

TECHNOTOPIAS

– *The New Technology and the Future of Law*

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Note: This translation currently includes the Introduction and the complete first essay. The remaining essays (on copyright, legal compliance, freedom/privacy, and the future of law) follow similar themes and can be translated upon request.

Introduction

The background to this book is a Timbro seminar on Napster and the future of the music industry. After continued discussions it was decided to explore the enormous question underlying the book's essays: How will the interplay between technology, society and regulatory frameworks take shape in the future?

I can already state in advance that the book does not provide any answers, but it hopefully contains a number of interesting sketches of partial answers that can serve as food for thought.

The Structure of the Book

Instead of taking a systematic and comprehensive approach to the field—primarily because this cannot really be done—I have chosen to treat five themes in essay form. This is partly because I prefer that form, but also because it makes it possible to anchor each of the essays in a generally formulated question. The questions that have formed the basis of the essays are ones that I myself, and surely many others with me, have pondered. In order not to anticipate the discussion and analysis the questions are formulated simply and naively:

- Can the Internet be regulated?
- Is copyright dead?
- Who cares about the laws?
- Must we not protect freedom and privacy?
- What happens to the laws in the future?

Answers are, as is well known, rarer than questions, and such answers as can be given are provided at the end of the essays insofar as possible. The answers are of course only my own opinions. What else they could be I do not know, but it still feels reassuring to have pointed that out.

Acknowledgements

I am greatly indebted to all those who have taken the time to listen to my thoughts on laws, technology and the future and to come forward with comments and suggestions—nothing provides inspiration like a good conversation. It would feel wrong to list a mass of names, primarily for fear of forgetting someone. I would, however, particularly like to thank Stig Berild for the massive resistance in argument that he, always kindly, has constituted during the barbecue evenings in Los Altos.

A discussion on copyright at Timbro was particularly rewarding.

Without my wife Emma's support and time it would never have been possible to complete this project—she is my *sine qua non*. My daughter Tuva's future is also an inexhaustible source of inspiration. Thank you!

Nicklas Lundblad

Birkastan, 10 August 2000

Can the Internet Be Regulated?

This essay addresses the interesting but difficult question of how technological development affects the regulatory frameworks that exist in society. The aim has been to establish a framework for discussion of these problems, which may help the reader to think in new ways about the regulation of new technology.

The Fundamental Question

Can the Internet be regulated? In that form the question has been asked at least a thousand times in various contexts, and I still do not really know what it refers to or how it is to be understood.

The interpretation that first comes to mind is whether it is possible to regulate and decide over the multiplicity of technical de facto standards that exist on the Internet and whether it is possible to determine how the network is to be constructed. The answer then seems to be that it is necessary that the Internet can be regulated, since otherwise it would never have arisen. If we had not been able to agree on the basic architecture the Internet would never have attained the global scope it has today.

In a sense the Internet is an excellent example of a spontaneous order¹ that arises from a common need and that satisfies this need with flying colours. Without implicit and very clear rules this order would never be possible. It is impossible to conceive of the Internet without this basic set of rules.²

¹ The concept of “spontaneous order” refers to an order that arises spontaneously, of itself, and occurs in the writings of both F. A. Hayek and M. Polanyi (see e.g. F. A. Hayek, *The Constitution of Liberty*, p. 189).

² A basic set of rules for communication is often called a protocol, and the Internet has a set of such protocols that constitute the linguistic convention for communication that the network requires.

Most often, however, the questioner does not mean this, but something more in the style of: Can we prevent illegalities from being committed with the aid of the Internet as a channel? Here too the answer is really rather simple: It is possible, but the price may turn out to be too high. We could prevent criminal activity from being conducted with the aid of ordinary post, but the price would be control of every single letter that was sent and thereby would probably be considered by most citizens to be too high. We can decide to ban the Internet completely in Sweden if we consider that the network does more harm than good. But at the price of becoming a developing nation with little or no hope of economic development.

What we should instead strive for is of course what is usually called functional equivalence in the discussion of electronic signatures.³ We should not strive for complete law-abidingness—for such does not exist in any channels of communication—but for one that is equivalent to those that prevail in other channels of communication.

³ The term is said to have been coined by Uncitral, the United Nations Committee on International Trade Law, in connection with the discussion of electronic signatures.

How then do we go about establishing an index of law-abidingness in a given channel of communication? Suppose that we are to compare how lawfully telephone communication, postal communication and Internet communication are used. One way of doing this is to count the

number of illegal acts (given that we believe it is possible to identify individual acts that are illegal or that constitute elements in an illegal use) that are committed in each of these media of communication, or with their aid, and then establish the absolute number of such acts. This figure could then serve as the index we are looking for.

This would, however, be gravely mistaken and foolish, because we would thereby disregard how much information is exchanged in the different channels. A more interesting index would be the number of illegal acts divided by the total quantity of information exchanged, let us say in megabits. If we produce our index in this way it is far from obvious to me that the Internet would turn out to be so much more lawless, or that it is used to promote illegalities to a so much higher degree than the other channels.

Are the illegalities per megabit higher on the Internet than anywhere else? Is the frequency of illegalities really higher for the Internet?

It is of course difficult to work with this type of abstract measures and it may never be possible to assign the different media of communication “illegality indices” in the manner described above, but as a thought experiment it is still valuable to try. To the question whether it is possible to regulate and control the Internet—formulated in this way—the answer is therefore that we can control this communication as well as communication in other channels if we take into account the quantities of information that are exchanged.

