

A World for Information Law

26-28 June 2009
with the support of INSEIT

A World for Information Law
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*Proceedings of the Second International
Seminar on Information Law**

A World for Information Law

26-28 June 2009
with the support of INSEIT

*Ionian University, Corfu, Greece
Department of Archive and Library Science
Department of Informatics*

*Edited by
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I. About the Seminar

Some Introductory Remarks

The fact that most of the institutions, beliefs, routines and practices as well as the whole structure of our society is undergoing a rapid and tremendous change, triggered by the digital revolution and the role of information, is widely accepted today. From this point of view it is, I believe, more than obvious that a postgraduate course in Information Science, oriented especially towards the study of the specific implications and problems caused in the Library and Information Services Sector by the information revolution is of extreme importance. It is obvious also that in such a period of a large scale transition, when the society is seeking a new balance and a new way of handling most of its day-to-day activities, the field of scientific interest and research is extremely wide.

In the context of this really wide and very important field of scientific interest, certain aspects of the whole problem are of really special importance. The problems concerned with the legal aspects of this new environment belong, without doubt, to this group. This is the reason for which we decided that the regular teaching activities of our postgraduate course should be complemented by specialized seminars in this crucial field.

The results of this decision were much better than expected. Apart from a fruitful educational experience for our postgraduate students, the two seminars offered a good opportunity for an extensive discussion and a prolific dialogue over a series of difficult to be solved problems and issues in this field. The publication of the proceedings of these seminars, apart from their educational role, will be, I believe, a really important contribution towards further promoting the relevant discourse on matters requiring urgent attention by the modern society.

Pr. George Bokus

Director, Postgraduate Program (2004-2008)

Head, Department of Archive and Library Science,

Ionian University (2006-2008)

A few words

These are the proceedings of the Second International Seminar on Information Law 2009, part of the course “Information Law and Ethics” of the Postgraduate Program “Science of Information” of the Department of Archive and Library Science. The first Seminar, in 2008, was titled “The Changing Facets of Information in Information Law”; this second one, “A World for Information Law”. As a Director of the Graduate Program “Science of Information” I want to thank the Professors and researchers who presented papers, chaired in sessions or participated in the Seminars. I must note that some of them came to Corfu from very far away. We hope that they will return to us soon; their positive evaluation of the seminars is crucial to their future success.

Pr. Spiros Asonitis

Director, Graduate Program

Department of Archive and

Library Science, Ionian University

Some notes on the International Seminar on Information Law

1. The First Seminar

The first International Seminar on Information Law took place in Corfu on June 25-27, 2008. The Seminar was organized as part of the Postgraduate Program of the Department of Archive and Library Science “Science of Information” and it was connected to the course “Information Law and Ethics”. Its title was “the changing facets of information in information law” because I thought that one of the major themes in information law is how information is transformed in relevance to various parts of information law [(intellectual property/information is: works/inventions/trademarks, privacy law (information as data) e.tc.). I could not have foreseen when we were designing the Seminar with the organizing committee (Rania Konsta, MSc., PhD cand., Nikos Anastasiou, Katerina Tzali, MSc. Mary Ampatzi, MSc.) that we would be so lucky in attracting the speakers we did attract. [I owe special thanks to all the members of the organizing committee].

We owe to start with Professor John Palfrey, Harvard Law School, Executive Director at that time of the Berkman Center for Internet and Society and currently, Henry N. Ess Professor of Law and Vice Dean for Library and Information Resources at Harvard Law School. Palfrey delivered the keynote speech at the seminar, presenting his book with Professor Urs Gasser, Harvard Law School, who succeeded him at Berkman, a book called “Born Digital: Understanding a New Population of Digital Natives”. Urs presented the book with John, arriving in Corfu from Switzerland in the middle of John’s presentation. I believe all participants have very warm recollections of this particular afternoon.

We were honored to attend the presentations of:

- ♦ Pr. Simon Rogerson, Information paradigms and the law in the information age.

Pr. Rogerson, Director of the Centre for Computing and Social Responsibility at the University of De Montfort, conceived and co-directs the ETHICOMP conference series on the ethical impacts of IT. Simon is a brilliant speaker and I am sure students will remember his presentation.

- ♦ Pr. Kenneth Einar Himma, The moral justification for legal protection of intellectual property.

Pr. Himma is a Professor of Philosophy at Seattle Pacific University, US. A worldwide constant traveller and speaker, author of many books and articles, Ken spoke about philosophy and intellectual property in a simple way, for every Greek student to understand. Thank you Ken.

- ♦ Pr. Bernt Hugenholtz, Latest developments in copyright law.

Pr. Hugenholtz is a Professor of Intellectual Property Law and Director of the Institute for Information Law of the University of Amsterdam (IViR). He is one of the most famous European experts on intellectual property and his humour and kindness will remain in our memories.

- ♦ Dr. Ken Shadlen, TRIPS and the challenges of knowledge use in developing countries

Dr. Shadlen is Senior Lecturer in Development Studies at the London School of Economics. He familiarized us with crucial matters on patents, drugs and the effects of TRIPS on prices and availability.

- ♦ Pr. Aristides Hatzis, There is no such thing as too much information: Mill’s moral confrontation and the importance of diversity

Pr. Hatzis is Assistant Professor at the University of Athens, Department of Methodology, History and Philosophy of Science. Aristeides taught us about the connection of philosophy and information, centering on Mill's theory.

We also enjoyed efficient and pleasant chairing of our sessions by Pr. Nikitas Hatzimihail, Assistant Professor, Cyprus Law School, Dr. Maria-Daphne Papadopoulou, Legal Advisor, Hellenic Copyright Organization and Maria Synanidou, MSc., Legal Advisor, Hellenic Copyright Organization.

Pr. Panayotis Vlamos, Informatics Department, helped in co-directing the Seminar in 2008 and for this, I am grateful.

Roxanna Theodorou, MSc, PhD cand., designed, creatively, for us the seminar's poster, the program and the invitations. Thank you Roxanna.

