

Editor's Note

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The contributions in this issue of the European Journal of Legal Studies tackle various developments which are currently shaping our future and raise important questions, varying from what technological advances mean for our understanding of “law”, to how legal tools are devised in practice to deal with the challenges posed by new advances. The topic is introduced below by the members of the Infosoc Working Group of the Department of Law of the European University Institute, who organised the conference during which these contributions were first presented and were kind enough to honour the European Journal of Legal Studies by publishing them in this Special Conference Issue. On behalf of the Editorial Board of the Journal, I would like to thank the members of the working group for all the work, and Benjamin Farrand for further editorial assistance. We are pleased to offer our readers a this collection of thought-provoking essays.

Introduction: Looking into the future...

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In the future humankind will find itself in an incredibly automatic and intelligent new space, people will be surrounded by technologies that observe, monitor, analyse, interpret, simplify, anticipate and explain the world for us. Humanity will be immersed in a deep and permanent communicational status, living in a planet of machines, agents and automatic processes. A vast array of powerful interfaces, embedded in all kind of objects and gifted with some sort of intelligence, will capture, scrutinise and process data about reality and nature surrounding us, as well as about every other human being living within. Such agents will recognise, react and respond, in an intuitive manner, to the presence and to the actions of

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different people and electronic objects. Human action and decision-making will be increasingly delegated to artificial agents, reality visible to the human eye will be super-imposed by electronic tags, digital identifiers and virtual entities, and the current network of computers and other terminals called the Internet will be a network of digital people, sharing a half-fictitious, half-real space that visionaries have been for long time prophesising as cyberspace or metaverse and that is now becoming to reality under the denomination of ubiquitous computing and ambient intelligence.

The future will be dominated by interactive technologies, pervasive and ubiquitous computing, mixed realities (where the virtual and the physical realms will converge), ambient technologies, augmented reality, autonomous software agents, artificial intelligence and many other technological developments.

“The future of ...” - Conference on Law & technology

Taking a glimpse beyond the present and bearing in mind the possible and prospective technologies which will come to fruition in the future, the European University Institute (EUI), through the Law Department and in conjunction with the InfoSoc Working Group, organised "The future of... Conference on Law & Technology," hosting the event in Florence, on 28 and 29 October 2008.

The conference challenged the academic community to think and foresee what challenges, problems and changes the Future will bring to Law. Rather than preview what the future will look like, the conference aimed at collecting new ideas, concepts and theories of how Law will accompany such a future, proposing a creative exercise in which a description of the upcoming world was combined with a prospective analysis of how law will change and evolve.

The conference intended to provide an original and ground-breaking symposium for exchanging ideas and fostering the debate about the triangular relationship between future, law, and technology, attracting quality papers dealing with prospective studies and analyses of legal

developments and transformations expected in the future. Taking into account the present technological trends affecting society, the “Future of...” Conference challenged scholars to think about and foresee the main problems and changes that Law will face and suffer in the upcoming future of ambient technologies, ubiquitous and pervasive computing, web 3.0, entangled realities, autonomous software agents, artificial intelligence and many other features and elements.

The conference welcomed the contributions of scholars and researchers from many different regions and cultures in the world, whose interests and research were directed towards the assessment of the evolving relationship that might develop in the future between law and technology. The numerous contributions were clustered into six different panels:

- General issues. New dimensions in the technological environment: the role of the law and agency
- Public law, jurisdiction, boundaries
- ICT tools for the law
- The personal sphere in the technological milieu: Liberty and privacy
- Biotech
- Intellectual property. Copyright, patent law

Session I: General issues. New dimensions in the technological environment: the role of the law and agency

The first session of the Conference, entitled “General issues – New Dimensions in the technological environment: the role of law”, presented two papers which analysed the interaction between law and technology, each one focusing on different aspects of this intricate relationship. The first paper, authored by Massimo Durante from the University of Turin, argued in favour of a role of mediation between the real and the virtual world assigned to law within the future evolution of information and communication technologies (ICT). The second paper, written by Sawhney, Ratnadeep and Lee, highlighted the importance of metaphors and precedents as conceptual tools to understand the development of new technologies.