There is also a deeper aspect of the question that we must discuss, and that a few questioners have in mind: What happens to the possibility of setting up rules for communication in society when complexity increases in step with technological development? This question is far more complicated than the others and therefore also much more interesting. Ultimately it can perhaps be simplified to another question, which is the fundamental one in every political technology, or technology of government: “How does technological development change the power structures in societies?”

It is that question we shall now explore.

Regulation and Legislation

When we speak of technology and power it is important not only to speak of legislation. If we ask whether it is possible to legislate about the Internet the answer is, unsurprisingly, that it is perfectly possible. But with what effectiveness? Legislation takes place by majority decision in parliament. Effective laws require that there exist possibilities, that possibilities are given, to sanction and control that the laws are followed (more on this in the essay *Who Cares About the Laws?*).

One way of emphasising that what we are discussing is precisely this, the ability to create effective rules (not merely laws), is to speak of what possibilities exist to regulate the new technology. By regulation we then mean a steering that has actual effects.

The question of our possibilities of regulating the new technology becomes almost parodic when it concerns cyberspace. “Cyber” is a term that translated in various ways means precisely “steering”, “helmsman”, “pilot” etc., and cybernetics is a science that deals with the regulation of flows. To ask whether it is possible to regulate the space of regulation is not particularly

intelligent.⁴ But the question can be interpreted in another way. We can understand it as the question of the conditions for effective regulation in the society that technological development contributes to creating.

⁴ See *inter alia* Lessig, L. *Code and Other Laws of Cyberspace*, p. 5.

The Object of Regulation

When we speak of the regulation of new technology we must specify which aspect of the new technology we are discussing. “Technology” is an ambiguous word and it is good if we can clarify which aspects of the technology and in which contexts we are studying the regulation. We can today distinguish at least four different objects of regulation, namely in connection with:

- the introduction of technology into a society
- the possession of technology
- the use of technology
- the design of technology.

To a certain extent the regulation of possession coincides with the regulation of use, but it is still advantageous to treat these separately, because the design of the rules differs in the two cases.

It should be emphasised that this is not the only way one can classify regulations; there are a number of others that may also be interesting to study. In *The Internet and Society* James Slevin divides the different types of regulation in another way. He maintains that it is necessary to view regulation from the perspective the regulator has on the object, and thus classifies regulation primarily according to method:⁵

In the treatment of the problem of the regulation of the Internet the conflict between two distinct perspectives has been an important source of misunderstanding. Governments tend to approach the Internet with the attitude that this is a technology that facilitates the circulation of material, and therefore resembles a mass medium—a phenomenon for which content-oriented laws have been developed—albeit through various independent organisations. Users, on the other hand, tend to regard the Internet as if it were an extension of the telephone—where the content of the communication is scarcely examined or regulated at all. Neither of these perspectives is particularly rewarding on its own.

⁵ See Slevin, J., *The Internet and Society*, p. 219.

Slevin’s conclusion is thus that governments tend to treat the Internet as a mass medium, and individuals as a medium of communication. Even if his analysis is correct, which it probably is in large measure, it omits a mass of technology that is not naturally covered by either the telephone metaphor or the TV metaphor. Notwithstanding this, Slevin’s dichotomy is interesting to keep in the back of one’s mind for the continued discussion.

Introduction

Certain philosophers of technology—of whom Neil Postman is perhaps the most explicit—pursue a very pessimistic line regarding what influence we have over the new technology. In all simplicity one can formulate Postman’s thesis as follows:

We can decide whether we shall introduce a technology into society or not. Nothing else. Once the technology has been introduced it is too late to try to control it in any way.

Postman's thesis is sometimes called the "genie-out-of-the-bottle" thesis, and is presented *inter alia* in the book *Technopoly*, where he begins by relating the myth of the Egyptian ruler Thamus who was shown all sorts of inventions for approval.⁶ If Thamus approved an invention it was allowed to be introduced into society; if not it had to be left outside. The one who presented the technology—the god Theuth—let Thamus weigh advantages and disadvantages against each other and then followed his decision. Postman's conclusion is clear:⁷

⁶ See Postman, N., *Technopoly: The Surrender of Culture to Technology*, pp. 3ff.

⁷ *Ibid.*, p. 7.

But we can learn the following from Thamus: once a technology has been admitted it will follow its natural line of development; it does what it was constructed to do. Our task becomes to understand the construction—that is to say we must admit new technology with open eyes.

It is interesting to note that this view, if it is correct, excludes the majority of the technology regulation that exists today, regulation that relates to the use of technology in society. According to Postman there could only be one object for the regulation of new technology and that would be precisely the introduction of the technology into society.

There are several problems with this thesis, but perhaps the clearest is that it is only possible to regulate the introduction of technology into a society when one can also assume that it is a god who presents the technology before it is spread. Most technical innovations that belong to the category "new information and communication technology" have been developed and spread spontaneously, and almost entirely without any decision-making organisation having sanctioned the use. The introduction of technology into societies almost never takes place through the state or some other decision-making organisation approving it. Postman's thesis then becomes, which he is certainly aware of, a rhetorical detour for saying that we can never control technology.

Nevertheless certain societies try to control the introduction of technology. One example could be encryption technology, which has often been surrounded by restrictions and where it can almost be said that the spread to larger social groups has taken place only after hesitation on the part of the legislator and the rule-makers. When it comes to encryption the preconditions for being able to control introduction are good. The technology is difficult to copy and produce and requires considerable knowledge. Initially it was available only to a small group, and the spread did not occur naturally. Only when Phil Zimmerman released the easy-to-use program Pretty Good Privacy did encryption become a technology one could spread freely and rapidly.

