particularly well. Although successful lawsuits have been brought against Napster[101] and MP3.com,[102] defenders of peer-to-peer networks often point out how difficult it will be for law to regulate online music sharing. As Napster lawyer David Boies explained to the *New York Times*: "No industry, and no government, can control the Internet. . . . If the R.I.A.A. succeeds in the U.S., they will simply drive Napster-like services to other countries. And as long as services are free to consumers, there is nothing the

[100] This is not to say the before the Internet there was no illegal copying of music on audio cassette recorders. The advent of the Internet and the MP3 file format, however, made this activity quicker and easier, and the quality of digital copies (unlike audio cassette copies) does not degenerate with additional copying.

[101] *Napster*, 239 F.3d 1004. On March 2, 2001, Napster announced that it would change its code to prevent users from sharing certain files named in the copyright law suit. Matt Richtel, *Napster To Start Blocking Access to Protected Music Files*, N.Y. TIMES, Mar. 3, 2001, at C1.

[102] *MP3.com*, 92 F. Supp. 2d 349.

R.I.A.A. can do about it."[103] Boies has a point. Because the Internet crosses national boundaries and because many services (unlike Napster) have no central control,[104] legal regulation may not adequately control the copying of music files. Though the law has managed to control Napster, it has not managed to control the general phenomenon of peer-to-peer file sharing.[105]

Commentators debate the effectiveness of using code to regulate file copying. Lessig has argued that code solutions will be so effective at protecting intellectual property that the danger is not widespread copyright violation, but over-protection of intellectual property.[106] In one sense, Lessig's doomsday predictions appear to be moving forward. For instance, the music industry has set up a group, the Secure Digital Music Initiative, to design a digital watermark to label recordings and set standards for players to distinguish between legally and illegally copied material.[107] Others feel that this faith in technological barriers is misplaced. No sooner had the industry group posted its standards than a group at Princeton announced they had broken the code. The leader of the group, Princeton computer science professor Edward Felten, pointed out the limits of encryption solutions, telling a reporter, "Right now, technology is not the answer."[108]

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[103] Matthew Mirapaul, *Is it Theft or Is it Freedom? 7 Views of the Web's Impact on Culture Clashes*, N.Y. TIMES, Sept. 20, 2000, at 42.

[104] Gnutella, Morpheus, and Limewire are all examples of a pure peer-to-peer sharing system where no information resides on a central system. Users access the system by connecting to another individual connected to the network. *See* Gnutella, *at* http://www.gnutella.com (last visited Apr. 10, 2002); Limewire, *at* http://www.limewire.com (last visited Apr. 10, 2002); Morpheus, *at* http://www.morpheus-os.com (last visited Apr. 10, 2002).

[105] *Napster*, 239 F.3d 1004.

[106] LESSIG, *supra* note 2, at 127.

[107] RIAA/Music & the Internet, Overview, *at* http://www.riaa.org/Music-SDMI-1.cfm (last visited Apr. 12, 2002).

[108] John Sullivan, *Cracking the Code, Musically*, N.Y. TIMES, Nov. 5, 2000, at sec. 14NJ, p. 6. Of course, more than code and norms were at stake for Professor Felten. He and his colleagues were threatened with litigation by the SDMI for violating the anti-circumvention restrictions of the Digital Millennium Copyright Act (DMCA), 17 U.S.C. § 1201 (Supp. V 1999). For a discussion of Felten's case and a critique of the anti-circumvention provisions of the DMCA, see Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575, 1647-49 (2002).

Programs that circumvent code-based protection systems are, in fact, quite common. One example that resulted in litigation is the Streambox VCR program.[109] The program allowed users of RealNetworks streaming audio or video to record the content for later use and to make unauthorized copies by disabling the Copy Switch, a feature of the RealNetworks software that controls whether users may download files and make additional copies of those files.[110] RealNetworks was able to shut down Streambox through litigation,[111] but the litigation process is costly and inefficient, and it would be an uphill battle for a company to win injunctions against every producer of technical circumventions and access control devices.[112]

Although many will continue to debate the feasibility of technological solutions, it is likely that, as in the physical context, architecture can directly regulate behavior in cyberspace, but that savvy or determined individuals or enterprises, like Felten or Streambox, will be able to subvert architectural barriers. Just as a determined burglar could cut through bars on a window, the determined computer programmer can break a digital code preventing file copying. Like bars on window, an encryption regime must be managed carefully to avoid the problem of architecture working against the development of positive norms. A "trusted system"[113] could send a message of distrust that challenges hackers to break through the digital wall.

