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Law and ICT. A Whole and its Parts

"Man must serve his electric technology with the same servo-mechanistic fidelity with which he served his coracle, his canoe, his typography, and all other extensions of his physical organs. But there is this difference, that previous technologies were partial and fragmentary, and the electric is total and inclusive. An external consensus or conscience is now as necessary as private consciousness. With the new media, however, it is also possible to store and to translate everything; and, as for speed, that is no problem. No further acceleration is possible this side of the light barrier."

Marshall McLuhan, "Understanding Media: The Extensions of Man", 1964

1 From ballistics to remote sensing

Few people remember the BARK and the BESK computers, once the flagships of Sweden's budding information industry. BARK was ready for operation in 1950, BESK in 1953. For a short while BESK held the world record in computing speed. Both machines were calculators in the strict sense, i.e. they were designed, built, and used for mathematical work such as ballistic calculations. Their development was supervised by a Board of Mathematical Machines, created in 1948 and existing until 1963. At that time computers were no longer simply "mathematical machines", they had become Automatic Data Processing machines. They had also begun to raise legal questions, not very many at first, and not very interrelated, but still questions worth attention. There was, for example, the question of patent protection of computing devices, and there were questions of contracts, and questions of insurance. Step by step the legal questions have become more numerous, more complex, and more interrelated. Part of the explanation has to do with the nature of information and communication technology (ICT).

ICT is made up of certain basic elements. The elements have all been present since the birth of the technology, but their relative significance and their visibility are still changing. The elements are automation, information, communication, integration, and sensation.

Automation was the natural first element to attract attention. The computer speeded up computation by doing away with slow manual action. Even the primitive BARK could perform mathematical operations at a speed of 5 to 10 per second. From the legal point of view, automation of this kind did not pass unnoticed. For one thing, computer programs needed to be inserted into the framework of intellectual property law. And automated decision-making in public administration soon caused concern from the point of view of both legality and jurisprudential theory.

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At the outset, the *information element* did not mean very much. Both input and output data were mere trickles compared with what we have become used to. Step by step the situation changed and the new technology began to be perceived as an instrument for storing and using large volumes of data. This meant, among other things, that computer systems found uses in many new contexts where automation could be combined with comprehensive filing systems and databases. In consequence, new legal interests arose having to do, for example, with computerised processing of personal data and the building of systems for the storage and retrieval of legal texts.

Communication via local and global networks has been a reality for decades. But not until the Internet revolution of the 1990s did communication begin to be perceived as an essential element on a par with, and perhaps even surpassing, the automation and information elements in terms of importance. This development is reflected by the increasingly frequent use of the term ICT instead of the older IT. It should be underlined that communication has to do not only with communication between machines but also with communication between people. Thus, ICT has become a medium both for private communication (e-mail, chat) and for mass communication (spam, streaming audio). This development is mirrored by the legal discussion, which has moved from relatively straightforward issues of traditional telecommunications regulation involving "conduit" to issues of "content" having to do with such themes as free speech, crime in cyberspace, and different strategies for the governance of global data networks.

Integration has to do with different kinds of convergence phenomena, best known among them being perhaps the convergence or fusion of telecommunications, mass communication media and data processing. These fields have traditionally been regarded as separate areas of legal regulation, and their coming together has required (and still requires) changes of regulatory strategies and instruments. Generally speaking, digital technology has implosive effects, for the simple reason that ICT is universal in nature and can be used to process and communicate information of any kind as long as it can be reduced to ones and zeroes.

Finally, *sensation*, is perhaps the most difficult of the five elements to grasp. In his "Understanding Media" (1964), Marshall McLuhan attempted to describe, among other things, the characteristics of different media in terms of "hot" and "cold", depending upon such factors as the intensity of the communication and the degree of involvement of the participants. If nothing else, McLuhan helped to make people aware that media as such are not neutral, that they affect our behaviour, our expectations, our experience, and so forth. Modern cognitive science studies the relationships between mind, body, and various tools for information processing (notational systems, books, maps, calendars, speedometers, microscopes, etc.). It emphasises interaction and interdependencies. Briefly, human beings think and sense not only with their brain and body but also with their tools. One looks in vain for a clear dividing line between the "inside" and the "outside" of man's mind. As for ICT, we are only beginning to understand the consequences. And a legal understanding hardly exists. One may look for its first signs in themes such as 'protection of minors', 'universal information services', and 'digital divide'.