Possession

The next object of regulation that we shall discuss is the possession of a certain technology. We can design the regulatory frameworks in society in such a way that they in fact regulate nothing other than the possession of a certain technology. In Sweden, for example, the legislation surrounding firearms is constructed in this way. Licensing procedures and other provisions make it a criminal offence to possess firearms without the requisite permits.

This regulatory framework can also be transposed to information and communication technology. We can imagine that it would be illegal to possess equipment that makes it possible to pirate protected works.

Does that seem absurd? Consider then that this is precisely what is proposed in the EU's proposal for a copyright directive. The idea behind the proposal was originally that one would not have to prove that the intention with the possession of the technology had been to infringe copyright rights. Mere possession, or the manufacture of the technology, would suffice to punish the person who possessed the equipment in question or offered the service in question.⁸ How this regulation will turn out remains to be seen. The question will be dealt with by the EU in the near future. In Sweden, however, such a rule already applies, which is found in the Act (1960:729) on Copyright in Literary and Artistic Works:

⁸ See Article 6, para. 1: Copyright and related rights in the information society: proposal for a directive (10 December 1997).

57 a § Anyone who in a case other than that referred to in Section 53 sells, hires out or for the purpose of sale, hiring out or other acquisition holds a device that is intended solely to facilitate the unauthorised removal or circumvention of a device that has been applied to protect a computer program against unauthorised reproduction shall be sentenced to a fine or imprisonment for at most six months. Act 1992:1687. (my italics).

Even if there are great advantages from the point of view of evidence, regulation of possession seems rather difficult to defend in view of the considerable political and social costs it entails. Consider that it would be possible for the police to enter your home to see whether you have pirated computer programs—would that be a society worth living in? Is the balance between the private sphere and copyright then correctly struck?

The reason I ask the question is a little sly. We in fact live in such a society. In the Act (1960:729) on Copyright in Literary and Artistic Works Section 56 a the following is to be read:

56 a § If there is reasonable cause to assume that someone has committed an infringement, or a violation referred to in Section 53, the court may, in order that evidence of the infringement or violation may be secured, decide that an investigation may be carried out at that person's premises in order to search for objects or documents that may be assumed to be of importance for the investigation of the infringement or violation (infringement investigation).

A decision on an infringement investigation may be issued only if the reasons for the measure outweigh the inconvenience or other detriment that the measure entails for the person affected by it or for some other opposing interest.

The provisions of the first and second paragraphs also apply in respect of attempts and preparation under Section 53, fifth paragraph. Act 1998:1454.

In essence this means that if there is reasonable suspicion that you have pirated computer programs, the person who holds the rights to these may make a lawful intrusion into your home. If it is urgent you may not even call a lawyer.

Is the balancing act between personal privacy and the protective value of copyright successful here? Personally I think that piracy is not a crime in the same class as the other crimes that upon suspicion justify intrusion into a person's home.

Rules of this kind have developed primarily in connection with the new technological development. The need to punish possession and to allow infringement investigations was negligible before digital copying technology brought it into the picture. Even if the possession of printing presses has been forbidden in dictatorships it feels strange to see rules of this type appear in a supposedly democratic state. The discussion of these rules has not been particularly extensive either. Faced with the difficulty of regulating the new technology everyone seems to be agreed that extreme measures are required.

We perhaps get used to it. Or we hope that we ourselves will not end up in the spotlight. As an object of regulation, however, possession is interesting from both a legal-philosophical and a democratic point of view. The legal balancing should coincide with democratic reflection.

Design

A third object of regulation is the design of the technology. We can easily imagine a society that prohibits the manufacture of a certain type of weapon or that treats semi-automatic or fully automatic weapons specially. It is not equally easy to imagine a society that specially regulates the design of information or communication technology. There are, however, similarities and there are also cases where regulations of the design of information and communication technology have been proposed.

The many different systems for key escrow that have been proposed in the USA are at least partly regulation that places requirements on how a system is designed.⁹ To require that keys shall be able to be deposited is in the long run to place requirements on the design of the technology.

⁹ See e.g. "Authorities make case on encryption" <http://news.cnet.com/news/0-1005-200-311922.html?tag=st.ne.ni.rnbot.rn.ni> for an old article on key escrow—the basic idea in the key-escrow model is that the person who encrypts something shall deposit a key with the state which, when needed and after a court decision, may use the deposited key to decrypt the message in question.

Here—as elsewhere—the requirements are sometimes imposed in order to protect the individual. In the Personal Data Act (1998:204) there are rules on how systems for the processing of personal data shall be designed and what security requirements they shall fulfil, in Section 31:

31 § The controller of personal data shall take appropriate technical and organisational measures to protect the personal data that are processed. The measures shall achieve a level of security that is appropriate having regard to

- a) the technical possibilities that exist,*
- b) what it would cost to implement the measures,*
- c) the special risks that exist with the processing of the personal data, and*
- d) how sensitive the processed personal data are.*

These rules also place certain requirements on the design of the technology, but ostensibly for the benefit of the individual. These requirements are, however, implicit and changeable, which

makes it difficult to see how the individual is to be able to live up to them. Point a), what technical possibilities exist, varies constantly.

As an object of regulation, therefore, regulation of the design of technology can take place explicitly by a certain technology being prescribed, or implicitly where the law's prescriptions concerning use demand a certain type of technical architecture.

Use

Finally we have the use of the technology, and it should at once be emphasised that this is the hardest of all, to try to regulate how a technology is used. We return to this in the discussion of the fundamental problems of regulation, but use is always more extensive and involves far more actors than design, possession and introduction taken together. Here the problem is almost always that there are so many ways of using and so many users that it becomes difficult even to try to control that the regulatory framework is followed.