Durante, through his paper “Re-designing the Role of Law in the Information Society: Mediating between the Real and the Virtual”, argues that, notwithstanding the incessant technological evolution, law will keep having an autonomous and central epistemological role in representing reality. In this account, law will be assigned the essential role of mediation between the real and the virtual world. In the words of the author, such an act of mediation requires a translation of the virtual information displayed by technology (the possibility opened and made available by the application of new ICT) into real information.

In developing his main argument, Massimo Durante claims that law, assigned with the role of mediation between the virtual and the real, will ensure the conditions of reliance upon information in both directions: from the virtual reality to the real world and from the real world towards the virtual reality. Regarding the former, law is attributed with the epistemic role of appraising in what terms the effects of an action performed in the virtual reality can be judged foreseeable and thus accountable in the real world (such effects are to be appraised in terms of legal responsibility, as it is within the real world that one is responsible for [the effects of] actions displayed within virtual reality). In addition, law displays its role of mediation also in the opposite direction, i.e., from the real world to the virtual reality. In this case, law confers a real content to the real world that can be appraised within virtual reality (this is done by means of informational reliance, as it is within virtual reality that one relies on informational data in order to perform actions that are likely to produce [legal effects] within the real world). In this perspective, and as Durante asserts, law can play a fundamental role of mediation between the real and the virtual to the extent that it assures reliance upon information. Moreover, as the author concludes, the way in which law can devise an act of mediation which determines the conditions of possibility of the representation of what is referred to as “virtual reality” within the realm of what is referred to as “physical reality” and vice versa is structured by the inter-subjective computer-mediated interaction and communication between individuals or groups.

The second paper, entitled “New Technologies and the Law: Precedents via Metaphors” and co-authored by Harmeet Sawhney, Venkata Ratnadeep Suri and Hyangsun Lee (Department of Telecommunications, Indiana University, Bloomington), provides an interesting study on the application of metaphors by courts as conceptual tools to understand and regulate new

technologies. In legal terms, and as metaphors help to establish precedents, the paper explains how new communications technologies have been shaped by legal precedents created by previous ones.

The article, relying upon a historical study of US case law, demonstrates how metaphors, in some cases, can be effective vehicles for the transfer of conceptual frameworks from one technology to another (as in all point-to-point networks that transport materials and information from one point to another – electric grids, highway systems, telegraph, railroad and telecommunications networks); and how, in other cases, this metaphor process breaks down (as in the case of radio and broadcasting, in which its initial conception as “wireless telegraph” or a point-to-point communication technology caused intricate juridical problems). The authors use the example of radio as a case where a metaphor based on an old technology failed to shape the new one in its image, describing the phenomenon of a “metaphor vacuum”, i.e., a case in which there were no readily available metaphors to think about the new broadcasting technology. Departing from the problem of “metaphor vacuum”, within the example of broadcasting as a new technology for which no clear precedent had been established, the article investigates how the legal system dealt with such a “stalemate”. Since the case law could not proceed without a precedent, the authors observe how such tension was resolved by “stretching” a previously established metaphor. Such a stretching process is carried out until it reaches a breaking point, which creates a metaphor vacuum or a realisation that a radically new framework is needed. Broadcasting technology is used by the authors as a paradigmatic case, as it ended up with a standard from the world of transportation systems and public utilities through the insertion of a new standard of “public interest, convenience and necessity” (PICON). In other words, PICON filled the metaphor vacuum, bringing along with it a legal framework.

This article calls our attention to the fact that, in the future, metaphors used in the early stages of the development of a new technology may not prove to be appropriate in the long run, setting precedents difficult to change at a later stage. It is thus important to remember that the “devil is in the details”, i.e., to remain alert to the peculiarities of the new technology, as it is the peculiarities that eventually bring about a metaphor vacuum.

