

Code is Murphy's Law

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ABSTRACT Cyberspace as a metaphor for a community has inspired many academics and others to produce further interesting ideas. However, with a metaphor as a starting point a lot of luck is needed in order to end up with a proper analysis. With Lessig's code the problem seems to be that cyberspace as a community is not the only metaphor presented. So is 'code is law'. Code, that is the Internet's architecture, software and protocols, is not law. Code is technology, while legal rules are generally only 'low tech' at best. However, this does not mean that technology would be more effective in controlling people's behaviour than the legal system is. Instead of mixing the two up, it seems better to make a clear distinction between code and law. In this paper the authors' position with respect to the conflicting ideas of 'the Internet as a place for anarchy' versus 'the Internet as a means of total control' will first be explained. Then a common way of dealing with the questions raised by Lessig and others, namely the metaphor, will be examined. Implicit or explicit models of man play an important role in these discussions and attention will be paid to some of those and the rational model of man in particular. On the basis of this, a new model for analysing questions of law, society and technology is put forward. Based on the model, the authors will then address some of the issues at hand. The conclusion is that Lessig's and others' concerns will probably disappear when information technology is further assimilated in society.

Between Anarchy and Total Control

The casual ease with which even academics make generalized statements about the Internet is quite remarkable. It is hard to believe that those same academics would make equally generalized statements about the 'real world'. However, just as remarkable is

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how often these statements are contradictory. For the purposes of this paper, one such academic has been selected in particular: Lawrence Lessig and his book *Code is Law*.

The Internet has made it possible to exchange data files across great distances simply and quickly and, apparently, unhampered by any interference from the authorities. The ease with which data could be exchanged gave rise to a belief that the Internet was the ultimate place for freedom. You could say and do what you wanted on the Internet. Laws were not applicable, nor should they be for this was cyberspace.¹ For some the Internet was experienced as being essentially anarchistic in character and that was something to be cherished and preserved. For others this made the Internet a nightmare.

At the other end of the spectrum, the growth of the Internet fostered a different vision of society, one where maximum control would be the norm. Information accessibility and data mining would transform society into a panopticon where nothing would escape the all-seeing eye of the authorities. Citizens would be puppets manipulated by the state and corporate interests. The Internet would offer more extensive opportunities for data mining. It would also, as Lessig argued, impose stricter constraints because, although people may be able to avoid normative and legal constraints, they cannot avoid technological restraints.² The one who would be in power would be the one who could control and develop the architecture (the Internet code) and infrastructure of that technology.

What can be seen here is that one person's ideal Internet is another person's nightmare. The idea that society would either become totally anarchistic or that the authorities would have total control is not new.³ Looked at rationally the inescapable conclusion would seem to be that society has not developed either one way or the other. The interesting question is why not? The answer would appear to be the same for both options: because it would not have been efficient or, in other words, it would not have had utility. In an anarchistic society a lack of formalized structures and authority leads to an inefficient distribution of means, suboptimal achievement and a reduction in safety. The emergence of states and law is therefore a product of utility.⁴ Similarly, a state controlled by the authorities is not efficient. Although it is true that information technology (IT) may give an impulse to centralization,⁵ maximum control is inefficient simply because it is too expensive.⁶

Is Lessig right to contend that 'code is law'? In estimating whether total control could ever be a reality, basic assumptions on market working and what technology can and cannot do must be taken into account. Without doubt technology has been the most important factor in social development, but nonetheless it is necessary to guard against technological determinism just as it is necessary to guard against Utopian social engineering.⁷ The hypothesis that it is possible to develop a technical blueprint for a desired reality is an extremely debatable one. For example, the practical experiences of automation make such a hypothesis a dubious one. Too many things can go wrong, while for a proper design it must be supposed that 'if anything can go wrong, it will'.⁸

Even if technological constraints could be made unavoidable, these constraints would not determine the choice of whether actually to implement these technical facilities or whether to use them. There is a relationship between technical performance – and any possible constraints that result from that performance – and legitimate authority. Even if the implementation of constraints were to be practically feasible, the kind of technical restraints that could be implemented in a totalitarian regime would be unthinkable in a Western, liberal state with a free market. A similar consideration arises with respect to the anarchistic vision. We would not tolerate extreme freedom of information if this were to mean the dislocation of social structures and a threat to our security.