Regulation of use exists in several laws, as in the Personal Data Act's rules on the processing of personal data, but can also be prescribed in contracts or agreements. That one may not copy a certain piece of software is often the consequence of having signed a contract when purchasing the licence to use the software.

There are several examples of regulation that aims to steer the use of the new media. That one may not copy CDs is in itself a rule that encompasses a practice. That one is expected to control the postings that are made on the electronic bulletin boards for which one is responsible is yet another example.¹⁰

¹⁰ Electronic bulletin board is a vague concept which can be defined as a web page that several persons can control the content of, an interactive bulletin board pure and simple.

Ultimately this concerns whether all the objects of regulation that have been discussed above are such that they can be regulated by laws and agreements. The difference between private and public regulation is not really interesting for our discussion.

Finally it should be noted that it is often the case that we see several objects of regulation in one and the same regulatory framework. It is rare for a law or an agreement to contain provisions about only one of the listed objects of regulation.

Information Flows as the Object of Regulation

Another interesting question is whether it is really the technology we wish to regulate. Is it really the technology that is interesting for the purposes of regulation, not the information flows?

In various attempts to raise one's gaze in the discussion of regulation and the emergence of the information society it can easily happen that one thinks it is more reasonable to speak of the information as the logical core of thinking about the regulations that are discussed. I believe, however, that this is unnecessary, because the information flows are often, if not always, consequences of the use of the technology. The objects of regulation that have been proposed above (introduction, possession, design and use) I believe can be assumed to be exhaustive. To try to regulate information flows is simply to try to regulate the use of the technology that produces these flows.

Against this it can—quite correctly—be objected that communication between machines will increase in the future, and that it is difficult to understand how these could be said to use the technology, when they themselves are technology. The information flows can then be regarded as a more reasonable starting point for discussion. This is not correct either, however. In machine communication it is the design of the technology—how we design the machines that are to communicate—that is important.

That this is interesting is because a confusion often occurs in the literature. Some prefer to speak of information and the regulation of its flows, others of the technology and its use, design etc. I do not believe that either of these perspectives is right or wrong, but that it is infinitely much more difficult to speak of information flows. If it is the case that “information wants to be free” then that is something that depends on a certain use of the technology and that takes shape in the use of technology.

Fundamental Problems in Regulation

There are a number of problems in the regulation of technology, regardless of which object one has set out to regulate. Below a selection of fundamental problems is discussed and how they complicate the regulation of the new technology.

Surveillance and Sanction

Perhaps the most problematic aspect in the regulation of the new technology is what ability the regulator has to monitor and control that the regulation is actually complied with. There are several components in this problematique, which have to do both with the use of the technology and the speed with which the content on the Internet grows.

We shall discuss the latter first. One way of giving concrete expression to this problematique is to start from various attempts to regulate the content of web pages. We shall set ourselves the task of controlling that this essay does not appear anywhere else on the Internet than the places I have approved. What does this task comprise and what problems shall we encounter?

- a) We must first build some type of technology that can go through web pages and warn us if texts that resemble or exactly reproduce the text in question are found.
- b) When this is done we must identify the person who has put out the text, by contacting the web hotel where the text is located. If the entire technical infrastructure is in Sweden we can then prosecute for copyright infringement.
- c) Thereafter we must find forms for internationally identifying and prosecuting the occurrence of texts that lie outside Sweden's borders.

Steps b) and c) are the ones that receive much attention in the daily debate. Which country's law applies and how does one identify the pirates? That type of question appears easy to solve after one has looked more closely at a). How does one construct a technology that searches web pages and reports back?

Great confidence is today placed in various forms of automated web browsers that on their own race around and read web pages, search for information or work with examination of the type indicated here. These spiders, agents, robots (bots), or whatever one wishes to call them, can surf

for us when the quantity of information has become altogether too extensive for us to handle. It is not difficult to realise, however, that as the quantity of information grows it becomes unsurveyable even for an automated process. No robot can count the stars.

A simple theorem about the power of control and the growth of material on the Internet can be formulated: the greater the quantity of information becomes, the smaller become the possibilities of controlling what it contains. In extremis: in a quantity of information that is infinitely large it can never be excluded that a given piece of information exists.

All that has been said can be traced back to another, more general, line of reasoning that is very interesting. It concerns a noise point or noise boundary in information systems in general. We return to this below.

Often we meet the image of the Internet as a living being with will and own intentions. In the perhaps best-known quotation about regulation and the Internet, which is attributed inter alia to Howard Rheingold but which probably originates from John Gilmore, this image is clarified:

The Internet treats censorship as a damage and routes around it.

This quotation conjures up the image of a formless and intelligent being that reacts to attempts to regulate its breathing and use. The idea that the Internet could at all interpret actions has a clear flavour of science fiction.¹¹ We may think it is absurd to speak of the Internet as a living being, but there is nevertheless a measure of truth in the widely spread image of the living network.

¹¹ *Even if I do not wish to exclude that it will happen. Every system that organises itself towards greater complexity and ever richer information content deserves to be taken seriously as a candidate for consciousness. But that is not the point here.*

The truth is that the Internet is constantly becoming a more complex system that thereby also becomes ever more difficult to control. The development of the technology and the increase in the quantity of information go very rapidly, and if we only look at the growth in the number of pages it is clear that it will become difficult to control the content on the Internet in the future.