Session II: Public law, jurisdiction, boundaries

In the second session of the Conference, entitled “Public law, jurisdiction, boundaries”, the three papers presented deal with the need to regulate the internet, but each one with a different aim. In the first paper, Armando Cottim analyses the interaction between cybercrime (and cyberterrorism) and the boundaries of criminal law jurisdiction. As the author states, “the advent of cyberspace has changed the established criminal law model. Online crime happens without boundaries, as attacks can come from outside the borders of one State, thus scattering crime scenes through two or more countries, sometimes in more than one continent.”

With this in mind, he analyses the 2001 Budapest Convention on Cybercrime, starting with an overview of all possible jurisdiction theories to be applied, and concludes that the “Convention relies exclusively on the territoriality and nationality theories to empower parties to establish jurisdiction.” Cottim criticises the choice made in the Convention, believing that it creates more problems than solutions.

Then he discusses the threats that arise from the interaction between Cybercrime and Jurisdiction, where he presents the famous *Yahoo Case*, decided by *Tribunal de Grande Instance de Paris*, “which ordered Yahoo! Inc and its subsidiary Yahoo France not only to exclude French surfers from sales of Nazi memorabilia (...), but also to destroy all the concerned files stored in their server”, and goes also through the *Rome Labs* and *Tore Tvedt* cases.

After discussing these cases, and the issues that can arise from the impact of cybercrime and cyberterrorism on the jurisdiction of the States, Cottim concludes that “cyberterrorism would probably not justify a convention to deal with it. The explicit inclusion of cyberterrorism in the Convention on Cybercrime by means of an additional protocol would probably suffice”. However, “given the path towards catastrophism and indiscriminate attack on human lives taken by modern day terrorism,” he “would consider possible and positive the inclusion of terrorism in the list of international crimes against humanity – in accordance with littera k of number 1 of article 7 of the Rome Statute of the International Criminal Court (ICC) – which would entitle

States to have universal jurisdiction to apprehend terrorist agents, although jurisdiction to prosecute would be given to the International Criminal Court.”

The second paper “Children Protection Online: Uneasy Steps towards a Balance between Risks and Freedoms”, presented by Federica Casarosa, focuses on the European initiatives for the protection of Children concerning the use of internet, what is a very important issue, since “children and young people are more and more often the first to take up and use new technologies; yet, they are not always aware of both risks and ways of dealing with them, or, whether they are, they are not always mature enough to evaluate the situations that they encounter and the possible consequences their decisions can have.”

The author recognises that sometimes the content to which children and young people have access through the internet is legal, at least for an adult, but it is “liable to harm them by impairing their physical and mental development” (COM(96) 87, par. 17).

After analysing the European framework in this area, she describes all existing risks for children in accessing the web: child abuse material; child grooming; cyber-bullying; and, unlawful privacy invasion. Then, Casarosa presents the tools developed by the European Union to fight against these risks (Hotline networks, Rating and filtering schemes, Age verification tools and Codes of Conduct).

Finally, she analyses the case of “social networks” (such as Facebook or Myspace) to conclude that “any policy aimed at protecting children, either from illegal and harmful content or from other possible online risk, due to the nature of the subject-matter, should be of a multi-faceted nature.”

The last paper, by Oles Andriychuk, entitled “Concept of “Network Neutrality” in the EU Dimension: Should Europe Trust in Antitrust?” aims at giving “a descriptive presentation of the current European regulatory framework in the areas of electronic communications and audiovisual policy”.

In his paper Andriychuk analyses the evolution of the EU legislation in the field of telecommunications, highlighting that the European policy in this area “was supposed to be governed by three major principles: liberalisation, harmonisation and competition”. Then, having these principles as a starting point, Andriychuk addresses the contradictions that arise from them, saying that “[t]he main problem is based in their ontology and methodology.”

He discusses issues concerning the “European policy of limited profitability” and “Local Loop Unbundling”, and, then, moves his focus to the European law of electronic communications, which he calls “Present-day regulatory regime”. In this topic he draws a comparative analysis between the EU and the US concerning “Network Neutrality”, stating that in the EU this issue “has been neither settled, nor yet properly articulated”. Although, he believes that since public opinion plays an important role in the European decision-making process, “the perspectives of the ‘Network Neutrality’ legislation appear to be quite likely”.