2. The Second Seminar

The Second International Seminar on Information Law took place in Corfu on June 25-26, 2009. On the first day, the Seminar took place at the Palace of St. Michael and George, at the beautiful Municipal Art Gallery of Corfu. Here we publish the proceedings of this Second Seminar.

I need to thank first Professor Labros Kotsiris, Member of the Greek Academy, also an esteemed member of the Greek legal faculty, who honoured us with his wonderful keynote speech on access to knowledge v. access to creativity. He gave us 'food for thought' for a long time since.

The Introduction to the Seminar, with a presentation on "A World for Information Law" (the Seminar's title) by Professor Herbert Burkert, Director of the Research Institute for Information Law of the University of St. Gallen, was a precious gift. Thank you Herbert. What an honor.

I also need to especially thank the distinguished Professor Simon Rogerson who returned to Corfu for this Second Seminar. Simon is a Professor at the De Montfort University, the Director of the Centre for Computing and Social Responsibility and also, the founder and co-director of ETHICOMP conferences. He is also a member of the Parliamentary IT Committee. Simon returned with his wonderful wife, Ann. Simon's paper, originally due to be presented at the 8th International Conference on Computer Ethics: Philosophical Enquiry, was 'donated'

to the Seminar, and was another precious gift to us. Thank you Simon- and thank you Ann, for joining.

Pr. Hugenholtz (yet another distinguished presence), Professor of Intellectual Property Law and Director of the Institute for Information Law of the University of Amsterdam, member of the Dutch Copyright Committee and consultant to the World Intellectual Property Organization, also honoured us with a paper. Pr. Hugenholtz is also one of the Professors who returned for the Second Seminar. Thank you Bernt, so much, for coming back to us, with your wonderful presentation on orphan works. Indeed, a great honour.

I thank Pr. Rafael Capurro for honouring us with his participation. Rafael, Professor at Stuttgart Media University, founder and director of the International Center for Information Ethics, Director of Steinbeis-Transfer-Institute Information Ethics, presented a very moving paper on Information Ethics for and from Africa. Thank you Rafael. You certainly won all our hearts here.

Thank you Pr. Herman Tavani, for accepting to chair the Seminar the first day-an honour to have you with us. Pr. Tavani is Professor of Philosophy at Rivier College and President of the International Society for Ethics and Information Technology (INSEIT). We greatly appreciated his honorable chairing and his wonderful humor.

Pr. Nikitas Hatzimihail from the University of Cyprus also returned to us, as did Dr. Maria-Daphne Papadopoulou and Maria Sinanidou, LL.M, from the Hellenic Copyright Organization.

On newcomers, we enjoyed the original and clever presentation of Jackie Bergman. Bergman, Master of Science in Thermal Energy Engineering, has a professional education in Psychology and is presently studying Integral Theory at Fielding University in California. Indeed, we have a lot to learn from studying aspects of psychology in connection to information law and ethics. Thank you Jackie.

Dr. Manju Dariwal, a faculty member of the English Language and Communication in The Laxmi Niwas Mittal Institute of Information Technology, Jaipur, India, flew all the long way from India for our Seminar, to present a paper on ICT and India-‘other’ societies. Thank you so much Manju!

Marcello Corrales, LL.M, a lawyer admitted to the Paraguayan Bar Association in 2004 and a Senior Research Associate at the Institute for Information Law (IRI) at the University of Hannover, presented with Athina Fragkouli, LL.M, a correspondent for the IRIS-Legal Observations of the European Audiovisual Observatory a paper on the sui generic right and biological databases. Thank you both.

Dr. Evangelia Vagena, Hellenic Copyright Organization, is the author of a paper on effective copyright enforcement on the internet, probably one of the 'hottest' issues in copyright's world today. Thank you Evangelia! With Maria Sinanidou, LL.M, scientific collaborator of the Hellenic Copyright Organization, they presented a paper on linking and hosting, as copyright issues. Thank you again, both.

Aimee van Wynsberghe has just begun her PhD in Philosophy at the University of Twente, the Netherlands. She presented a paper on robots and policy which, obviously, attracted great attention from our audience. Thank you Aimee.

On people from abroad who participated in the Seminar as distinguished audience, I need to thank first Pr. Frances Grodzinsky, Sacred Heart University, US; Fran is a dear friend, who has contributed enormously in the teaching of the Postgraduate class of Information Law and Ethics in 2007, when she flew all the way from the US and delivered three lectures on privacy and intellectual property topics. Then, I must thank Pr Urs Gasser, Harvard Law School and Pr. Kenneth Einar Himma, Seattle Pacific University, for their presence and participation in the second seminar.

Many thanks to the seminar's organizing committee: Rania Konsta, MSc., PhD cand, Mary Ampatzi, MSc., Nikos Anastasiou, Xara Zarvala, MSc. and Katerina Tzali, MSc.

Dionysis Kourtesis designed for us our poster, our program and the invitations. Thank you Dionysis. The Seminar was also part of the Computer Ethics: Philosophical Enquiry 2009 site; this was designed by Alexandros Panaretos, MSc., PhD cand. Thank you Alexandros.

3. The future

As one may detect from the topics, the Seminar attracted many different issues of the relation among information, law and ethics, as it

also attracted researchers from far away, for example from the US to India. This is the way we see this Seminar, as information law has become as wide a subject as it could be, actually. Researchers on the field of information law, and ethics, from all over the world, have come to understand this and have started the effort to carve our general principles applicable to the whole range of these issues. We hope to add whatever we can to this fascinating discussion, with the future seminars in Corfu we hope to organize. We will also open the floor for refereed papers, aside from the invited presentations, so that more people may present their work on information law and ethics.

In this course, we also hope to correct mistakes we made during the seminars; there were mistakes, and I personally thank people who took the sort of courageous, and certainly time-consuming, step of telling us about them (thank you Simon-we will try to follow your professional advice). We learn every day we live and I do hope people who are so much more experienced in the academy than me, will forgive me and will teach me, as I endeavour to teach my students (and of course, very often, they teach me). My hope is that everyone realizes that whatever we do in this context, we do with good will.