For this reason, focusing on code alone is a mistake. Effective regulation must instead depend on changing a social

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[109] RealNetworks, Inc. v. Streambox, Inc., No. 2:99CV02070, 2000 WL 127311 (W.D. Wash. Jan. 18, 2000).

[110] *Id.* at *4-*5.

[111] *Id.* at *13 (imposing a preliminary injunction on the distribution of Streambox VCR).

[112] Streambox was a commercial enterprise in the United States. The task of finding every hacker who posts something on the Net or tracking down and suing parties abroad would be substantially more difficult than bringing suit against Streambox.

[113] Trusted systems use encryption to protect data and do not allow the data to spread to other system unless those systems also enforce the same protections. *See* Mark Stefik, *Trusted Systems*, SCI. AM., Mar. 1997, at 78.

norm. Currently, a norm exists that accepts the copying of copyright protected digital files. Some 62 million users opened accounts with Napster to copy files.[114] A roundtable discussion conducted by the *New York Times* about file sharing gives a sampling of public sentiments. One venture capitalist remarked, "record companies now charge so much . . . that people feel justified in stealing."[115] A teenage consumer took a more fatalist view: "[T]he technology is way beyond anyone's control. I won't stop file sharing. If anything, I'm looking forward to more movies and videos becoming available. The possibilities are limitless."[116] Or as a Gnutella software developer put it: "[T]he majority of Americans do not think it is an offense to trade music online."[117]

Can this norm change? Because of the widespread distribution of users and the anonymous nature of cyberspace, some theories of norms would predict that this norm will not shift easily. There does not seem to be much to gain by refraining from copying files on the Internet.[118] A rhetorical question posed by Newsweek— "Can 62 million Napster users really be wrong?"—exemplifies the notion that normatively it is fine to swap files, even if the courts say otherwise.[119]

Social meanings, however, are malleable, and for them to change in the file sharing context the impetus must come from architectural changes. The debate about the feasibility of code-based regulation misses the point because a perfect encryption solution is not necessary. As with eBay, code does not have to prevent cheating, it just has to foster a norm that discourages

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[114] *See* Brad Stone, *Good to the Last Drop*, NEWSWEEK, Feb. 26, 2001, at 59.

[115] Mirapaul, *supra* note 103.

[116] *Id.*

[117] *Id.*

[118] For instance, there is not an obvious way for restraint to act as a signaling mechanism whereby people would demonstrate their commitment to future cooperation. For one thing, copyright holders and unauthorized copiers are not in a reciprocal relationship in the same sense as two parties engaging in a commercial relationship. *See supra* notes 29-34 and accompanying text (discussing Posner's signaling theory of norms). Nor, in the present context, can an individual gain much esteem from restraining from illegal copying. *See supra* notes 35-41 and accompanying text (discussing McAdams' esteem theory).

[119] Steven Levy, *Playing Fair with Copyright*, NEWSWEEK, Feb. 26, 2001, at 60.

cheating. In the file sharing context, the answer may not be code that allows for signaling, but code that makes file sharing more difficult. Even if hackers or Princeton professors break digital watermark technology, many users may not want to use these anti-encryption programs. Not simply because it is a hassle to go through the extra step of downloading the hacker software to break the encryption, but because there is a social meaning tied in with encryption—the message that it is wrong to copy the particular file. Even if the tools are readily available and detection by law enforcement is a remote possibility, when the rules are apparent, most users will want to play by the rules. The meaning of downloading the code-breaking software will be cheating; and by and large people do not want to cheat.[120] Should a norm of compliance with copyright law begin to develop, implementing widespread encryption controls might be counterproductive to the maintenance of that norm. Widespread encryption would send a message to users that most people were trying to cheat and had to be stopped. This is not conducive to the development of a network to support a compliance norm.[121]

The technology employed by RealNetworks (and circumvented by Streambox VCR) is a good illustration of how this sort of general norm of compliance could develop. When a version of the Streambox VCR that bypassed the RealNetworks Copy Switch was widely available, users may have felt little

[120] Just as putting locks on windows can prevent crime (even though locks are not unbreakable), encryption will prevent illegal copying (even though encryption can be broken).