Andriychuk concludes that “‘Network Neutrality’ is an interdisciplinary phenomenon. It can be explored from economic, legal, societal, technical and political dimensions.

As we could observe, all the papers, in one way or another, deal with the interaction between the Internet and law addressing how law can provide an up to date response to this new phenomenon, trying to find a solution which guarantees the protection of the individuals without blocking the development of such technology.

Session III: ICT Tools for the Law

Session III, entitled “ICT tools for the law”, was conceived as a section to explore the characteristics and implications of the use of ICT support for legal practice. It was thus concerned with the area of study known as “Legal Informatics”, “Artificial Intelligence and Law” or “Information Technology for lawyers”, among other possible expressions.¹ Whereas IT Law

¹ **A. OSKAMP and A. LODDER**, “Law, Information Technology and Artificial Intelligence”, in **A. LODDER and A. OSKAMP (Eds.)**, *Advanced Technology in the Legal Domain. From Challenges to Daily Routine*, Dordrecht, Springer, 2006, p. 3.

deals mainly with the issue of analysing which are the legal problems of the new reality arising from the use of Information Technologies and how to tackle them, legal informatics is technologically oriented and explores how computer applications can be best developed to meet legal practitioners' needs. This implies a contextualised understanding of technological applications and requires, therefore, a thorough analysis of current trends and needs in the legal profession. This is precisely the main focus of Prof. Pompeu Casanovas' paper entitled "The Future of Law: Relational Justice and Next Generation of Web Services", in which he intends to bridge the evolution of web technologies (Web 2.0, Web 3.0, next generation Semantic Web) with the change of paradigm in the legal field. Prof. Casanovas carries out a detailed study of current technological trends (Web 2.0, Web 3.0, Semantic Web) and prospects of application in the legal milieu. He underlines the fact that there is a current lack of knowledge of the detailed way in which the Internet is evolving, and that some of the Semantic Web promises have not yet been fulfilled. New trends such as the next generation of web services based on personalisation and user-centred approaches are discussed. The incredible expansion of the legal market as well as the pervasive use of ICT in legal practice are presented as indicators of what is going on in the legal sphere. Some current trends in the intersection between law and technology are highlighted, such as the obstacle that the law sometimes represents for technological evolution, and the effect the use of new technologies has in the expansion of the legal profession. In this framework a new legal paradigm is introduced, through the concepts of Relational Law and Relational Justice, based on flexibility, dialogue and autonomy, on a higher and more effective citizen participation and the increase of self-regulatory forms, all of which can be enhanced by the next generation of web services. This creates a general picture of the future of the law, underlined by the main thesis of the paper: that Semantic Web technologies should be cognitively and sociologically grounded in order to satisfy real user needs, taking thus into account "the social situated knowledge that enables law to be created, implemented and shared in an increasingly technological social and organisational environment."

The concept of legal informatics has indeed evolved following technological advances and requirements from the users in the legal profession. It started with the construction of the first databases of legal documents in the 1960s, giving way later on to the design of large administrative databases in the 1970s, to systems aimed at assisting lawyers in the task of finding

legal information (legal information retrieval) and to great expectations in the field of expert systems in the 1980s, which would turn out later on to be too ambitious a programme. Nowadays approaches to legal informatics have changed perspective and regard computer applications as assistance tools to the main task accomplished by a human operator. This assistance can focus on the different information processing tasks that are part of the legal professional daily routine, one of which is legal information retrieval. This has always been central to legal reasoning, but especially nowadays, when risk of information overload exists, enabling more efficient access to reliable and useful legal knowledge becomes a pressing need. Indeed, legal information of different types (authoritative sources but also case law and legal doctrine²) is moving to the Web and therefore legal professionals, and citizens as well, are exposed to information overload.