I need to thank Pr. George Bokos, for this own good will, as the Director of the Postgraduate Program in 2008, to grant the necessary funding for the first Seminar. We hosted important people from abroad and without funding, actually large funding, this initiative would not have been possible at all. Thank you Pr. Bokos, for your valuable endorsement, for believing in what we could organize, for granting us a sort of a “carte blanche” to proceed with our vision.

I am obliged to thank Pr. Theodore Pappas, Chairman of the Department of Archive and Library Sciences, for his positive support. I do hope these Seminars pleased him, as part of the Department’s activities. I trust he will continue backing us up, in difficult, financially, times for Seminars...

I am deeply obliged to Pr. Spiros Asonitis, Director of the Postgraduate Program for his invaluable help. Pr. Spiros Asonitis, as Director of the Municipal Art Gallery of Corfu, granted us license to use the Gallery for the Seminar its first day, and allowed us and our guests a quite formidable and inspiring venue. The photos are living proof if this.

I am in great debt to the International Society for Ethics and Information Technology and its President, Pr. Herman Tavani, for sponsoring these proceedings.

I also have to thank all faculty members of my Department, for supporting the Seminar, agreeing to its funding and also, for their honourable presence and participation. I do hope that the faculty will continue supporting this Seminar.

Last, but not least, I thank my postgraduate students of the years 2008 and 2009, for attending, participating and helping in the organization of the Seminars. There would be no Seminars without them; actually, the Seminars were and are designed for them. The Postgraduate students have been incredible in their support and participation; the experience was entirely transformed by their presence, their questions, their ideas and their positive feelings 'sent' to the speakers, as much as the speakers communicated with them. We should not therefore forget that the postgraduate students are our 'propeller' for all future activities.

Maria Bottis

*Lecturer, Department of Archive and
Library Science, Ionian University*

II. Papers and Presentations

The case A2K v A2c

Lampros Kotsiris

It is true that the last thirty years the protection and enforcement of intellectual property was extended repeatedly. New technologies have made possible for right holders to exert more contracts over information at the code level. Digital rights management tools in technical protection measures have become an important part of the contemporary appropriation strategies of the information industries such as “sterile cds” of the sony or the so called genetic and restriction technologies designed to enhance the excludability of the proprietary plant varieties, or e-books that enhance copying from the user (read aloud, programs).

It is undeniable that Copyright law, as a part of intellectual property law plays a central role in the evolution of education and diversity of expression. Copyright law supports society by encouraging creative expression in matters of art, science and literature, but also by prompting social-economically creates as incentive for creativity and dissemination of the authors’ original expression, their works. Therefore one speaks about a **structural function** of Copyright promoting the democratic character of the public dialogue: through the creation of independence from the state and by certain exception and limitations in favour of the private use and the community for education. The trend of expansion in the international reality is even more striking. (The TRIPS agreement, the WIPO Treaties of 1996). To the question why, the answer is the same for all the forms of intellectual property of the idea of **incentives**. It is argued that copyright exists to provide creators with an incentive to create and disseminate their works publicly. By providing a creator with a timely limited exclusionary control over creative expression creator is allowed to **capture** the benefits associated with the use of his work. They contend (some However over the picture has dynamic efficiency of incentive theory) the information society the challenge of the copyright law has not enhanced the

exclusionary rights from being broader (more kinds of information), **deeper** (more right) and **more strict** (due to sanctions). Creativity is related to the so called cultural economy and its enormous profits from the exploitation of the works of authors. To this forwarding expansion of “access to creativity (A2c)” the last decade a counter movement has emerged the so called “Access to knowledge” (A2K), a movement which refers to the whole intellectual property....

The dilemma is: the choice between existing policies characterized as “intellectually weak and ideologically rigid” and new models to produce Representatives of mobilizations such as “access to medicines” “free software” “restive commons” “open science” and open publishing proclaimed that the governance of knowledge technology and culture was in crisis and that a new “Access to Knowledge Treaty” (WIPO level) was indispensable and govern informational goods. Such movements have pushed industries to have some open sources for free use (Linux) and others, like the system Copyleft, created by Richard Stallman, have introduced the idea creator, if they want, to devote their works to the public with no exclusive rights, unless someone is trying to misappropriate the work against the intention of the creator.

- The case A2K v.A2c is still pending.
- The predominant accounting IP scholarship of the recent expansion in IP law draws on “public choice theory” of Professors Landes and Posner, which between the value that creators place of having property rights (economic rent) and the value that would be copiers place on the freedom to copy without licence (a competitive return). According to the public choice theory, actors have stable interests and do not have to make complicated judgements in order to determine as to how their interest may be advanced.

On the other side “framing theory” interprets processes that bring actors close to one another, locked in struggle over law into alignment with one another and identifies effects so that rational people with interests can in common will advance their common interests (by collective action).

The rhetoric of the A2c and theA2 resistance is:

The first contends: a) negative are piracy, theft property, counterfeit, organized crime b) positive are innovation, wealth creation, incentives, creative investment, economic growth.

The second considers pejorative terms monopoly, privilege, anticompetitive practices, piracy of the commons and b) positive terms, freedom, sharing, access, innovation, new business models.

In cases like A2KvA2c the law may incorporate the discourse not in the sense of an existing conflict (one says white the other says black), but in the sense that both are saying this is white but every party does not comprehend it in the same way.

Conclusions have been drawn:

The whole structure of the A2K mobilization is a network formation rather than a pyramid with centralized structure. Piracy is denied by all as an unauthorized use, illegal. A2K mobilization is not in alliance with piracy. It repudiates piracy, respects the law and the rights but it seeks a place in the Law and the Convention, putting forward to the lawmaker, especially by the international, the need for a more flexible law to compromise the rights of creators and the social need for access to knowledge: a need created in the end by the same authors of science, technology, art. It seems that the waves are growing higher and stronger. The Gutenberg era of the hard copy in the information society seems to be the past. Global solutions are to be found so that one day the formation would become A2K-A2c.