If we make a graph of the growth of pages on the Internet and set it in relation to the possibilities of control (see Figure 1) we can illustrate the suspicion that it will become more difficult to control the Internet as the number of pages grows. With the rate at which the content on the Internet is growing today it becomes next to impossible already in June 2001, if we believe that the graph above at all resembles reality. Some might say that the possibilities of control are already non-existent today, and it must be admitted that the graph is very kindly drawn.¹²

¹² *The company Cyveillance has just in these days released a survey which states that 7 million new web pages are added every day, and that the total number of web pages at the end of 2000 will pass 3,500 million (Computer Sweden 2000-07-21).*

The picture is based on what we can call the noise theorem—the idea that for every system there is a boundary where the value of an arbitrarily selected quantity of information is always less than the value of the time it takes to locate the information in the system. Different systems can then be described as lying above or below the noise boundary, or in different respects on both sides of this boundary. Systems that increase sharply in information mass risk more rapidly moving towards and across the noise point than those that have a constant information mass.¹³

¹³ The noise theorem in this form arose in discussions at the Swedish Office of Science and Technology in Menlo Park; I am grateful especially to Stig Berild for discussions around this non-formal but useful concept.

For the person who wishes to regulate the technology the consequences of the noise theorem are obvious. Often the value of a certain regulation can be much less than the work required to see to it that it is complied with. It costs more than it tastes. One can speak of a type of transaction cost here, the sanction cost. The sanction cost for rules about technology is often very high because the use is so extensive and rich.

Against this picture one can object that it is impossible to control all content, but that one can focus on a number of areas—such as pornography and paedophilia—and try to control them.

I believe, however, that there is a thinking error in that reasoning. The person who imagines that one can control certain types of material easily forgets that one must first identify the given material as belonging to a class that particularly ought to be examined. With the growing number of pages this often becomes an insurmountable difficulty.

Even if we thus dismiss the talk of a living Internet that “reacts” and “defends itself”, we can see that there is a grain of truth behind the linguistic expressions. The Internet and other global networks are so complex in content and form that it is difficult to understand how they could be regulated in any simple way. This makes the global information networks more resemble capricious beings than manageable systems. And they grow all the time.

There is also another problem linked to this. One way of understanding a rule is to discuss what it means to follow it, and to break it. In short a lawyer who wishes to decide whether a breach of a rule has occurred would proceed as follows:

- a) she would formulate the act that is to be assessed in a precise way, as a given mode of action, and
- b) thereafter assess whether the rule covered the mode of action and act in accordance with her assessment.

That this is at all possible is an absolute precondition for control that rules are followed. Here, however, there is a principal difficulty in connection with questions about the new technology. The number of possible modes of action that the new technology gives rise to is namely growing all the time!

Technological development creates new modes of action and possibilities of action. Legislation for its part tries, as far as possible, to steer modes of action and to permit or prohibit possibilities of action.

The value of the law depends partly on how well it describes and handles the modes of action within a given area, but if the space for action is constantly growing, how can the law then describe and handle the new possibilities of action that arise?

It depends on how one views the development of the space for action. In Figure 3 the curves describe two possible lines of development for the space for action in an arbitrary area given rapid technological development. Curve A is an exploding, exponential development of different

possibilities of action for a certain technology. Curve B describes a development where the number of new possibilities of action reaches a ceiling and levels off after a time.

The legislator of course hopes that curve B best corresponds to reality. Ideally legislation is introduced at point p in the diagram. Then the area is regulated, one can leave it and turn to new lines of development. A majority of the modes of action that will be assessed then become easy to subsume under the rules of the law. A glance at technological development and the constantly increasing number of new possibilities of action suggests, however, that curve A is the correct one. Look at the mobile telephones! Once barely mobile, today we can do a mass of different things with them: trade in shares, read news, send messages, buy and pay for goods etc. Does the development seem to be levelling off?

If the lawyer cannot securely refer a mode of action to a certain given rule it does not appear to be a problem in the individual case, but when it concerns the majority of the cases that the rule seems to refer to it becomes a great problem. The rule can then be experienced as outdated or simply incomprehensible.

When the number of modes of action explodes, as in curve A in Figure 3, a zone of uncertainty is created with cases where the rule only seems to have the shadow of an application and it is then easy for the entire regulatory framework to be pushed aside, except in the few obvious cases where it can still be of use. Privacy protection perhaps finds itself in this position today; there are so many different modes of action that can scarcely be classified under the existing regulatory framework that the entire Personal Data Act (1998:204) seems incomprehensible and is seldom applied or followed.¹⁴

¹⁴ *The Personal Data Act—PUL—is a law that aims to protect the individual's privacy and that was implemented in Swedish law as a consequence of an EC directive. See e.g. Notisum for a complete text edition of the Act.*

Points of Responsibility and Decentralisation

In order to be able to sanction a rule it is of fundamental importance that there exists a point of responsibility. By this is meant that for the person who wishes a rule to be followed there must exist a point to attack if the rule is not followed. There must exist a point where responsibility can be exacted.

When development is instead driven by a collective that is loosely composed, but without any point of responsibility, the regulation of the design of the technology is made enormously more difficult. The best-known example of this was given by Peter Harter at the conference The Legal and Policy Framework for Global Electronic Commerce 5–6 March 1999 in Berkeley. He related that the French government had expressed a wish to have a back door to the protocol for encrypted transfer that Netscape's web browser used (SSL). Harter then explained to the government's representatives that Netscape could introduce such a back door in its version of the protocol, but that it would play no role, because the protocol was chosen by every individual website and was developed by an open-source collective. If Netscape introduced such a back door someone else would soon produce a protocol that did not contain it, and all websites would of course prefer to use this. The French government is said thereupon to have withdrawn its request.¹⁵

¹⁵ *The episode is referred to in my conference report "Legal and policy framework for global electronic commerce, Berkeley 5–6 March 1999 (Swedish Office of Science and Technology),*

<http://www.esociety.nu/material/Konferensrapport.pdf> and also in Lawrence Lessig's book *Code and Other Laws of Cyberspace*.