Geist's paper, entitled "The Open Revolution: Using Citation Analysis to Improve Legal Text Retrieval" focuses precisely on the improvement of legal information retrieval systems, which are still based on the same technologies that were used in the 1980s (mainly Boolean search) even if the system performance presents deficiencies. The paper proposes an improvement by the introduction of citation analysis, which is an information science concept according to which citation can indicate the existence of a relationship between documents. Citation analysis was used to improve the performance of the Google search engine and the author of the paper highlights the feasibility of applying it to the search of information in the legal domain, since the network structure of the www and that of legal documents is similar. Indeed, the case study of the paper shows that the network structure of Austrian Supreme Court decisions and their headnotes is a free-scale one, just like the www network structure.

Sometimes legal informatics not only provides new tools for the assistance of traditional legal tasks, like legal information retrieval or legal drafting, but proposes the introduction of new tasks or methods for legal analysis at the same time that it provides tools to support these newly suggested tasks. This is the case in the article by Mahler on "Tool-supported Legal Risk Management: A Roadmap". The first part of the paper presents the advantages of the introduction of a method for legal risk analysis. This implies an innovation in legal method, for even if risk

² G. SARTOR, M. BIASIOTTI, E. FRANCESCONI, M. PALMIRANI, F. VITALI, *Legal Informatics and Management of Legislative Documents*, Florence, European University Institute, 2007.

management exists *de facto* in legal practice, no formal methodology has been developed by legal theory in this regard. The paper provides a definition of legal risk and illustrates through an example how a standardised method for dealing with legal risk could be applied to the assessment of the clauses of a contract. Nevertheless given that methods for legal risk assessment are still not well established, the author argues, they should be regarded as a complement to current legal methods, which are based on experience and heuristics. Furthermore, since the introduction of legal risk management methods is complex and costly, the introduction of IT support could be very valuable. The second part of the paper suggests three ways in which IT tools could support the task of assessing legal risk: by supporting the process, helping the analyst to follow an order and to document the outcomes at every stage; by supporting the communication between different experts, which might be required to identify the risk and estimate it; by ensuring interoperability with existing legal information systems. The author claims as well that, with due care, it would be possible to include some elements of automation to support human judgment and analysis in legal risk assessment. Finally some considerations are made with regard to the limitations that legal risk analysis might have as a business model, due to its costs, but further research is encouraged in light of the potential benefits it might bring about.

Beyond their application to the support of legal activity, IT, and especially Artificial Intelligence, can be regarded as possible risk sources for some rights. Calo's paper explores precisely this aspect of AI, by analysing its current developments and potential dangers for the right to privacy and how US privacy law can cope with those challenges. The approach taken in this paper is therefore different from the one taken in the previous ones: in this case, technology is analysed as a factor that alters reality and can, therefore, require a reaction from the law in order to prevent certain undesirable effects. The paper starts with an overview of the traditional concern about dangers of AI for privacy. Traditionally, AI threats to privacy have been connected to the increased capabilities of AI enhanced devices not only for surveillance, but for the organisation and the analysis of data in such a way that new information may emerge which was not previously obvious to the human eye (data mining and knowledge discovery). The paper goes on to analyse the current trend of enhancing the social capabilities of machines, in order to make them interact more naturally with people. It highlights as well some of the effects of social machines on people, among which the elicitation of human-directed behaviour and the increase

of the sense of being observed and the corresponding feeling of uneasiness. These are controversial issues with regard to the right to privacy. Firstly, given the reaction of people to social cues present in the behaviour of machines, the collection of information by the latter will become easier, since they are endowed with an ability to persuade subtly. Secondly, the pervasiveness of social AI may hinder the possibility of being left alone in private spaces in which to be oneself with the corresponding limitations for the development of one's personality. Finally, as to the way in which US privacy law deals with the highlighted risks for the right to privacy, the author claims that the law contains already some answers, although education and other extra-legal solutions (like discussions around social media) are feasible as well, especially in the short term.