The Metaphor Approach

What both the anarchistic and total control visions of society have in common is that the Internet is seen as a thing, a place or a space where normative rules can or cannot be applied. For some it is a place or space where nobody has to keep to the rules, while for others it is a place or space where everyone can only follow a prescribed set of rules. Deviant behaviour is either impossible or the general norm. The term 'the Internet community' suggests that people who use the Internet have something in common, that there is something of which they form a part. If such a metaphorical approach is used, then it does not seem so strange that how to behave in 'the Internet community' becomes an issue or what the rules of this 'community' are.⁹ A dichotomy is created between the Internet and the 'real world'. That this in itself is strange becomes apparent if it is borne in mind that no-one speaks of the 'telephone community or the 'highway community'. So why should there be an Internet community?

Alternatively, the Internet is often described not as a space or place but as a thing: 'one big copy machine' or 'an electronic sieve'.¹⁰ Using this metaphorical approach then, similarly it is not surprising that people see the Internet as an apparatus that can be controlled and that someone could have authority over it, even exclusive authority.

To describe the Internet as an 'electronic highway', 'cyberspace' or a 'virtual world' as if speaking of a thing does no harm in itself. However, it carries the risk with it that associations will be made, for example traffic rules, cyberpolice or property or that someone suddenly refers to the 'real world'.¹¹ The Internet is not a place where you can stay. To imagine that one visits Hawaii while 'visiting' a tourist website is as realistic as to dream about it.

What then is the Internet? In essence, 'the Internet' is nothing more than a number of technical protocols that make it possible to transfer data between equipment using various infrastructure facilities such as telephone networks, cables, satellites, mobile phone networks, fixed connections and electricity networks. The question that arises with respect to this Internet is whether the control of these protocols – and with that the architecture and the infrastructure - will lead to a restriction of civil rights. In order to produce this effect, an intentional choice would have to be made by someone for a certain type of architecture and/or infrastructure, as in itself an architecture and/or infrastructure would not bring these restrictions with it. The question presumes, therefore, that the protocols, the architecture and/or the infrastructure could be controlled. If that is not the case, the question does not make sense.

Models of Human Behaviour: The Rational Model

The idea that a society can be designed and steered is a characteristic of the sociological model of man. The sociological model is based on the presumption that people will behave in accordance with the norms of the group to which they belong.¹² Only a sociological model can be found behind the belief that society can be moulded. The psychological model is founded on human basic needs, such as food, shelter and sex. The needs arise from the human body and not from a social construction.¹³ The economic model of man has, as its starting point, the idea that people aim to maximize their money. This approach also does not lend itself to social engineering.

It would seem that the model used by Lessig is one based primarily upon the sociological model of man. Norms and rules determine how people will behave. According to Lessig, norms and rules contain constraints and a breach of these constraints incurs

sanctions. Failure to abide by a norm would lead to the disapproval of the group, while the failure to abide by a legal rule would lead to punishment. This is a rather traditional approach, which is not uncommon among lawyers. Furthermore, Lessig argued, the market and the architecture of the Internet also give rise to constraints and no deviation from these constraints is possible: if the price is not paid, the market will not deliver the product, if the appropriate box is not ticked, then the Internet will grant no further access. The scenario that Lessig portrayed is one in which the Internet is able to operate without taking democratic legal rules into account. Seen from this perspective, Lessig's theory is nothing more than the mirror image of the old fear of total anarchy. From this perspective, Lessig's approach is not as new as might have been presumed.

Theories that rely upon the idea that society can be moulded, presented here in the form that technology can be moulded, fail to take into account a transition that has been taking place over the last few decennia. The sociological model of man for describing, explaining, predicting and influencing human behaviour has been giving way to the rational model of man as outlined by Jensen and Meckling: the resourceful, evaluative, maximizing model (REMM).¹⁴

The characteristics of this model can be set out as follows.