See literature:

Sh. Balganes, Debunking Blackstonian Copyright, *The Yale Law Journal* v. 118 (2009), p. 1126.

Sh. Balganes: Forseeability and copyright incentives, *Harvard Law Review* v. 122 (2009) p. 1489.

Amy Kapezynski: The Access to Knowledge Mobilization and the new Politics of Intellectual Property, *The Yale Law Journal* v. 117 (2008) p. 804.

Kal Raustiala, Ch Springman: The piracy paradox revisited, *Stanford Law Review* v. 61 (2009) p. 1201.

W. Landes, R. Posner, *The Economic Structure of Intellectual Property Law* (2003).

What's love got to do with IT?

Jackie Bergman

The nature of law

A lawyer once told me:

«You know we lawyers, we don't care very much about what is right or wrong, good or evil. We use the law in favour of our clients!»

And I agreed, the law is the manual for our civilized society. The intention behind law is to create ethics that lead to the good life. Independently of each person's subjective perception in the moment! And law has certainly lowered suffering and created prosperity. We will look into the possibility of love nevertheless having something to do with this.

The nature of law is to establish what behaviour is acceptable in different situations in life. It is based on our *thinking* about what actions bring the feelings we desire. The bottom line here is that feelings are what we aim for. We want to obtain some feelings and we want to avoid others. One simple example is the feeling of trust that is required for developing business relations. Our thoughts indicate what actions and behaviour will generate the desired feeling outcome. Thoughts can be directed, but are inherently neutral and do not generate action.

A compass for actions

If we are hungry, we want food to get satisfied. If we are ill, we want care to get healthy. If we are threatened, we want protection to feel safe. And if we as children have emotional stress, we can as adults get help from a therapist to resolve encapsulated feelings in our subconscious.

Due to limited space for this presentation, I need to make a long story short: There are only two basic feelings that affect our actions, **fear** and **love**. Fear is what is felt when we lose what we have or think we will not get what we want. And we resist the experience. The good news is that we can always choose what feeling should gov-

ern our actions. There is always a way to turn the situation around, so that love is the motive for the action. Love can include fear. But nor vice versa. This is what probably all wisdom traditions tell us! So, maybe you could agree to some extent to the concept of fear and love being a kind compass for our actions.

I have tried it myself during 30 years while managing large scale investment projects in the energy industry. Without it, I would never have succeeded to handle the difficulties I have come across.

A map of perspectives

Is there then any map to use the compass with? Actually, the old Greek said that by means of Aesthetics, Ethics and Science, it is possible to describe all aspects in Creation. So let's see if we can make some kind of map out of these words. Hopefully a map that can include as many perspectives on the World as possible.

Why perspectives? Because it is through perspectives that we see the World. Before you and I have gotten any perception at all, we have actually chosen a perspective from which we perceive. If I look as being a lawyer, I see certain things and not others. When you use a microscope, you can only see small things. And it is fair to assume that the Dalai Lama has yet another perspective on the world. Each of these roles will give a true but partial perception of the World. What would a map Aesthetics, Ethics and Science look like?

As sentient beings, we can divide reality in the Subjective and the Objective. The Subjective is what happens inside our awareness. The Objective is what can be observed out there by our senses.

Subjective

Objective

Further more, when you and I have created a feeling of 'we-space', there is **Intersubjectivity** between us. Objects can also be connected and work in systems. We call that **Interobjectivity**.

Subjective	Objective
Intersubjective	Interobjective

Another long story made short:

- ♦ Aesthetics happens in me, it is Subjective. (Beauty is in the eye of the beholder.)
- ♦ Ethics happens in between the two of us, it is Intersubjective. (Doing 'good' or moral deeds requires a duality in which it can occur.)
- ♦ Science is our search for Truth, which is in turn Objective as well as Interobjective. (Science favours 'Messen und wissen/Measure and know.')

Subjective ♦Aesthetics	Objective ♦Science
Intersubjective ♦Ethics	Interobjective ♦Science

Please notice, that everything that exists or happens, does so in all four quadrants simultaneously. And you can actually find a suitable quadrant for the perspective of every type of profession or person and its perception. You can find out how perspectives interact and if the entirety of the situation is covered.

Another way to see this structure is as a neutral/content free operating system that indicates which 'program' or perspective on the world is useful to describe a specific situation.

A map of maps

This map of maps is called Integral Theory and the main author behind it is Ken Wilber. It is getting increased attention around

the world as a means to facilitate all kinds of personal and societal development work. In November this year, State of the World Forum will be held in Washington DC. Integral Theory will be used as a frame work for the conference. The sub title is 'Truth is not enough', emphasizing that we need to include all the quadrants in order to induce wise action.

The initial question of this presentation was: What's love got to do with IT? My answer is that when I have a sense of love in my inner awareness, I will get an increased capacity to include you just as you are, in that common 'We' or unity. I will also have a greater capacity to include your truth and all scientific truths into my sphere of awareness. This is not to say that I will share your opinion. But if you have an opposite opinion to mine, I will not be furious but curious on your perspective. Because given the experience and the perspective that each one of us is looking through, we can have nothing but 'the Truth', even though it is always partial.

As the intention behind law is to create the good life, it is written to the reflect Love in a formalized way. It translates moral and ethics of our culture to a set of objective and measurable norms, being the 'Truths' of our culture. As long as we stay within the norms, everything is hopefully just fine and we can enjoy a stable Unity as a base for developing cooperation!

Subjective ♦Aesthetics ♦Love	Objective ♦Science ♦Truth (Law)
Intersubjective ♦Ethics ♦Unity	Interobjective ♦Science ♦Truth (Law)

But if I feel Fear, it is likely that I perceive Separation rather than unity towards other persons and objects. And I might have excluded your Truth and possibly kept my Truth away from you. We can call that incomplete Truth or Untruth.