Session IV: The personal sphere in the technological milieu: Liberty and privacy

In the fourth session of the Conference, "The personal sphere in the technological milieu: Liberty and privacy", all papers addressed the new challenges to privacy as a consequence of the recent development of information technologies, focusing, however, on different issues. The first paper, entitled "Property in Personal Data: a European Perspective on Instrumentalist Theory of Propertisation", analyses Lessig's theory of privacy as a property right from a European perspective. Such a model of data protection, which leaves to the individual the possibility to decide whether personal information can be used or not, goes in an opposite direction of the European model, which considers the right to personal data as an autonomous fundamental right, which confirms the importance of such a right for the European society.

To develop this analysis, Purtova raises the question of "whether the introduction of the property rights in personal data, whatever scope of those rights may be, is a legal option in the European Union".

After considering that the introduction of property rights in personal data would be "a legal option in the EU, both on the level of the Union and individual member states", she concludes "that content-wise Lessig's instrumentalist theory does not fit into the European legal

context because the scope of rights in personal data it advocates for is not what is meant by property in Europe.”

Different from Purtova, in the second paper - “The Myth of Odin’s Eye: Privacy vs. Knowledge” - Paolo Guarda discusses the risks of the access to knowledge in a digital context for individuals’ privacy. He believes that individuals are not aware of the cost of our access to knowledge in a digital context, “despite the outward gratuitousness of the provided service”.

He analyses the cases of Digital Rights Management systems (DRM) and of “Google search engines”, addressing the issues that arise from the relationship between privacy and knowledge in the digital context.

Guarda identifies “three fundamental dimensions of the concept of privacy: ‘spatial’, ‘informational’, and ‘decisional’”, linked to the consumption of intellectual works, and focuses his analysis on the last dimension, which he defines as the one that “concerns the choice, the freedom that must be recognised to every person in order to be able to take a decision without any kind of external conditioning.”

Finally, after analysing many aspects of what he calls “privacy vs. knowledge conflict”, Guarda suggests that we should reconsider “rules, technologies, and customs in the light of this new unifying category that moves our attention to the management aspect of the exchanging flows, rather than to their inherent diversity.”

From the descriptions above, we can see that both authors tried to draw our attention to the challenges that new technologies pose to Law and the need to find solutions that balance all interests involved and are in line with the current digital scenario.

Session V: Biotech

Session V of the Conference was devoted to biotechnology and to the potentialities that this scientific field promises to set off. Biotech is dramatically changing the world we live in,

questioning our own human constitution and nature, and challenging many of our legal assumptions, principles and theories. Biotechnology is, at the present time, one of the most exciting areas for interdisciplinary research, presenting a panoply of troublesome questions and problems in the fields of agriculture, food science and medicine, among others.

One of the most interesting developments in the area of biotechnology relates to genetic engineering technology and its application to the human body, allowing for the genetic manipulation of the latter. Regarding this theme, Wojciech Zaluski's paper analyses the question of the admissibility of enhancing an embryo's nature through genetic engineering (calling this process genetic enhancement), tackling this question from a legal philosophical point of view, through an argument of autonomy.

The paper provides a number of important and necessary distinctions and articulations that one should bear in mind when examining the question of genetic enhancement and autonomy, such as personal and moral autonomy (and its different varieties: material and formal, weak and strong); their corresponding presuppositions; and the different types of genetic enhancement, the directed genetic enhancement and the all-purpose genetic enhancement. While arguing that personal autonomy does not have any presuppositions, Zaluski does not take a definite position concerning moral autonomy, asserting that it is not clear whether the latter has two (human agency, free will) or three presuppositions (being contingency of birth the third one). In this account, the author distinguishes two competing conceptions of moral autonomy, one that does not presuppose contingency of birth (conception I) and the other that presupposes (conception II). Regarding such problematic presupposition, Zaluski questions Habermas' claim that contingency of birth is crucial for moral autonomy, being a presupposition of human agency. According to the German philosopher, a person whose birth was not contingent cannot be expected to be able to take full responsibility for her actions, and thereby cannot be morally autonomous. Zaluski, contrarily, does not find it self-evident that human agency requires that a subject's genetic constitution should not have been designed by some other person, asserting that the lack of contingency of birth does not by itself undermine human agency. In this regard, Zaluski presents arguments supporting the claim that contingency of birth is not (necessarily) a presupposition of human agency and thereby of moral autonomy. Nevertheless, the author leaves

the question open, safeguarding the position of those that advocate contingency of birth as presupposition of human agency.