1. Individuals care about almost everything (knowledge, independence, the plight of others, the environment, honour, interpersonal relationships, status, peer approval, group norms, culture, wealth, rules of conduct, the weather, music, art and so on). They are willing to make trade-offs and substitutions (to give up some sufficiently small amount of any particular good for some sufficiently larger quantity of other goods) and individual preferences are transitive (if A is preferred to B and B is preferred to C, then A is preferred to C).
2. Each individual's wants are unlimited. He or she prefers more goods to less (goods in this sense do not have to be things: they can be anything from art objects to ethical norms). The REMM cannot be satiated.
3. Each individual is a maximizer, that is he or she acts so as to enjoy the highest level of value possible. Individuals are always constrained in satisfying their wants. Wealth, time and the physical laws of nature are examples of the important constraints that affect the opportunities available to any individual.
4. Individuals are resourceful and creative. They are able to conceive of changes in their environment, foresee the consequences thereof and respond by creating new opportunities. Although an individual's opportunity set is limited at any instant in time by his or her knowledge and the state of the world, that limitation is not immutable. Human beings are not only capable of learning about new opportunities, they also engage in resourceful, creative activities that expand their opportunities in various ways.

The REMM of man is similar to the economic model. However, the REMM is based upon utility maximizing and does not restrict itself to the maximizing of money,¹⁵ which is the basis for the economic model. That this rational model of man is becoming the dominant one is reflected in the increased popularity of studies such as business administration and IT.

Criticism of the REMM is usually based on the fact that the REMM is a rational decision model, whereas people do not always act rationally: emotions can affect decision making.¹⁶ However, if the REMM is understood properly, it is clear that emotions form a part of the utility function. The rationality of the model lies in the presumption that an

individual will decide what will produce the most utility for that individual and that includes emotional factors. Furthermore, decisions that were made under the influence of emotions are, in that context, also rational even though a different decision may have been reached without emotional stress.¹⁷ In this respect Jensen spoke of a pain-avoiding model.¹⁸

If the rational model of man is compared to the sociological model of man, then the way in which people are expected to deal with constraints is significantly different. According to Jensen and Meckling the 'REMM's response to a new constraint is to begin searching for substitutes for what is now constrained, a search that is not restricted to existing alternatives. REMMs will invent alternatives that did not previously exist.¹⁹ Jensen and Meckling pointed out the crucial distinction between the REMM's recognition that cultural factors are reflected in human behaviour and the sociological model's assertion that cultural factors determine human behaviour.

Technology, then, may well be considered to be the most important factor in initiating or, at the least, influencing social developments, but just as cultural determinism cannot be coupled with the rational model of man, neither can technological determinism. Individuals will only use those technological inventions that are of use to them, in a way that gives them the most utility. That use could be a quite different one from the one that the designer had in mind. Putting aside for now the question as to whether the architecture of the Internet does indeed have a coercive character (see later), the fact of the matter is that people hardly ever have any alternative other than to use the Internet.

Ideas about the working of the market also show a divergence, depending upon which model of man has been chosen as the starting point. As noted above, Lessig contended that it is not possible to escape from the constraints imposed by technology, while the constraints imposed by norms and rules have a different impact. Neither, however, in his view, is it possible to avoid the constraints imposed by the market.²⁰ This would mean technology and the market could impose constraints that could not be imposed by norms and rules. Technology and the working of the market could implement constraints on behaviour that are actually permitted by the law (and by norms).²¹ Nonetheless, Lessig argued that market behaviour can be subjected to constraints imposed by the law and that market transactions only exist because of the law. In this view, where the law is seen as a dominant factor, other conclusions are drawn than would be the case using the REMM of man. In the REMM, laws are 'simply' a part of the utility function, as are so many other factors. A law or an amendment to a law does not in itself produce the type of behaviour that is the aim of the law or amendment. What it does produce is a new situation for individuals in which the law or amendment, together with other factors, will be taken into account in the attempt to achieve maximum utility.

Finally, when thinking about constraints, care should be taken not to let the thinking itself be constrained. With respect to technology it is of course the case that there is a relationship between designing something and what can be done with that design. We cannot make any artefact do what it is technically incapable of doing. However, to label something as a constraint in the sense that a new technological product does not quite perform as was expected by its users is to miss the important opportunities an artefact could offer. Furthermore, if a certain extra possibility exists but has not been implemented then, given a free market, it can be predicted that that extra possibility will become available. With respect to the market, the theory that individuals cannot avoid constraints does not seem to take into account the enormous increase in power that consumers have acquired over the last decennia.