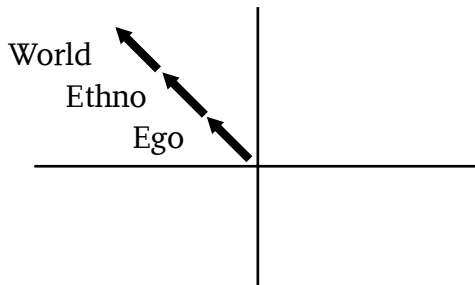
Subjective ♦Aesthetics ♦Love ♦Fear	Objective ♦Science ♦Truth (Law) ♦Untruth
Intersubjective ♦Ethics ♦Unity ♦Separation	Interobjective ♦Science ♦Truth (Law) ♦Untruth

Ethical behaviour is in a deep sense related to the intention behind. The action per se can not be judged as ethical or not. Presence of Love can be seen as an indication on the ambition to behave ethically.

Reality and development

Enlightenment is often described as the highest level of wisdom. The definition of Enlightenment is the ability to see reality as it is, without judgement. Judgement is here synonymous to resistance, fear or incapacity to accept reality as it is.

One more of many dimensions in Integral Theory I want to point out here with you, is that there is a development dimension as well. Individuals as well as collectives go through development. When we are born, we start of as being egocentric. Later on we realize the inspiration that comes out of caring for others and we become ethnocentric. If we are not stopped by some kind of fear along the way, we will move on to become worldcentric. We can see this kind of progression in all areas. If nothing gets in our way, our natural direction is evolving all the way towards our full potential. When experiencing love, you reach out to the world and everything that is in it. You feel “Flow” and could even be creatively brain storming. You are naturally expanding your awareness and capabilities. When you feel fear, you get narrow vision and the capacity to include reality and its possibilities are diminished.



Making use of the compass and the map

This is a much abbreviated presentation of huge subjects. Like what love has got to do with Information Technology as well as Integral Theory. I will publish a whole book later this year on the latter relation. On YouTube you can see two videos for further understanding of how to apply the theory in reality:

- ♦ Fear or love, Jackie Bergman
- ♦ Fear or love in the integral approach, Jackie Bergman

What you already know about our challenges related to the environment, economics, cultural globalization and information technology, I need not repeat. By this presentation, I hope that you feel inspired to be brave in the face of these challenges. One definition of brave is that your love is bigger than your fear. Being brave, you can see reality and your fellow humans in a loving and creative way. And law can continue to be made and used as a means of caring for all and everything. The choice is yours!

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Biography

Jackie Bergman is a Master of Science in Thermal Energy Engineering. He has continuously deepened his understandings and experiences in leadership. He has a professional education in Psychology and is presently studying Integral Theory at Fielding University, California.

He has been working as a project manager for the major energy utility companies in Sweden during 30 years. His whole career has been oriented towards large scale solutions that are environmentally adapted. All along he has been guided by the notion that there are only two basic feelings, fear and love.

A World for Information Law

Herbert Burkert

What is meant by this ambitious title?

Is this an observation?

Is this a vision?

Or is this a program to reach such a vision?

I. Let me start with the observation:

During the last 150 years «*Information*» has become an increasingly important perspective on the world. By abstracting what is around us to phenomena of information and communication we have come to understand that e.g. electromagnetic irritations may serve as carriers of information, an observation which brought us the electric telegraph, the telephone, radio and television and finally the Internet. By abstracting numbers, words, images, sounds and colors to a series of binary states of information we have been able to capture the essence of media communication.

The ensuing technologies then in turn have made us look again at our surrounding world - now in order to restructure it for optimal use by such technologies with the help of methodologies like systems analysis, information engineering, information management and communication sciences, all providing us with new insights with which we have reshaped economic, social and political processes and systems.

And Law?

Law has been caught by this development in a curious way:

Law, as a system of norms, rules and decisions, and thus as an assembly of information and communication processes has itself been a prime *object* for these changes:

Legal information retrieval and legal decision making machines have been the two poles between which law has become modernized - but not necessarily revolutionized: Today the legal profession would not know how to manage its work load without the help of electronic

filing systems or data bases with legal norms, court decisions and commentary articles. But there is still no fully automated judge rendering decisions free from human biases and unimpressed by threats or temptations although many researchers still seem to have high hopes then in artificial intelligence now in xml-structures and semantic processing to move closer to solve the puzzle of human decision making.

At the same time Law has been called to duty *to intervene* in the conflicts information technology has either been creating, intensifying, or only made more visible: for example the conflict between citizen's liberties and the power of the state, between consumers and the providers of services and goods, between employers and employees, conflicts which underlay the still ongoing debates on privacy.

But Law had not only to react to the new displays of power, here of informational power. Information technology has also laid bare hidden assumptions of legal doctrine: for example that there is a clear distinction between the copyrightable and patentable, that immaterial property has at least some connection to a definable work, that a fair distinction is possible between the original and its inherently derivative elements, and even more basically that the notion of immaterial property is unquestionably justified by what such a concept has been contributing to progress and a better living for us all.

Depending on differences in cultural, political and economic contexts Law has reacted differently to such challenges, with different intensity, with different speed and using different methods. In spite of these differences all approaches can be divided into two basic categories of response: Legislation and Interpretation.

Legislation is favored wherever governments seem to be in need of a fast and potent proof that they are able to at least manage if not master the challenges of the technologies and the fears and certainties these technologies seem to bring with them. Not surprisingly it was by criminal law that governments and their legislatures responded defining for example a new type of crime, the «cybercrime», and enlarging the powers of the prosecution. Another area of legislative activity has been electronic commerce where trust in electronic communication had to be installed to make the new medium economically feasible - although some would argue that all that has been achieved was para-

phrasing already existing rules. The era of legislation to domesticate the revolutionary potential of the new technologies is far from over yet, as indicated by recent legislative texts seeking to introduce «Internet decapitation» as a new form of legal sanction.

Interpretation, the other approach by Law to master the «New» is less obvious to the general public. It is the world of subtle, incremental change, hardly perceivable by the layman except by its consequences. Civil law responsibilities for internet contents providers e.g. are still largely constructed by analogies from traditional civil responsibility law. Such interpretative approaches are not restricted to traditional law concepts; they even affect what has just newly been introduced with the help of the legislative approach mentioned before: For example courts have started to interpret IP numbers as «non-personal data» to exempt them from the application of data protection law by which legislators had just attempted to protect (also) Internet users.