Finally, the fundamental question posed in the paper, the question of genetic enhancement and the violation of human autonomy, receives different answers according to the articulation established between the two conceptions of moral autonomy and the two types of genetic enhancement.

Session VI: Intellectual property. Copyright, patent law

Session VI of the Conference was concerned with the future of intellectual property in the digital environment, with particular focus on the forthcoming developments of copyright law in the information society. As it is becoming an increasingly valuable asset, in fact, information has been progressively turned into a commodity, whose value can however only be exploited if appositely supported by legal and/or technological means.

In particular, the advent of digital technologies has considerably affected the production and distribution of works in the realm of intellectual property. Their impact can mostly be attributed to the increasing digitalisation of content and to the growing trend towards globalisation that is characteristic of the Internet network. These new technologies have made it possible for nearly anyone to produce and/or reproduce a whole variety of works and to disseminate them via the Internet, regardless of any legal or national boundaries.

Enforcing copyright law in the digital environment has therefore become a challenge that may jeopardise the traditional business models employed by the entertainment industry. While a new set of offences has become available on the Internet, the scale and the extent of the more traditional offences have in fact been considerably amplified. Digital technologies also have destabilised the two fundamental features of the copyright regime: the concept of artificial scarcity - originally meant to realign the properties of intangible works with that of physical goods - and the notion of exclusivity, implemented through a set of exclusive rights

which are strictly and inherently national. This raises the following questions: Is the current IP regime still appropriate in the digital environment? Is it still necessary in order to protect the incentives to create and to disseminate new content? And most importantly, is it sensible to protect an intangible work in the same way as we protect a tangible one?

From authors to end-users, from producers to commercial publishers, copyright law has a different impact on every party involved. While the digital environment may be regarded as a threat by certain categories of people, for others, the Internet and digital technologies constitute an exceptional tool for the production and dissemination of content.

It is commonly believed that stronger laws against the unauthorised reproduction and distribution of content (such as the DMCA in the US and the Directive on the Information Society in the EU) are necessary to provide effective remedies against copyright infringement. Yet copyright enforcement will never be successful as long as users do not consider the provisions of the copyright regime to be fair. Therefore, the need for public legitimacy should not be underestimated. If overly restrictive, copyright law will be either infringed upon or in some way circumvented, whereas an excessively lenient regime will inevitably be ignored.

Originally conceived for the purpose of encouraging cultural production, copyright law has been designed to provide authors with sufficient economic rewards through the granting of proprietary rights in the expression of any original work of authorship. It has nevertheless always been acknowledged that the protection granted by the copyright regime had to be somewhat limited, both in scope and in duration, since an optimal level of innovation could only be achieved with the establishment of a proper balance between private property and public domain.

This particular issue is explored by Federico Morando in his paper on “The legal status of software interoperability information” in which he addresses the uncertainty regarding the legal status of interoperability information by distinguishing between interface specification and interface implementation. The paper provides a thorough analysis of the actual scope and limitations of copyright protection for computer software and related interoperability information, and concludes by suggesting that certain categories of works, such as most utilitarian works,

should be subject to a weaker form of protection designed to discourage free-riding without hindering the process of cumulative innovation.

Thus far, the flexibility of copyright law has allowed for the copyright regime to readjust to and/or to overcome a multitude of historically challenging circumstances, as evidenced by the increasing number of works that copyright protection has been granted to. Today, however, new solutions are being devised by the private sector, which is seeking autonomously to address the challenges introduced by the digital environment, albeit from two opposite perspectives. On the one hand, insofar as it can be assimilated to a private good, information has been made excludable and artificially scarce by means of restrictive contractual agreements and technological measures of protection. On the other hand, to the extent that information is being regarded as a public good, widespread availability can be achieved through specific contractual mechanisms, such as Open Content licences, which may encourage the widespread dissemination of works while ensuring that right holders retain a certain number of their rights.