A Conceptual Model for Integrated Legal Science

In the above section it was argued that the rational model of man is a better basis for describing, explaining, predicting and influencing human behaviour than the sociological model of man. It was also argued that neither would this lead to an anarchistic social situation nor one dominated by the authorities or corporate interests.

The way in which a law is expected to work will be influenced, if often implicitly, by which model of man is used for describing, explaining, predicting and influencing human behaviour. It can make a considerable difference whether the basic premise is that laws have a decisive effect on people's behaviour or whether people see laws as only one aspect that will be taken into account in their decision making. In the first premise, drawing up rules will be sufficient to alter people's behaviour. In the second premise, it would be necessary to study how the rules work in relation to other factors that could determine an individual's utility considerations.

The rational decision REMM predicts that, if technological innovations are useful to someone, they will be applied in a way that achieves the most utility for that person. Forbidding a particular use of a technological innovation does not in itself guarantee that it will not be used and neither will a given architecture guarantee that the artefact will be used in a way the creator had in mind. What it does affect is a person's utility considerations. This produces a new situation, which again will be considered and a decision will be made based on the modified utility considerations.

On the basis of the REMM and considering the essential properties of IT, a new model is proposed for describing and explaining the interactions between the law, technology and people's behaviour. The consecutive dependence relationships between technology,

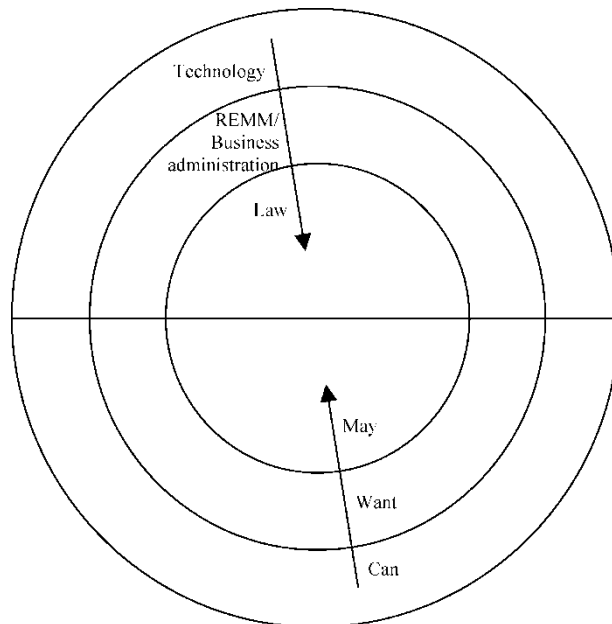


Figure 1. Conceptual model for integrated legal science.

social developments and the law are represented in this model. The basis for this model is positivism, in other words that one reality exists and that that reality can be known.²²

The model consists of three concentric circles (see Figure 1). The outer circle encircles 'can', that is the technology. The middle circle covers that which people 'want' within the limits of what is possible using the REMM as the model for explaining human behaviour. As a multidisciplinary science, business administration offers a structure for obtaining insight into (individual) utility considerations. Finally, the inner circle is the domain of the law, of 'may' (and 'must'), of demands and authorizations, of norms and facilitation. Law is an artefact for the facilitating of human interactions, for example in the form of 'property', 'majority', 'marriage' and 'purchase'. Through fixing norms and sanctions it delineates the external boundaries of human 'want'. The law can steer 'want', but is not decisive and is itself limited by 'can'.

Interpreting Code

In answering the question of to what extent does code (architecture) determine human behaviour, it is important to find a criterion that can be seen as a characteristic of the information society. Four stages can be distinguished in the development of technology until now.²³

1. The first stage is characterized by the ability to influence spatial structures, for example building a hut or a house or making a pot or a pan.
2. The second stage consists of the possibilities for more flexible spatial structures, for example the wheel or hinged doors.
3. The third stage gives the possibility of controlling the powers that are necessary for bringing things into motion. The invention of the steam engine announced the age of the Industrial Revolution.
4. The fourth stage offers the possibility of an artefact starting or stopping itself. Examples are doors that open themselves if somebody approaches and computers.