To summarise: Information and communication technology is a complex and multifaceted array of elements finding its uses in the most diverse contexts. From the point of view of law this is an essential assertion. Sloppy thinking sometimes seeks to reduce ICT to a simple tool, similar in kind to a saw or a typewriter. The reasoning goes: We don't need a law of typewriters, neither is there any need for a legal theory of saws and sawing. Ergo, ICT is not worth fussing about. But is that really all there is to it?

2 Dealing with a tool

How often does a saw interact with the law? In what contexts? In what ways can a typewriter have an impact on administrative decision-making? Silly questions like these quickly indicate that tools are of many kinds and that their relationship to law varies. An attempt at generalising will make it clear that tools may be simple (such as a ring binder) or complex (such as an organisational and technical set-up for verification of electronic signatures), that they may be "hard" (a tape recorder) or "soft" (a classification scheme), special (a pencil sharpener) or general (paper), and so on. Obviously, a simile such as "there is no need for a law of typewriters" ought to be used with care.

ICT must be placed into the category of extremely powerful tools – complex, general, and with far-reaching consequences for society. Perhaps the word "tool" is not even a very good way of labelling it, perhaps it is even misleading. Other words to characterise ICT come to mind – and have indeed been used by different observers. "Industry", "market", "ecology", "culture", and "language" may be mentioned. Regardless of their exactness, such notions are useful since they point towards broader perspectives and create an interest in exploring legal aspects of ICT instead of belittling their importance.

Ever since it began, the discussion of ICT and law has distinguished between two main relationships between the two phenomena. One relationship at an early stage became evident mainly through the development of computerised legal information retrieval systems. Briefly, this relationship concerns *the use of ICT for legal purposes*. The other relationship has to do with substantive law, *viz* matters of legal regulation associated with ICT and its uses in various contexts. The questions that will occupy us in the following concern both types of relationships, including the possible links between them. First some comments on ICT law in general.

Although 'fields of law' are not of the kind to be found in the Linnæan flora there are, of course, criteria which can be used to classify and divide. Many of these criteria are associated with classical, conceptual or institutional legal ordering – private law, tort law, contract law, insurance law, and so forth. Other criteria are associated with different areas of activity, with practical interests, and the like. Some examples are building law, banking law, and maritime law. The two types of criteria, conceptual and practical, often blend into one another, so that it may be difficult to tell to what extent a particular field of law is delimited and characterised by theoretical or practical concerns.

The prevailing view of ICT law seems to emphasise its practical nature. The radical version of this view does not even recognise ICT law as a field of law proper: It isn't sufficiently coherent, at most it is a loosely interconnected collection of legal problems having to do with computers and data networks. These problems are best treated separately within established fields such as contract law, copyright law, penal law, and so forth. We may call this approach the traditionalist's view. It reflects a healthy scepticism towards far-reaching (sometimes almost boastful) claims that ICT has given rise to a new legal order or that ICT in general and cyberspace in particular are phenomena beyond the reach of the law, that the Internet is a lawless country, and so on. This is the revolutionary's view.

The divergent reactions of legal professionals (theorists as well as practitioners) can be seen as reflecting the complexity of ICT and the many perspectives that one may apply in order to understand its legal hurdles. One way of describing these hurdles is to focus on what may be called 'the paradoxes of ICT law'.

- ICT law encompasses almost all branches of law, but in order to be meaningful it must nevertheless be narrowed down and delimited.
- ICT law ought to be independent of technology (technologically neutral). At the same time it must be capable of regulating and steering technology and its various uses.
- The development of ICT law often requires broad as well as deep understanding of machinery and methods, but the legal solutions must be simple to understand and apply.
- ICT law requires foresight but encounters many difficulties when it comes to predicting future developments, situations, applications, issues etc.
- ICT law involves demands for "new law" but must at the same time be based on inherited legal views and existing legal concepts and regulations.
- ICT law has to solve urgent local and national problems (in tax law, for example) but it has to do so in an international, quite often global framework.
- Legal solutions to ICT-related problems must often be developed speedily but the solutions should be well thought-out and dependable.

These 'paradoxes' are, of course, to be seen, not as logical impasses but as practical and theoretical difficulties. They may also be seen as arguments against the radical version of the traditionalist's view (the 'business as usual' view). Above all, the traditionalist's view is based on two shaky presumptions: (a) that ICT is a relatively simple phenomenon that does not pose demands for legal rethinking, and (b) that a fragmented or piecemeal approach is sufficient, i.e. that the legal problems of ICT can be solved when they come into view and without any need for efforts to apply holistic thinking.