Yet the effectiveness of private ordering depends on a variety of legal and technological factors. As highlighted by Ugo Pagallo in his paper on “The future of P2P systems and their impact on contemporary legal networks”, there exists a mutual interaction between technological progress and legislative activity. On the one hand, the development of new technologies necessarily requires traditional legal concepts to be readjusted or reformed. On the other hand, however, the legal system will determine the direction into which a particular technology may or may not develop. Accordingly, as technological advances necessarily have an impact on the legislation, the law is equally capable of affecting technological progress by either endorsing or condemning specific technological developments. Technology is, therefore, not neutral and public regulation may sometimes be required to either promote or constrain certain private mechanisms of self-help in order to allow for the deployment of new contractual and/or technological innovations.

With the introduction of an additional layer of protection for any technological means replicating the physical properties of private goods, legislative reforms have been so far

endorsing private regulation only to the extent that it was intended to restore the former status quo.

However, like most areas characterised by risks and uncertainty, the digital environment may actually represent a tremendous opportunity for a variety of stakeholders. For instance, the entertainment industry once regarded the VCR as a threat, although a valuable business model has eventually grown out of this threat: the rental industry. The Internet, if appropriately exploited and regulated, would definitely yield similar benefits.

Indeed, since stronger IP laws may actually hamper the potential for the creation and dissemination of works, Internet and digital technologies should perhaps be embraced as an opportunity for innovation rather than being addressed as a dangerous threat.

The law nonetheless has an important role to play as far as the endorsement of a certain technology is concerned. As Ugo Pagallo demonstrates in his paper, with the advent of P2P technology, we may eventually witness the deployment of a more efficient way of producing and distributing information through the Internet. However, while the law may attempt to control its development, it is only by allowing the technology to develop independently that its corresponding benefits and drawbacks will become objectively identifiable and capable of being consequently dealt with. Instead, banning or excessively regulating a new technology at the outset would merely stifle technological progress and eventually prevent the emergence of new and more efficient business solutions.

The set of papers presented at the conference shows the richness of the debate that arises from the complex question of the future panorama of the entanglement of law and new technologies. On the one hand, the development of technologies gives place to new realities not previously foreseen by the law at the time of its creation. In this sense it is very illustrative to think of Simon's concept of an artefact and to apply it analogously to the law. An artefact is designed according to its functionality, taking into account the environment in which it is expected to work:

“An artifact can be thought of as a meeting point –an ‘interface’ in today’s terms- between an ‘inner’ environment, the substance and organization of the artifact itself, and an ‘outer’ environment, the surroundings in which it operates. If the inner environment is appropriate to the outer environment, or vice versa, the artifact will serve its intended purpose. Thus, if the clock is immune to buffeting, it will serve as a ship’s chronometer. (And conversely, if it isn’t, we may salvage it by mounting it on the mantel at home.)”³

If we understand the law as an artefact, designed taking into account a particular reality that it intends to regulate (outer environment), it will be natural to think of the necessity of adapting it if that reality changes. In our case, due to new technological advances and specially to their pervasiveness, reality changes and many issues arise that need a legal answer. The topics of the panels of the conference are just an example of the issues requiring further legal attention: from the right to privacy and liberty, to intellectual property debates, and issues of public law, like the boundaries of jurisdiction in the digital milieu, cybercrime and the regulation of biotechnology, among others. On the other hand, however, technologies can bring about many benefits that cannot be ignored and that have indeed received attention during the conference. In particular ICT and AI can provide increased functionalities for computer support to the tasks that are part of legal practice, such as legal information retrieval or legal drafting. This is a sign that due to scientific and technological development not only the object of legal analysis evolves, but legal practice itself changes as well in its methods and cognitive underpinnings.

This way, even if predicting the future is not an easy task, we strongly believe the conference to at least have provided a forum of discussion for exploring open issues and current trends, in which a fruitful exchange of ideas and impressions to deal with future events in the field has taken place.

³ H. A. SIMON, *The Sciences of the Artificial*, Cambridge, MA, MIT Press, 1969, p. 9.