[121] *Cf.* Sheffrin & Triest, *supra* note 26 (describing failed deterrence strategies for tax compliance). The case of music listeners differs, of course, from the earlier example of the eBay community. On eBay, it is reasonably likely that buyers might become sellers and vice versa (though a good deal of the sellers on eBay are actually commercial enterprises). However, it is extremely unlikely that most music listeners will ever be copyright holders. The better analogy is the taxpayer analogy. Music listeners, like taxpayers, are unlikely ever to find themselves on the other side (i.e., as copyright holders or tax collectors). Nevertheless, as has been empirically demonstrated, network norms of compliance can develop in these situations. *See id.*

compulsion not to use it.[122] Since the court barred Streambox from distributing the VCR program in this form,[123] copies of the program have not disappeared. They have, however, become more difficult to find and install. The whole enterprise has taken on a clandestine air.[124] The difficulty of obtaining the bypassing software, along with the fact the most users who do attempt to download the program will receive a message that their behavior is in some normative sense "wrong," may deter individuals from using the circumvention technology. While some will continue to do so, many will not.

The second norm problem in digital music arises among file sharers themselves. The system of file sharing requires both a supply of files and demand for them. Demand is plentiful,[125] but it turns out that the supply of files may in fact be quite tenuous. The notion of widespread file sharing (even the use of the word

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[122] The court case does not actually state how widespread the use of the program was, nor does any data seem to be easily available to ascertain how many users actually took advantage of the product.

[123] Obviously, the presence of copyright law (in particular the DMCA) was necessary to shut down Streambox VCR. Although I have paid little attention to the role of law (or the role of the market), nothing in my argument should be taken to suggest that law does not have a role to play. Legal protections are, of course, terribly important. I will only go so far as to echo Lessig's argument that law cannot be expected to bear the burden of regulation alone. *See* LESSIG, *supra* note 2.

[124] For example, users may download the current version of Streambox VCR (which does not include the ability to bypass the copy protection features) and then download a software patch restoring the VCR to its former glory. Even where this is available on the web, however, no user could engage in the operation without some sense of nefariousness. Witness the text on a site that provides the software:

> Although using StreamBox VCR is easy, finding it on the Internet for download is not. Moreover, the current version of StreamBox VCR (1.0 beta 3.1) requires one to register the program, and it "phones home" everytime you queue a file for downloading. To avoid these misfortunes, one should apply the crack that has been developed.

Afterdawn.com, Unofficial Manual for Streambox VCR 1.0 beta 3.1, *at* http://www.afterdawn.com/articles/archive/streambox_vcr_guide.cfm (last updated Apr. 12, 2002). The site goes on to warn potential users that "Streambox had legal difficulties with RealNetworks" and that "U.S. users should not download this program!" (though the site does nothing to stop them and is written in English). Afterdawn.com, Streambox VCR 1.0 beta 3.1, *at* http://www.afterdawn.com/software/video_software/video_tools/streambox_vcr.cfm (last visited Apr. 2, 2002).

[125] At its peak Napster had 62 million users. Levy, *supra* note 119.

"sharing" as opposed to "copying") leads to a sense that everyone engaged in the practice is contributing to some common enterprise. A recent study, however, by two researchers at the Xerox Palo Alto Research Center (PARC) dispels this last notion. The research reexamines distributed file sharing systems such as Gnutella and FreeNet. The authors, Eytan Adar and Bernardo A. Huberman want to shift the discussion from copyright compliance to cooperation among the file-sharers themselves. They write:

> While a lot of attention has been focused on the issue of free access to music and the violation of copyright laws through these systems, there remains an additional problem of securing enough cooperation in such large and anonymous systems so they become truly useful. Since users are not monitored as to who makes their files available to the rest of the network . . . or downloads remote files . . . the possibility exists that as the user community in such networks gets large, users will stop producing and only consume. This free riding behavior is the result of a social dilemma that all users of such systems confront, even though they may not be aware of its existence.[126]

The authors conducted an empirical study of Gnutella, a distributed file sharing service.[127] The study found that 69% of users share no files; they only download files.[128] The burden of actually hosting files for distribution fell predominately on a small percent of the users. The top 1% of hosts (in terms of

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[126] Eytan Adar & Bernardo A. Huberman, *Free Riding on Gnutella*, Internet Ecologies Area, Xerox Palo Alto Research Center, http://www.firstmonday.dlc/issues/issues_10/adar (last visited Apr. 12, 2002).