Moving away from the traditionalist's standpoint can mean a variety of things. To begin with, ICT law may be structured and delimited in different ways. As we have already discussed, these differences have to do, among other things, with the diverse criteria that can be used to structure and classify. For one thing, the criteria may be theoretical or practical, and they may be more or less closely related to the kind of interest taken in the technology. Thus, there are efforts to treat ICT law as 'information law', i.e. as a general law of information handling. Such a view involves obvious difficulties of delimitation and invokes needs for a theoretical basis founded in both jurisprudence and information science. Typically, information law advocates tend to look for structuring criteria in the different stages of information handling (collection, storage, ordering, etc.) and take an interest in information processing whatever the kind of tools that are being used. For natural reasons, it is mostly academics who engage in this kind of thinking. On the practical side, the flow of treatises on 'Computer law', 'Internet law', 'Cyberspace law', 'Software law', and so on continues to swell. This literature at least bears witness to the steady interest taken in ICT law as a field of legal practice where special expertise is appreciated and where issues are often treated across areas of law such as contract law, intellectual property law, insurance law, tax law, penal law etc. A sort of interdisciplinary treatment, one may say. Of course, the ambition with regard to integrated analysis varies. Many treatises are little more than compilations of comments on assorted ICT-related legal issues that could equally well have been treated separately.

One question remains: what of the legal use of ICT? Is it completely separated from the notion of ICT law? At first sight, the answer may seem obvious, namely that 'use' and 'regulation' are two different things that have nothing in common. A closer look, however, makes the answer less obvious. For both pursuits there is a need for an understanding of the complex phenomenon of ICT, not only an understanding in general, but a legal understanding, i.e. knowledge of technology in the legal perspective. A bond between the two subjects, yes, but the question is, how strong? Is it only the superficial fact that ICT is of interest both to those who are engaged in legal uses and to those who work with its regulation? No, there is

more to consider. Let us return to the interest taken in a possible theoretical platform or basis for a notion of 'information law'. Generally speaking, a deeper understanding of ICT law appears to require a deeper understanding of ICT phenomena and how ICT interacts with the law. In this way, attention focuses not only on legal uses of ICT in a simple sense (automatic calculation of social security benefits or contracting through e-mail, for example) but on legal aspects of uses of ICT in society in general. Consider, for example, use of ICT by financial institutions or use of ICT in commerce. They are not first and foremost "legal uses" but certainly important enough from the point of view of legal regulation. One way of summarising this use/regulation connection is to say that ICT creates new environments or a new infrastructure for legally orientated activities and that, in consequence, more and more uses of ICT in society become a legal concern and must be closely studied. Some aspects of this task will now be considered.

3 A complex interaction

Many committees and study groups have done their best to chart the *legal effects* of ICT. Others have studied *legal obstacles* to the development of ICT uses in society. Both starting points are viable, but the "effects and obstacles" approaches both risk being too narrow. The reason is that 'law' and 'ICT' should be seen as mutually preconditioning phenomena. In other words, the two phenomena interact in more or less dynamic and complex patterns. The study of this interaction should not limit itself to certain simple effects and obstacles at a given point of time.

Consider as an example the emergence of electronic documents. The initial legal effect consists in uncertainty regarding their treatment. Briefly, should they be equalled with traditional paper documents or not? The search for an answer soon makes it apparent that the question has different answers in different legal contexts. If all is well, the most pressing problems are solved through actions of the lawmakers, development of case law, elucidatory comments by legal scholars, and so forth. But technology never rests. Among other things, changes in the electronic environment can bring about factual situations that may or may not have been foreseen. Consequently, legal solutions that were well-suited at a certain stage may become uncertain or even disputed and in need of review. On the other hand, it may be considered necessary to impose constraints and requirements that shape or re-shape the electronic environment in a legally acceptable way. For example, if there is found to exist a legal need for "original" electronic documents, then the technical tools for producing such documents must be developed and used in the relevant situations.

The example is sketchy and simple. Nevertheless, it suffices to illustrate that what is initially looked upon as a simple conceptual issue ("can documents be electronic?") will soon turn into more or less complex questions of an interplay between law and ICT over time.

Above the level of single concepts, similar conclusions may also be drawn. Consider, again, the notion of *integration* (convergence). It refers to the fact that digital information processing and communication brings with it the disappearance of borders of different kinds. Some examples of such disappearing or increasingly fuzzy borders concern technical equipment (e.g. the mobile phone becoming a computer terminal), markets (e.g. the software firm becoming a vendor of communications services), and the public and private sectors (e.g. private companies performing information services for public authorities). All these and other forms of integration have resulted in needs for reappraisals of legal regulation that has relied upon stable borders and the possibility of upholding different regimes for different sectors or phenomena. Debates and analyses have been going on for decades and illustrate well the difficulties of coming to grips with the changing interplay of law and ICT.