As different as these approaches may seem they do share a common denominator which makes these developments fundamentally *different* from previous interactions between law and technological and social change: The *Information Perspective* is present wherever people communicate, it is thus by its very essence a global perspective, and information and communication technologies are global technologies. They may not spread across the globe in equal speed, they may not be distributed equally across the globe, but their potentials can only be fully envisioned if and when they are seen as being «for the World».

II. A *World for Information Law* is therefore also a vision and more than a vision, it is what I would call an «implicit necessity of thinking»: Communication is about overcoming distances. Such distances may arise from nature, they may arise from culture. Information technology is mastering nature, reducing physical distance to hardly perceivable time intervals. Information law, itself being part of a global culture, will have to help to manage cultural distances. As with the advances in seafaring technology international trade law had evolved to manage different cultures of power, trust and ensuing customs, we see now evolving an international law of information and communication, a body of law not only for knitting together technological communication infrastructures across national boundaries and securing technical stability, but an international law on information as culture,

on information and communication as meaningful exchanges on our private lives and fates, on our communities, as well as on our world views. This understanding of Information Law will be affecting what we know and believe and what we may still know and still come to believe as individuals, groups, countries, regions and as mankind.

This perception of Information Law is as frightening as it is challenging, providing a new source for conflicts but also for conflict solutions, evolving as a new «Law of the Seas», a «World for Information Law».

III. There is nothing, I am afraid, that will save us from being forced to walk a similarly stony path like the one we had to walk and which we still have to walk since the at least the 17th Century to arrive at a Private and Public International Law as we know it today. There are many signs that such a World Vision of Information Law is a highly endangered view: Also in law there is competition for hegemony to impose one's own view of what should be law and its underlying values upon others; there are many signs of Internet Nationalism and Protectionism, affecting even the so highly praised international technological infrastructure. As always Law and certainly Information Law is not a given thing that can be taken for granted, it has to be re-created and strengthened with each and every conflict and debate.

This then brings me to an understanding of the *World for Information Law* as it might well be suited for such a seminar of scholars: While remaining fully aware of the political implications and the power challenges any law and Information Law in particular is carrying with it, this might well be a moment to reflect - without such pressures but with a common purpose - on the values, institutions, procedures and conceptual mechanisms that are called for in the building process for the «World for Information Law».

Such a stock taking and assessment approach might e.g. look at copyright law and privacy law simultaneously to see not only how they are interrelated, how for example Digital Rights Management is affecting Privacy, but more fundamentally, to see on how the methods with which copyright law and data protection law, nationally, regionally and internationally, have attempted to meet the challenges of information technology and as to why they both have not been able to provide yet sufficiently stable expectancies for conflict resolution.

But this event should not only be about critical *stock taking*: In addition there are still many challenges ahead for the *creative aspects of law*: A Universal Right to Communication, Information Infrastructures as Common International Public Goods, and world wide standards transparency, accessibility, security and accountability are examples for such possible challenges.

IV. Let me add yet another item, for perhaps another step with which to come closer to the vision of a «World for Information Law». This step paradoxically is a step backwards:

We have started these reflections with an observation on the «information perspective» which had opened for us the world of information technology and information society. Would it then not be worthwhile to look at the *phenomena of information law* by using the same instrument and pursue our travels through law through the «eyes» of information?

Such an approach would not substitute traditional legal methodology or such still highly fashionable approaches like the «economics and law approach». Rather, it would seek to supplement and enrich the existing canon of legal interpretation and speculation: In a first step the *Information Law Approach* could seek to re-phrase legal problems as problems of information distribution, information access, information protection, re-analyzing legal norms as to what they offer in terms of informational functionality, as to what they perform in terms of institutionalizing and channeling information interests to arrive at informational justice. Such reflections could help to enrich Law's capabilities of conflict resolution and develop a new concept of legitimacy. Such an approach, such a new language for information law should not find it too difficult to harness international undertakings of a similar nature. Such an *International Information Law Approach* would provide that level of «concrete abstraction» that could help to bring theorists and practitioners together not only from many legal sub-disciplines and many different cultural legal traditions but even across disciplines all joined by their common interest in information and its global reach.

There are certainly well founded doubts as to whether such a fresh methodological approach will suffice to avoid the pitfalls of political

strive. But it is also an encouraging sign that this seminar on a «World for Information Law» has been able to bring together these participants willing to take up the challenge, taking law *and* information seriously and looking forward to jointly approach both from a truly global perspective.

Biography

Herbert Burkert (hb@herbert-burkert.net) is Professor of Public Law, Information and Communication Law and President of the Research Centre for Information Law at the University of St. Gallen, Switzerland and a Senior Researcher at the Fraunhofer Institute for Intelligent Analysis and Information Systems in Germany (currently on leave of absence). He is an Affiliated Fellow of the Yale Law School Information Society Project and of the Information Law and Policy Institute at New York Law School. He studied law, history and political science in Cologne and Dublin, holds a doctorate from the University of Frankfurt and received his habilitation from the University of St. Gallen. He has served as an advisor to international organizations, regional and national governments. He is also the executive director of a contemporary art foundation in Germany.

Information Ethics for and from Africa

Rafael Capurro

Introduction

On behalf of the participants of the African Conference on Information Ethics let me thank President Thabo Mbeki and the South African Government for sponsoring this outstanding event. This paper was first presented at the African Ethics Conference in 2007. Let me also thank the Department of Information Science at the University of Pretoria, the School of Information Studies at the University of Wisconsin-Milwaukee and the members of the International Center for Information Ethics for their commitment in organizing this meeting. This paper deals in the first part with some initiatives concerning the role of information ethics for Africa such as NEPAD, UN ICT and AISI particularly since the World Summit on the Information Society. Information Ethics from Africa is a young academic field. Not much has been published so far on the impact of ICT on African societies and cultures from a philosophical perspective. The second part of the paper analyses some recent research on this matter particularly with regard to the concept of ubuntu. Finally the paper addresses the issues and outcome of the African Conference on Information Ethics held in Pretoria, 3-5 February 2007.