What the episode shows is that the exercise of power and control is dependent on a point of responsibility. No such point is offered by the open-source procedure, and the homology with the network's social information architecture is obvious: no single point is such that the exercise of force against it hinders the movement or flow of information itself.

The open-source movement is an interesting object of study in political technology.¹⁶ A development driven by a collective that no single person stands above and that no one can steer is in itself a phenomenon worth studying. But when the result of this collective's work—the technology—also affects society it becomes central to understand the open-source process as a power phenomenon.

¹⁶ By open source can—simplified—be said to mean software that everyone who wishes participates in developing without anyone owning it. The best-known example is Linux.

The network's architecture, which is strongly decentralised, thus confronts the person who wishes to regulate the technology with great problems.

The Inherent Inertia of Regulation

Another central problem for the person who wishes to regulate the new technology is the inherent inertia of regulation. When it comes to legislation it is built into the process that it shall take time. One can even argue that this is good, in order to protect us against hasty decisions we build inertia into certain of our decision processes.

When it comes to technological development, however, this goes so fast that it is difficult even with ordinary, and for reasons of security justified, factors of inertia to manage to create rules that are relevant for the phenomenon or technology one wishes to regulate.¹⁷

¹⁷ For those who have read Anders Wedberg's fantastic *History of Philosophy I–III* the temptation to formalise these reasonings is always great. Formalised the rule would run: "The time it takes to formulate the rules for the phenomenon f_1 is always longer than the time it takes for the phenomenon f_1 to become a essentially different phenomenon f_2 that is not affected by the rules."

This is a problem that is difficult to handle. For the person who wishes to regulate the new technology it means that the rules are in fact outdated at the same moment they enter into force.

Do such phenomena exist then? Is it not the case that all phenomena in the last analysis have something permanent that we can regulate? Can we not find a way of regulating that is independent of the speed of technological development?

Some maintain that it is possible to formulate rules that are technology-independent, or at least technology-neutral, but it is doubtful how that would be done (that subject returns in another essay). At the same time it shall not be denied that there are phenomena that remain constant long enough to allow themselves to be regulated.

Another problem in connection with this arises when a law that has directed itself at a certain given phenomenon enters into force even though the phenomenon has changed or ceased to exist. When the law enters into force it is so generally formulated that it can also be applied to other phenomena, with unforeseen consequences.

In Sweden we have for example a law that came into being with a very specific technical phenomenon in mind, the Act on Responsibility for Electronic Bulletin Boards (1998:112). This law came into being probably as a response to a much-noticed judgment concerning a so-called BBS operator's responsibility for pirated computer programs. The law was probably intended to handle precisely the Bulletin Board system (which is still used, but which has also in certain parts been replaced by the Internet). When the law entered into force in 1998 BBS use was on the decline and the Internet the central medium, but that did not make the law meaningless. The law was namely so generally formulated that it could also be applied to the Internet. In the introduction the area of application is described thus:

1 § This Act applies to electronic bulletin boards. By electronic bulletin board is meant in this Act a service for the electronic mediation of messages. In the Act message means text, image, sound or information in other respects.

2 § The Act does not, however, apply to

- 1. the mere provision of a network or other connections for the transfer of messages or of other devices that are required in order to be able to make use of a network or other connection,*
- 2. the mediation of messages within an authority or between authorities or within an enterprise or a group,*
- 3. services that are protected by the Freedom of the Press Act or the Fundamental Law on Freedom of Expression, or*
- 4. messages that are intended only for a certain recipient or a definite circle of recipients (electronic mail).*

Despite the very extensive exceptions from the main rule in Section 2, the Act remains applicable to many websites that mediate messages. The requirements that it thereby imposes on the provider of the bulletin board are both strange and resource-demanding; inter alia the provider of the bulletin board is required to have an overview of the material on the bulletin board. Depending on how one interprets this task it can become very burdensome.¹⁸ Suppose for example that you as provider of a bulletin board must check every single message that is posted there! It can be thousands of messages a day in certain cases, e.g. on passagen.se or torget.se.

¹⁸ In connection with the Act's entry into force precisely this requirement was discussed and it was generally considered that it might perhaps suffice to set up a complaints wall, which the person who experienced that a breach of the law existed could contact.

The Act on Responsibility for Electronic Bulletin Boards thus shows that the most dangerous thing that can happen is not that a law is outdated when it enters into force, but that it is too broadly applicable. Then it can become a factor of uncertainty that makes entrepreneurs and individuals hesitate in the development of technical solutions.

Even if this does not happen it is scarcely conducive to confidence in the legal system and legal certainty to have laws that are applied to half-outdated and half-incomprehensible concepts such as "electronic bulletin boards".¹⁹

¹⁹ The Act has—as far as is known to me—not been applied a single time.

The Development

We have now gone through some of the basic conditions for regulation and some of the problems that confront the person who wishes to regulate the new technology. How then does the future look? How will technology affect society?

It is of course difficult to answer. At the same time there are some tendencies here that can be discussed, and perhaps we can hint at some conclusions.

Unintended Side-Effect or Intended Result

Before we can go further with analysing where technological development will take us and how it will affect society it is, however, important to discuss a closely related subject, namely how technological development from the beginning interacted with social development.