A third example has to do with legal use of ICT, *viz* automation and data networks in the administration of justice in a broad sense, i.e. use of ICT in lawmaking, in the judiciary, in public administration, and so on. By now it is generally accepted that much more than simple efficiency improvements and basic re-tooling (word processing replacing typewriters) is involved. In fact, as present endeavours in Sweden and elsewhere illustrate, the very foundations of the legal order need to be scrutinised. Suffice it to mention two examples: (i) the structure and functioning of the criminal justice system (questions associated with data flows between the different actors, rules on evidence and use of digital media in the courtroom, changes in the overall organisation of the courts, etc.) and (ii) the respective roles and responsibilities of the state and of private parties with regard to the storage and dissemination of legal sources (what information should be regarded as a common good available without cost to the citizens, and to what extent should the state refrain from providing information services that may come close to a new form of lawmaking?).

As already remarked, the issues are neither new, nor can they be formulated and solved once and for all. They aroused theoretical interest already when ICT was at a more primitive stage and its ramifications more uncertain. One of my own contributions to this early discussion was a theory of "legal system management" (in "Computing Law. Perspectives on a New Legal Discipline", Liber 1977). To summarise a complex argument, legal system management as it was presented in the monograph concerned both the management of legal information systems proper, such as the ones designed and operated for the courts, and management of legal aspects of information systems of other kinds such as systems aiming at strengthening participatory democracy and systems for rights administration and the like. The basic thoughts have already been presented above, *viz* that the complex and dynamic interaction of law and ICT (at that time referred to as EDP, Electronic Data Processing) requires serious attention and even some new legal thinking. In practice, the theory has found an expression in, among other things, the notion of a "satisfactory openness structure", i.e. basic requirements that Swedish public authorities design and operate their information systems with due regard for the right of access to official documents (see Chapter 15 of the Secrecy Act (1980:100)).

Today there is a relatively widespread awareness that law and ICT interact in various ways: that the one may steer the other, that they may complement one another, and that they may counteract one another. Viewed in this way, law and ICT form part of a whole, and abstract reasoning in the 1970s about, for example, the need for a legal "structural theory" of data processing has become practical concerns in relation to computer programs that put legal norms into operation, rights management systems, privacy enhancing technologies, filtering of harmful content on the web, and so on. Even in the USA, where "computer law" has tended to be a predominantly practical concern, the interest taken in theoretical and structural aspects appears to be growing. A recent example is Lawrence Lessig's lucid analysis of the interplay of legal regulation in the traditional sense and the design of computer programs and other elements of information processing systems.[1]

Against this background two assertions may be made. Firstly, ICT law is not devoid of a theoretical basis. On the contrary, the complex interaction of law and ICT opens up a field of interesting and challenging questions and possibilities, many of which have yet to be exploited. Secondly, even if one accepts the traditionalist's view that ICT law is to be looked upon as a collection of legal issues belonging to different established fields of law (contract

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[1] A useful illustration of the early discussion may be found in Herbert Fiedler, *Forschungsaufgaben der juristischen Informatik.* In: EDV und Recht. Möglichkeiten und Probleme. Hrsg. A. Kaufman. Berlin: J Schweitzer 1973. EDV und Recht, Band 6. As for Lessig, see *Code and Other Laws of Cyberspace*. New York: Basic Books 1999.

law, administrative law, penal law etc.), the collection need not be indiscriminate but can and ought to be shaped according to particular points of view.

4 Points of view

The world one sees depends on one's view of the world. This truth is old and well-known to us all, although we are apt to forget it. Thus, the question of whether there *is* such a thing as ICT law oversimplifies things and must be reformulated. One way of doing so is to pick a number of viewpoints and use them to reflect on some Swedish experiences.

As for the viewpoint of *legal practice*, for some legal practitioners ICT law appears to constitute a distinct field of expertise whereas others are inclined to let it melt into the classical pattern of general contract law, tax law, labour law, penal law, and so forth (cf. the contribution by Viveca Bergstedt Sten). Clearly, views depend on the kind of professional and commercial interests taken in the subject matter. For a lawyer specialising, for example, in issues of software contracts (different types of contracts, existing standard contracts, proprietary rights, insurance coverage, practical concerns etc.) it will be natural to emphasise the bonds that tie the issues together. For a lawyer specialising in tax law or in general company law, the ICT issues naturally form part of a legal framework where their distinctiveness is a minor concern. However, the law firms that offer advice on matters of ICT law should not be regarded as vendors of snake oil. To the extent that they base their claims to expertise on area-specific knowledge and experience, they are just as serious as the ones offering specialist advice on matters of maritime law, building law, media law, or whatever.