The theme of this conference, namely “The Joy of Sharing Knowledge”, echoes the core ideas of the World Summit on the Information Society (WSIS), as stated in the Geneva Declaration of Principles as well as becoming a part of the Tunis Agenda for the Information Society. Let me recall you the statement of the Geneva Declaration concerning the “Ethical dimensions of the Information Society”:

«56. The Information Society should respect peace and uphold the fundamental values of freedom, equality, solidarity, tolerance, shared responsibility, and respect for nature.

57. We acknowledge the importance of ethics for the Information Society, which should foster justice, and the dignity and worth of the human person. The widest possible protection should be accorded to the family and to enable it to play its crucial role in society.

58. The use of ICTs and content creation should respect human rights and fundamental freedoms of others, including personal privacy, and the right to freedom of thought, conscience, and religion in conformity with relevant international instruments.

59. All actors in the Information Society should take appropriate actions and preventive measures, as determined by law, against abusive uses of ICTs, such as illegal and other acts motivated by racism, racial discrimination, xenophobia, and related intolerance, hatred, violence, all forms of child abuse, including paedophilia and child pornography, and trafficking in, and exploitation of, human beings.” (Geneva Declaration of Principles 2003)

The participants of the Tunis summit shared the Geneva vision with the following words:

«2. We reaffirm our desire and commitment to build a people-centred, inclusive and development-oriented Information Society, premised on the purposes and principles of the Charter of the United Nations, international law and multilateralism, and respecting fully and upholding the Universal Declaration of Human Rights, so that people everywhere can create, access, utilize and share information and knowledge, to achieve their full potential and to attain the internationally agreed development goals and objectives, including the Millennium Development Goals” (Tunis Commitment, 18.11.2005).

President Mbeki reaffirmed this commitment from an African perspective in his statement to the second phase of the World Summit on November 16, 2005:

«Our country and continent are determined to do everything possible to achieve their renewal and development, defeating the twin scourges of poverty and underdevelopment. In this regard, we have fully recognized the critical importance of modern ICTs as a powerful ally we have to mobilize, as reflected both in our national initiatives and the priority programmes of NEPAD, the New Partnership for Africa's Development.

We are therefore determined to do everything we can to implement the outcomes of this World Summit on the Information Society and appeal to all stakeholders similarly to commit themselves to take

action to translate the shared vision of an inclusive development-oriented information society into practical reality» (Mbeki 2005).

The idea of this conference emerged in October 2004 during the international symposium “Localizing the Internet. Ethical Issues in Intercultural Perspective” held in Karlsruhe (Germany) organized by the International Center for Information Ethics and sponsored by Volkswagen Foundation. All the leading international experts in the field of information ethics were invited to participate. It was the first of its kind, dealing with information ethics from an intercultural perspective. Themes discussed included issues such as the impact of the Internet for social, political, cultural and economic development, addressing particularly questions related to privacy, access to information, intellectual property rights, quality of information, security, advanced capitalism and the digital divide. All participants were aware of the intercultural challenge of such a meeting at which some fifty scientists from all over the world participated. During this symposium it became clear that the African continent was not well represented. There was one representative from South Africa, which happened to be Johannes Britz, one of the initiators of this conference, as well as Willy Jackson, a representative from Cameroon, and Issiaka Mandé, Burkina Faso (the latter two both live in Paris). There were of course many reasons why more African scholars were not present. Some were unknown to other international scholars, and lack of funding to attend international events was and still remains a serious stumbling block.

The participants of the ICIE symposia were well aware of the urgent need to thoroughly research the ethical challenges that the introduction of information and communication technology poses for the African continent. They include the problem of development, particularly the eradication of poverty, the protection and promotion of indigenous knowledge, the archiving of African websites, and especially rights to communicate and to access knowledge in a digital environment so that Africans can become part of the emerging knowledge economy. We can summarize these issues under the label information ethics for and from Africa.

Information Ethics for Africa

At the celebratory opening of New Partnership for Africa’s Development (NEPAD) offices at the South African Council for Scientific

and Industrial Research, CSIR President and CEO, Dr Sibusiso Sibisi emphasised the unwavering commitment to the work done by NEPAD. Dr Ivy Matsepe-Casaburri, Minister of Telecommunications of South Africa said on this occasion:

«In this era of the Information Society, ICTs are regarded as tools for development. It is incumbent on us to commit ourselves to use these tools to create a better life and a more humane world (...) I have faith in NEPAD because it is a home-grown, ambitious but realisable project of the African Union. Gone are the days when people solved our problems for us and not with us» (Matsepe-Cassaburri 2005).

The Presidential Commission on Information Society and Development (PNC on ISAG) has made major contributions to attain this goal in South Africa. It explicitly adheres to the WSIS vision of an information society as one «where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving the quality of lives» (ibid.)

Another important promoter of a humane information society is the South Africa NGO Network SANGONeT, founded as Worknet in 1987 and devoted to involving civil society in the ICT process.

Since the WSIS, African societies have been keenly aware that sustainable socio-economic development requires appropriate information and communication technologies. This awareness was already evident at the African Information Society Initiative (AISI) launched in 1996 and coordinated by the UN Economic Commission for Africa (UNECA). Its goal is to create a pan-African ICT network giving Africans the means to improve the quality of their lives and fight against poverty. AISI's focus areas aim at promoting sectoral applications of ICT for eradicating poverty and improving quality of life. This implies:

- ♦E-Strategies: IC Infrastructure at national, sectoral, village and regional level, Scan-ICT programme
- ♦Information & Knowledge: indigenous capacity to aggregate and disseminate information
- ♦Outreach & Communication: involves all societal actors

AISI has already achieved some of these goals. It provided support to 28 African countries to develop their own national ICT infrastructure. There are periodic consultations starting with the Global Connectivity for Africa Conference which took place in Addis Ababa in 1998, and the evaluation of ICT impact (Scan-ICT Project). AISI organized a Media Training Workshop at Addis Ababa as well as a forum on ICT's, Trade and Economic Growth in Addis Ababa in March 2006. Workshops on regional information and communication infrastructure have taken place since 2004 in Nairobi, Tangiers, Dar es Salaam, and Kigali.