[127] Unlike Napster, Gnutella and other decentralized peer-to-peer services do not rely on any central server. All files and file information resides on individual users' computers.

[128] Adar & Humberman, *supra* note 126.

number of downloads) shared 37% of the total files shared.[129] The top 20% of hosts in terms of volume share 98% of the total files shared.[130]

The authors have identified a potential tragedy of the commons. The classic tragedy of the commons argument focuses on the idea of free riders over-consuming an exhaustible resource.[131] Individuals may not exhaust digital files themselves in the same manner as physical resources, because digital files are infinitely reproducible. The authors point instead to bandwidth constraints as the exhaustible resource. Only a fixed number of users may connect at any given time to any given host. If the number of hosts making files available is small, only a small number of users will be able to access the files.[132] The authors predict that a tragedy of the digital commons awaits.[133]

The results of the study dispel another myth—the idea that because services like Gnutella operate with no central authority, they are beyond the reach of legal enforcement. While it might be infeasible for a copyright holder to sue the 33,335 users on the system during the study's test period,[134] it would be significantly easier to sue the 333 top hosts who provide over a third of all the downloads. Gnutella, the authors argue, provides a false sense of security.[135]

The study raises a particular question: Why do some users continue to contribute to the common good? Although the files offered by hosts are not affected by the copying, hosts do incur a bandwidth cost by allowing users to connect to their computers. One answer may be that hosts believe that others on the system cooperate. Research has shown in other contexts that individuals cooperate in collective action settings when they trust others are cooperating.[136] If a Gnutella user believes

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[129] *Id.* The top 1% represents 333 hosts.
[130] *Id.* The top 20% represent 6,667 hosts.
[131] *See* Garrett Hardin, *The Tragedy of the Commons* 162 SCIENCE 1243 (1968).
[132] Adar & Huberman, *supra* note 126.
[133] *Id*.
[134] *Id.*
[135] *Id.*
[136] *See supra* notes 25-28 and accompanying text.

that others are cooperating by hosting files, that user is more likely to become a host herself. If, however, the fact that few actually do cooperate becomes widespread knowledge, it is likely that users will begin to defect. As Dan Kahan argues:

> [B]ecause individuals are reciprocators, their inclination to contribute to public goods depends in a large measure on the inclination of other individuals to do the same and thus grows stronger or weaker as they observe others contributing or not. . . . [C]ollective behavior is susceptible to multiple, self-sustaining equilibria depending on the beliefs individuals form about the likely behavior of others.[137]

This line of research suggests that the norm of cooperative file sharing may be far more precarious than generally thought.

III. CONCLUSION

In the physical world, law, markets, norms, and architecture all interact to regulate human behavior. The same is true of cyberspace. Because of the particular difficulties of law enforcement in cyberspace, the possibility of regulating cyberspace predominately through law is limited. Since cyberspace is an entirely "built" environment, the computer code that defines it seems like a likely way to control the activities of those on Internet. However, although code is a powerful tool, it cannot carry the regulatory burden alone. In some cases, design decisions in code can be circumvented (just as physical architectural barriers can be broken through); in other cases, code is simply not the most effective way of fostering productive behavior.

As we have seen, software engineers can and do become norm entrepreneurs[138] by writing code that allows for and fosters the development of productive social norms. Those who

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[137] Kahan, *supra* note 23, at 339.

[138] *See* Sunstein, *supra* note 42, at 909, 929 (describing "norm entrepreneurs" as people who are able to change norms).

write code and those who seek to regulate it should recognize this power. At the same time, code writers must remember that just as the rules they create through code will define an allowable set of behavior, the design will encourage the development of certain social norms. By combining rules written into computer code and design strategies calculated to promote good behavior, and by paying heed to the complex relationship between architecture and norms, software architects will be able to guide the development of productive social norms in cyberspace.