Turning to the viewpoint of *lawmaking*, one finds that the Swedish Ministry of Justice has a number of sections for different areas of law (private law, administrative law, penal law etc.). Matters of ICT are distributed among these sections, so that intellectual property rights are handled by one section, protection of personal data by another, and so forth. As a consequence there have been difficulties with regard to co-ordination and practically no development of a sort of "meta knowledge" about the regulatory issues of ICT (cf. the contributions by Per Furberg). Some people may regard this as a weakness, whereas others will point to the advantages of the existing organisation and emphasise the value of developing and applying in-depth knowledge of traditional fields of law instead of organising work crosswise.

In academic *teaching and training*, the law faculty of Stockholm University offers an example of how issues of law and ICT may be treated in an integrated fashion at different levels of activities. During their first year of study, the law students are introduced to ICT as a field of legal interest from the point of view of both usage and regulation. The course totals six study weeks and is labelled "legal informatics" (rättsinformatik). Its main difficulty is to be found in the student-beginner's superficial knowledge of law and legal thinking. Nevertheless, it is possible to address at least some fundamental issues of ICT and law, the problems of security and vulnerability, for example. The obligatory basic legal informatics course is followed by elective one-semester courses dealing with particular aspects of ICT law such as e-commerce and information risk management. Many students also choose to write their final "graduation paper" on matters of ICT and law. As for post-graduate courses the faculty offers an international programme in "Law and Information Technology". The one-year program reflects the basic strategy by spending time both on more conventional study of ICT law and on methodological issues associated with such issues as legal system management (cf. above), structuring of legal information (XML and related tools), and automation of legal decision making. Above the master programme level, there is a doctoral programme. At present, theses are underway on access rights regulation, freedom of

expression and new media, rights in databases, and information security issues. To summarise, for a law faculty that decides to include law and ICT in its syllabus it is not difficult to design suitable offerings and find a place for them in its curriculum. It may be mentioned that courses in "legal informatics" are also in demand in other branches of Stockholm University, not least the Department for data and system science. In particular, courses on ICT law basics attract a considerable number of students.

Last but not least there is *legal science*. By now, the study of law and ICT has gained recognition as an area of specialisation. But just as in legal practice, views differ regarding its significance and its future. There are also varying views on how it ought to be conducted, i.e. views regarding its delimitation, its centre and periphery, its relations to traditional branches of legal science, and so forth. The situation for the field at the different law faculties in Sweden varies accordingly. Basically, three approaches may be distinguished. One may be described as disinterest, i.e. the field is not perceived of as worthy of any particular, methodological attention. Another approach recognises that there may be merits in paying attention to the field as a whole or, at least, that it is fruitful to organise co-ordinated efforts to study its various aspects, even if such efforts had better be placed into the framework of the traditional disciplinary matrix. The "Lex Cyberia" programme at the law faculty of the University of Lund may be seen as an example of this kind of approach. The third approach is to be found at the law faculty of Stockholm University, where the teaching programme described above is matched by ambitious scholarly work aimed at developing "legal informatics" as a sub-field of legal science. The project got going in the mid-1960s. In 1968 the Faculty Board formally agreed to set up a special working party for law and EDP, later to be renamed "the Law and Informatics Research Institute" (IRI). Thus, work has been going on for about thirty-five years and the IRI is by now a well integrated part of the legal science endeavours of the Stockholm University law faculty.

To summarise. 'Law and ICT' is variously perceived, depending upon perspectives, professional interests etc. This diversity is hardly surprising and is to be welcomed, at least so long as the different views challenge, enrich, and develop one another. The important thing to keep in mind is the complex and powerful nature of ICT. It is an amalgamation of old and new information utensils (alphabet, paper, calculator, map, telegraph, camera, radio, motion picture etc.) in a joint, basic "electric" format (to return to McLuhan's terminology). Many experts believe we have so far seen only a fraction of the changes that this amalgamation is capable of bringing about on both the societal and the individual level. Some of the changes will be deep, others shallow. It is my conviction that this also holds true with regard to the legal order and that the task of observing, analysing, and understanding the interaction of law and ICT constitutes both a challenge and a responsibility for legal professionals, be they academics or practitioners. To put it simply, many "technical" issues are in fact "legal" and an increasing number of traditional "legal" issues come shrouded in "technical" concerns. Law and ICT are more of a wholeness than many of us realise.