The information age can be associated with the fourth stage in the development of technology. It is characterized by the ability of machines to now also interpret and process data, something that formerly only people (and animals) could do. The computer is to data processing what the steam engine was to the use of energy in artefacts. For this reason, this age is sometimes referred to as the 'Second Industrial Revolution' or the 'Information Revolution'. 'Data' is a general term used for indicating all possible patterns that may contain information. It includes, for example, ink spots, rows of ink spots, words, pictures, spoken or written numbers, patterns in electromagnetic waves on magnetic tapes or disks, etc.²⁴

One of the characteristics of IT in the fourth stage is that machines can interpret and process data. This characteristic would seem to be of importance in answering the questions as to whether it is possible to control data and whether it is possible to use data for steering or controlling human behaviour. The fact that machines can interpret and process data means that data cannot be controlled. Data can always be changed and manipulated in the process. *A fortiori*, if a person cannot control the data itself, how can this person use it to control others?

If we wish to protect electronic files against the manipulation of others, then we must either make sure that access is secure or that the files are safe. However, it is a fact that

people may be able to access data files against our will by, for example, hacking or by impersonating an authorized person. Furthermore, protecting access to data files or securing the files does not offer a solution where the intention is that the data files should be available to others, whether or not on a commercial basis, such as is the case with music, films and computer programs. Little can therefore be expected from technical measures for protecting data files or from the use of digital rights management (DRM) systems. A rational approach to this issue leads to the conclusion that it would be a waste of time and money to invest in such measures, as the only ones to profit would be the producers of technical security measures and DRM systems.

In addition, what if data are used in order to control peoples' behaviour? To prevent, for example, personal profiles being drawn up, we could simply mislead the machine. We could erase evidence of surfing or give the surfing tracks an anonymous character or use someone else's identity or more than one identity, we could lay extra false tracks or we could just lie.

With respect to the control of digital data and the use of data for controlling people, the conclusion seems to be that the possibility of manipulating electronic data files is inherent in the application of digital technology.

Some of the Issues at Hand

Based on these considerations, the prediction would be that neither anarchy on the Internet nor total control by technology is probable. It is not happening in 'real life' either. It is interesting to consider an example for each of the three possible directions: measures implemented by technology, consumer behaviour controlled by technology and anarchy.

With respect to measures implemented by technology, there does not seem to be much difference between filling out a paper or an electronic tax form. What counts is the decision of the person to either pay or not pay the required amount. That does not mean there are no efficiency advantages in using electronic tax forms, but it will not change tax-payers' behaviour dramatically.

Measures taken by the authorities aimed at fighting organized crime or international terrorism do not even seem to have the advantage of more efficiency. The requirement that network providers and providers of network services are under an obligation to allow tapping, otherwise the networks and network services may not be set up and exploited, does not have the intended effects. The users of the networks and services could simply use encryption. To impose an obligation on all those who have knowledge of the encryption technique in order to help decipher the encryption is rather futile. The operation becomes even more pointless when it is borne in mind that it is possible to encrypt a message in such a way that it would slip past detection and security services because the meaning would be hidden in an apparently innocent message. Furthermore, the obligation to record and store so-called 'traffic data' will yield little if a choice has been made to use an indirect information transfer, for example through news groups or websites. If false tracks are left, then filtering 'suspicious' movements would be of little help. However, these measures will possibly help in tracking down the more stupid criminals. Finally, it should be pointed out that these laws came into existence under democratic control and the judge can test their performance as well as their effects.

With regard to corporate interests, it should be noted that these days some websites require personal information to be provided before further access is allowed. This is in

itself little different from the situation in which information is sent by post (the organization concerned in this situation also has to know a person's name and address). However, in a market economy the presence or absence of competition plays a role. Some firms may decide to grant access to everybody without further identification, while other firms may require personal data first. Similarly, some firms may decide to give up using spam, whereas others might wish to continue using it. For consumers it is wise to use technical means against spam and malicious programmes.²⁵

A better example of the dominance of the industry is the use of technical measures for preventing the copying of works (for example music) to the extent that the legally permitted exception of copying for an individual's own use is frustrated. It could seem that technology has taken the place of legal measures here and that the use of technology has gone beyond the ambit of the legal provisions: technological measures may prevent the copying of works where the law would allow it and they may even make it impossible to copy works that are not protected by copyright. However, although this may be the intention of the copyright owner, it is not the effect in practice, for example the enormous scale of downloading on peer-to-peer networks.