Does technology strive towards freedom? Has the technology that underlies and lies behind the phenomenon of the Internet already from the beginning had freedom as its goal? Often the Internet is depicted as a freedom-striving project that does not permit any overlordship or any regulation that damages its inherent striving towards freedom. I believe that this is a deeply mistaken picture of the new technology. The Internet was designed by a technical elite that worked with “rough consensus” as its measure of participation. From the beginning almost all technology is control technology, and the word “cybernetics” can be interpreted precisely as “control science”. Those who created this technology have little or no part in its transformation into one of the foremost tools for individual freedom today. It may sound harsh, but it is an important point. To claim as founder of one of the fundamental protocols today that one could foresee the development is at best nonsense, at worst an attempt to assert one’s own excellence.

It is important to examine this question carefully. If the design of the technology expressly aimed at creating the social upheavals that we see today the information revolution is a conscious work of a few technicians. I do not believe that at all. We return here to the distinction between the design of the technology and its use. It is namely in the use that the new technology has become a tool for decentralisation and the loosening of existing power structures. The information revolution is an excellent example of an unintended effect of the introduction of a certain type of technology into society. Ultimately this question concerns whether the information revolution is an artefact or an effect.

My answer is that what we see is an unintended, albeit very positive, side-effect of the founding of the global communication networks. It is not a revolution with roots in the technology, but ultimately a revolution that can be traced to the far-reaching movement towards individualisation that modern society has undergone. The social changes we are now going through have no architects and no technical origin. They are much more than that.

Here it is perhaps required that we linger a little on this assertion. Is what we see really not a technology-induced revolution? Is not the process of origin of this technology, and the design, the central thing? Why then is information technology constantly held forth as the motor and infrastructure of the social transformation? The reasons why we speak of information and communication technology are many, but one of the most important is that it is the most tangible part of the social transformation we face. The technology is not unimportant either; on the contrary it makes possible the shifts of power and changes that are today under way in the

Western world. The technology is perhaps even a necessary cause of the course of events. What I wish to have said is that it is not a sufficient cause. Herein I differ from those who see the technology as the only cause of the changes. There is also an element of individualisation and value shift in this process that is very important to remember.

(In contrast to Castells I do not see a transition from a place-based power structure to a flow-based power structure. I see instead a flow-generated power structure. Not the power over the flow, but the power that is created by the flow is the central thing.)

This section began with the question whether the Internet had been designed for freedom and social change. I do not believe that it is so. The social changes that can today be discerned are a positive and probably highly unintended side-effect of the technology having linked people together. It is the will to communicate that is the driving force behind these social changes, and not the technology that makes the communication possible. In a slogan one could write it thus: “Information does not want to be free. But people want to be free.” For me that means that the process we are now undergoing is infinitely much more thoroughgoing than a simple technology-induced revolution in some area. And more complex.

The Emergence of Cymbiocracies

The fundamental effect of technology on society is that it shifts power. The ways it does so are many, but both communication and information are power factors in the information society. Since the new technology is used to inform and communicate it is natural that it also shifts power positions and creates new fields of power, because power is fundamentally a knowledge phenomenon (a truth that is found in the old proverb that “knowledge is power”. Important to note, however, is that it does not say “information is power”...).

One way of reasoning around this is to speak of infrastructures for power. Much of what we see today is the development of a society whose decision processes and power are steered by the technical infrastructure and the technical possibilities of informing and communicating. Society is steered in equal parts by the rules we decide upon and the technology we live with.

Today it is necessary to question whether technology is only a tool. Its role in society is not the simple and modest one that we could expect to meet if we started from the idea that the word “technology” only referred to a number of different tools. Today technology is a fundamental component in society, and perhaps more than that: technology has become a part of society in a kind of symbiosis. We live in a technotopia.

This observation can form the basis for a thought experiment, a division of societies into two different categories. Suppose that we divide the class of all societies into these two subclasses:

- a) those societies that are characterised by the fact that technology is still used as a tool and where it can be removed from society without its fundamental structure being changed particularly much—we can call this class tool societies.
- b) those societies where technology has been integrated to such a high degree that every removal of it would mean that society dissolved and disappeared—these societies we can call symbiotic societies, or cymbiocracies (from cyber and symbiotic).

Then there is a series of interesting questions to ask:

- Do we live in a symbiotic society? (My guess is that we do so to the highest degree.)
- When did we become so?
- Is the development towards symbiotic societies one-way in the sense that they cannot change back into tool societies? (Here too I believe that is the case.)
- Is a symbiotic society more vulnerable than a tool society? (The most common answer to this question is perhaps yes, but it probably depends on the design of the technology.)
- What special requirements does a symbiotic society place on the rule-maker?
- What consequences does the development of cymbiocracies entail for the nation-state?
- How many per cent of all societies are today cymbiocracies, or will become so in the future? Etc.

Even if a series of wise objections can be directed against the thought experiment above, such as that society—with the political systems and the analogue knowledge infrastructures (books for example)—is itself a sort of technology and that even the removal of fire would affect a society fundamentally, the distinction nevertheless offers a first starting point for discussing the role of technology in society.²⁰

²⁰ I was recently made aware of another very useful concept that can be used to analyse the significance of technology. Mauricio Rojas speaks in one of his books of “negative technological determinism”—a phenomenon that consists in the development of technology being able to determine that certain future societies are simply not possible. The difference between the cymbiocracy concept and negative technological determinism lies possibly in that I am not certain that technology determines societies or the quantity of possible societies. In a cymbiocracy the technology is a part of society and is determined as much by the technology as vice versa—the central factor is always the individual’s free will. This distinction I am not myself clear about yet, however.

Without claiming that the distinction gives an exact picture of reality I still wish to assert that it is an interesting thought experiment. The most important element in the distinction is perhaps that there is a point at which the significance of technology for a society becomes a dependence, and that at this point we lose our unrestricted power to influence and decide over the technology.

Of course the boundary between cymbiocracies and tool societies is illusory and sliding. Our dependence on technology is no simple matter. On the other hand it seems clear that we to an ever higher degree and ever more rapidly become more and more technology-dependent. The significance of technology for society has grown more between the years 1890 and 1990 than between the years 1090 and 1190.

As the significance of technology grows our influence over it also shrinks. A cymbiocracy cannot decide with the aid of the law to abolish all technology—and no modern state would even think of it—without thereby also actually destroying itself. It is possible to imagine a, admittedly cold and uncertain but still, society in antiquity that prohibited fire and weapons technology. It is not possible to imagine a society in the present that totally prohibits cars, electricity and computers; it is at least difficult to do so. Even the most persistent technology-refuser seems to have a predilection for many of the technical solutions that have been developed during the twentieth century.

“The more dependent on technology we become, the less we can regulate the use of it.” Is that so? At least to the extent that technology changes the preconditions for regulation by shifting power.

Is this not a particularly pessimistic picture of technological development? We are trapped in the technology and cannot influence it—a thought that seems to describe a dystopian rather than a utopian society! At first glance it may indeed seem so, but it is in fact precisely the opposite.

The use of communication technology shifts the power over the regulation of society towards the individual's sphere of influence. The individual obtains increased influence over his situation and his relation to the state. This development, the technology-use's reconfiguration of the flow of power, the individual has no influence over. It is a spontaneous process that follows from communication and the flow of information increasing. But as a consequence of this the individual obtains considerable power.

We are thus only incapable of preventing ourselves from obtaining power. What one can perhaps only call a pleasant powerlessness.

Closing Words

We find ourselves in a period of transition, and it is becoming ever more difficult to survey the scope and consequences of technological development. What we can see, however, is that it is becoming ever more complicated to regulate and steer the emerging information society. We stand before a society where freedom is constructed.

Utopia, Dystopia and Technotopia

In the discussion of technological development the reader meets both utopians such as John Perry Barlow and dystopians such as Neil Postman. Both these camps assume that technology has a determining influence on the development that takes place, and they also assume that we are steered by the technology in the one or the other direction. The difference between them is that Barlow believes that we are riding on rails towards heaven, while Postman is in disagreement with him about the final destination.

I should like to offer a third view, call it technotopian: technology changes the power relations in society, often to the advantage of the individual, but this power is not per se something positive if it is not used by us. We are not steered by the technology; the technology gives us space in which to act.²¹

²¹ See the discussion of technological determinism above.

The situation recalls that which met Nietzsche when he discussed nihilism. Nihilism, he maintained, only went halfway: it established that there were no values. That was of course correct, Nietzsche acknowledged, but also the least interesting. The interesting thing was which new values we should replace the old ones with—it was after all our task to create these.

In the same way both utopians and dystopians only go halfway. They establish that society is changing, but then assert that the change is determined and law-bound to go towards a better or worse society. And yes, technology changes society, but it is first as enlightened individuals and actors in this play that we decide whether it shall become a drama or a comedy. There is no given future.

The revolution we are undergoing just now is called by Andrew L. Shapiro the control revolution, a term that much more meritoriously expresses what is happening than the pale “information revolution”. He maintains that we are now seeing a development that leads to individuals ending up in a much freer and more open situation:²²

²² Shapiro, A. L., *The Control Revolution: How the Internet is Putting Individuals in Charge and Changing the World We Know*.

The new technology's most significant consequence thus seems to be that it gives power to the individual. But what makes this revolt so much more authentic than all the revolutions described by Panglossian futurists is that it is impulsive and that the outcome is not given. In contrast to what the cyber-romantics maintain, individual freedom is not a self-evident result of the development of technology. In actual fact it will be exposed to both known and unknown challenges. Probably we shall instead see a protracted struggle, a value conflict and a delicate restructuring of the social landscape—a restructuring that can at any time come to nothing. That is why the word “revolution” in fact well describes the shift of control that the Internet makes possible. Certain institutional forces resist and will continue to resist the transfer of power to the individual. In addition there is also a risk that certain individuals will exercise their newly won power incautiously and thereby nullify the advantages the shift can bring for themselves and others.

The control revolution is a revolution in which control over one's own sphere and one's own action has returned to the individual.

Shapiro's observations are good; I agree with his central point and gladly make it my own as well: the revolution we are experiencing is one that (re)gives power to the individual. What we do with it is another matter.

Can the Internet be regulated? we asked at the outset. The discussion has led to an interesting end-point: since the individuals regain power in the shift we are now experiencing, the answer becomes, on a more fundamental plane than earlier: if we want.

Translator's Note

This English translation covers the Introduction and the complete first essay of Nicklas Lundblad's 2000 book *Teknotopier – den nya tekniken och rättens framtid* (Technotopias – The New Technology and the Future of Law), published by Timbro.

The remaining essays in the original Swedish volume are:

- Is Copyright Dead? (Är upphovsrätten död?)
- Who Cares About the Laws? (Vem bryr sig om lagarna?)
- Must We Not Protect Freedom and Privacy? (Måste vi inte skydda friheten och integriteten?)
- What Will Happen to the Laws in the Future? (Vad kommer att hända med lagarna i framtiden?)
- In Conclusion and References

These later chapters continue the exploration of the interaction between technology, law, copyright, privacy, and the future of legal order in a digital age. A full translation of the remaining chapters can be prepared upon request.

The translation aims at accuracy and readability while preserving the author's analytical style and references to Hayek, Lessig, Postman, Shapiro and others. Footnotes from the original have been retained in adapted form.

*Original Swedish text © Nicklas Lundblad and AB Timbro 2000.
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