Nonetheless, it would be wrong to point to the common practice of downloading music as an indicator that the Internet has an anarchistic character. That would only be the case if it were totally impossible to act against behaviour that has been deemed criminal. The large-scale illegal distribution of copyright-protected works, either for commercial purposes or where own use has been abused, is dealt with by the law and cases do come before a judge.²⁶ The same can be said for child pornography on the Internet or incitement to racial hatred.

Conclusion

It takes time before people become accustomed to new technology. For example, the coming of the railways in the nineteenth century was greeted with both excitement and alarm. It would indeed change society forever, but today the railway has become a commonplace part of the infrastructure. The average commuter feels neither excitement nor alarm. What is new brings uncertainty. The advent of the personal computer made people fear that society would be split along new lines, a new variant of the old haves and have-nots: those who would have access to a computer and those who would not. The same caution can be seen with respect to the Internet: at first most people ignored it²⁷ as something not relevant to them and later it became a must for many. At one time it was even seen as the new source of economic growth, the area to invest in. It took a crash in technology stock before people looked at the Internet more rationally.

The theory that society will become dominated by its technology and the alternative theory that technology spells anarchy are symptoms of a society in transition, a society trying to come to terms with something new. Both scenarios are unlikely because neither enhances utility. Looking at technology from the point of view of putting constraints on it is too one-sided: technology can be enabling and can create new opportunities. Resourceful individuals will always find a way of maximizing their utility.

Trying to control the way people behave is nothing new. Recent examples include the attempt to divide the world into digital video disc (DVD) regions, the attempt to create an artificial distinction between blank audio/video compact discs (CDs) and data CDs or the way in which Sony tried to protect its records division by having its hardware division

place protection in its CD burners in order to stop people using the cheaper data CDs.²⁸ Rational consumer behaviour means no-one is buying Sony CD burners and the Sony artists are being downloaded just as before.

There are also examples of companies acting rationally. Philips sold its record label to Seagram just before it introduced its own CD burner. Given the nature of the free market, if dominant players try to implement certain limitations in their technology, for example Microsoft in its PCs or Nokia in its mobile phones or, in particular, if they were to cooperate in such an endeavour, it is more likely that they will lose their dominance rather than these technological limitations being realized. Not only would the authorities come into action to prevent the abuse of a dominant position, one factor that should never be forgotten, the working of the market itself, would also come into play.

Of course technology influences social developments. It would be 'virtually' impossible to argue otherwise. However, Lessig's complicated theory of subjective and objective constraints adds little to the discussion. His theories are based on an outdated model of man and a misunderstanding of the role of technology. A more rational approach would be to accept that technological developments lead to social developments and to the evolution of norms and law. It might then be well advised, for example, to just accept that home copying does not mean the end of the world. Firms will gradually move to better ways of making money. In the meantime, general levies for home copying could be arranged. Code is not law. At the present state of technology, if code would be law this could only mean Murphy's law.²⁹

Notes and References

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- 2 Lawrence Lessig, *Code and Other Laws of Cyberspace*, Basic Books, New York, pp 235–239, 1999.
- 3 For example, Mikhail Bakunin and George Orwell.
- 4 H O Kerkmeester, *Recht en Speltheorie (Law and Game Theory*, with an abstract in English) (diss.), Vermande, Lelystad, 1989.
- 5 Richard De Mulder, *The digital revolution: from trias to tetras politica*, in I Th M Snellen and W B H J Van de Donk (eds), *Public Administration in an Information Age. A Handbook*, IOS Press, Amsterdam, pp 47–56, 1998.
- 6 Francis Fukuyama claimed that the liberal democratic state may constitute the 'end point of mankind's ideological evolution' and the 'final form of human government' and, as such, constituted the 'end of history'. Francis Fukuyama, *The End of History and the Last Man*, Penguin, 1992.
- 7 Karl Popper, *The Open Society and its Enemies – Volume 1 – The Spell of Plato*, 5th edn, 1966 and Pieter Kleve, *Juridische Iconen in het Informatietijdperk (Legal Icons in the Information Age*, with an abstract in English) (diss. Rotterdam), Sanders/Kluwer, pp 2–3, 2004.
- 8 Murphy's law: 'if anything can go wrong, it will', cf. http://www.edwards.af.mil/history/docs_html/tidbits/murphy's_law.html
- 9 'Netiquette' seemed to be referred to a lot in the anarchist Internet times.
- 10 Egbert Dommering, *Copyright being washed away through the electronic sieve. Some thoughts on the impending copyright crisis*, in P B Hugenholtz (ed.), *The Future of Copyright in a Digital Environment*, Proceedings of the Royal Academy Colloquium organized by the Royal Netherlands Academy of Sciences (KNAW) and the Institute for Information Law, Amsterdam, 6–7 July 1995, Kluwer Law International, Den Haag, pp 1–11, 1996.

- 11 Cf Dan Hunter, Cyberspace as place, and the tragedy of the digital anticommons, *California Law Review* Vol 91, 2003, Mark A Lemley, *Place and Cyberspace*, Social Science Research Network, http://ssrn.com/abstract_id=349760 and Michael J Madison, Rights of access and the shape of the Internet, *Boston College Law Review*, 2003.
- 12 Michael C Jensen and William H Meckling, The nature of man, *Journal of Applied Corporate Finance*, Vol 2, pp 4–19, 1994.
- 13 Cf. A H Maslow, A theory of human motivation, *Psychological Review*, Vol 50, pp 370–396, 1943.
- 14 See Jensen and Meckling above.
- 15 In modern law and economics the general idea is that of maximization of utility, which makes their 'homo economicus' rather similar to the REMM. See for example R Cooter and T Ulen, *Law and Economics*, Addison-Wesley, Reading, MA, p 10, 1997 and R A Posner, *Economic Analysis of Law*, Little, Brown, Boston, 1998.
- 16 Cf. Daniël Kaheman and Vernon Smith, Noble prize winners 2002.
- 17 For example, an employee who resigns under the influence of severe job stress.
- 18 Michael C Jensen, *Foundations of Organizational Strategy: Preface and Introduction*, Harvard University Press, pp 1–7, 1998, Social Science Research Network, http://papers.ssrn.com/sol3/paper.taf?abstract_id=244154
- 19 Michael C Jensen and William H Meckling, The Nature of man, *Journal of Applied Corporate Finance* Vol 2, p 6, 1994.
- 20 Lawrence Lessig, *Code and Other Laws of Cberspace*, Basic Books, New York, pp 235–239, 1999.
- 21 For example, making a back-up copy from a copy-protected disc.
- 22 Pieter Kleve, *Juridische Iconen in het Informatietijdperk (Legal Icons in the Information Age)* (diss. Rotterdam), Sanders/Kluwer, pp 22 and 359, 2004.
- 23 R V De Mulder, *Een Model voor Juridische Informatica (A Model for Legal Informatics)*, with an abstract in English) (diss.), Vermande, Lelystad, p 95, 1984.
- 24 R V De Mulder, *Een Model voor Juridische Informatica (A Model for Legal Informatics)*, with an abstract in English) (diss.), Vermande, Lelystad, p 23, 1984.
- 25 For example, spam filters, anti-spy software, cookies managers, cryptography of anonymous remailers and other help such as black lists and white lists or dummy email accounts.
- 26 For example, cases initiated by the Recording Industry Association of America against illegal uploaders.
- 27 For example, in the past many malicious domain name registrations could take place without countermeasures by the legitimate name holders.
- 28 Although irrational behaviour with respect to IT can very well be rational to the manager involved, i.e. to give stockholders the impression that one is dealing with illegal copying.
- 29 Murphy's law: 'if anything can go wrong, it will, cf. http://www.edwards.af.mil/history/docs_html/tidbits/murphy's_law.html