The UN ICT Task Force published a report in 2003, edited by Joseph O. Okpaku (2003). His Excellency Kofi A. Annan, former Secretary-General of the United Nations stated in his contribution, "Communication Technologies: A Priority for Africa's Development":

«Clearly, if we are to succeed, the process must engage all stakeholders: donors, the private sector, civil society organizations, governments, and especially those in the developing world itself.» (Annan 2003, xvii)

In the contribution to this report by Emmanuel OleKambainei, Chief Executive and Program Director for the African Connection Centre for Strategic Planning and Mavis Ampah Sintim-Misa, former Chief Executive Officer of this Centre, write:

«(...) there is a need to promote general ICT diffusion and raise awareness and appreciation as well as e-literacy among our populations, especially children and youth. This should be coupled with efforts to demystify and de-demonise ICT for people to accept it as an everyday tool and not an end to itself. (...) This can be done by targeting and ensuring that basic education and literacy change from the traditional "3Rs" (reading, writing and arithmetic) to a higher standard that can be referred to as "LNCI" or Literacy – reading and writing, Numeracy – working with numbers, Communicacy – communicating effectively, Innovativeness/Initiative. Success in this (...) will give Africa's education, human resource development, as well as research and development the ability to "cheetah-pole-vault" so as to catch-up with the rest of the global community.» (OleKambainei and Sintim-Misa 2003).

Africa needs, indeed, a “cheetah-pole-vault” ICT strategy and not just a leap-frog one.

Joseph O. Okpaku, President and CEO of Telecom Africa Corporation, writes in the introduction:

«To a large extent, wealth has a vertical structure in African society, with most families consisting of the entire range, from the well-off to the most needy. The structure of family obligations in traditional Africa makes the pursuit of the collective advancement of the entire community a norm. The disruption of this model, through “modernization”, has been a threat to reaping the benefits of this tradition for contemporary African development» (Okpaku 2003, 11).

Okpaku offers a vision of a society in which everyone has a central role to play. This vision corresponds to the original structure of African society based on the pre-eminence of the “extended family and its mutuality of care, concern and support” (Okpaku 2003, 13). In other words, Africa’s scholars and politicians must retrieve their own social traditions in order to create a humane and authentic African information society. Some first steps have already been taken. The Africa preparatory conference for the WSIS in Tunis that took place in Accra in February 2005 specified that the goal of the African information society community must include all stakeholders:

«Building the information and shared knowledge society will contribute to achieving the Millenium Development Goals to improve quality of life and eradicate poverty by creating opportunities to access, utilize and share information and knowledge (Accra 2005).

The African Internet Service Provider’s Association envisaged in February 2005 the following actions:

«Given that Africa is the most unwired continent in the world, and yet is part of the Information Society, action should be taken (...):

- ♦ A regional multi-stakeholder coordination body be mandated to co-ordinate and ensure collaboration among the numerous existing projects in Africa under the New Partnership for African Development (NEPAD)
- ♦ Regulators adopt an open and transparent licensing and regulatory regime that propels the access to and building of ICT infrastructure.

- ♦ The private sector participates in the technological dynamics of the development and also provides hard investment.
- ♦ Civil society creates interest in consumers to demand and ensure service delivery quality and return for money.
- ♦ Donors support this development by providing and facilitating access to soft financing and expertise where necessary for PASSIVE infrastructure
- ♦ Finally, that all the stakeholders above subscribe to the horizontal layering of the communication system in the manner of physical layer (infrastructure), followed by the logical layer, applications layer, content layer, etc” (AfriSPA 2005).

A recent study on “Ethics and the Internet in West Africa” by Patrick Brunet, Oumarou Tiemtoré, and Marie-Claude Vettraino-Soulard, based on field surveys of five nations in West Africa two anglophone, The Gambia and Ghana, and three francophone, Burkina Faso, Côte d’Ivoire, and Senegal, raises key ethical issues that, once identified, should ensure the adaptation of Internet technology and its integration into the development of African nations (Brunet, Tiemtoré, Vettraino-Soulard 2004). According to the authors, certain technologies such as the cellular phone might more readily and efficiently be developed in Africa and can contribute, for example, to the dissemination of medical information and to South-South cooperation. In order to avoid the digital gap within African societies, African governments could democratize telecommunications to ensure access for the most disadvantaged people. But, as the authors emphasise, the Internet is no panacea. Their work shows why information ethics matters, politically, socially and academically. It matters not only for Africa but from it.

Information Ethics from Africa

Information Ethics in Africa is a young academic field. Not much has been published on the role that African philosophy can play in thinking about the challenges arising from the impact of ICT on African societies and cultures. Most research on ICT from an ethical perspective takes its departure from Western philosophy. Let us review very briefly some recent works on African philosophy that are relevant in a negative or positive sense to the subject of this conference.

African oral and written traditions of philosophy have a long and rich past, going back as far as 3000 BC with the Egyptian Maat-Philosophy of ancient Egypt, the Afro-Hellenic tradition of Greek and Roman Antiquity and the early Middle Ages (Amasis, Plotinus, Philon, Euclid, Apuleius, Tertullian, Augustine), the Afro-Islamic tradition (Al-Farabi, Averroes, Ibn Battuta), the colonial break with contributions in the amharic language (Zara Yoqob, WaldaHawat, Amo, Hannibal), the anti-colonial philosophy (DuBois, Garvey, Césaire, Senghor), the ethno-philosophy of the 70s (Kagame, Mbiti), Afrosocialism (Nkruma, Nyerere), universalistic theories (Houtondji, Wiredu, Towa), and contemporary representatives of different schools such as hermeneutics (Okere, Ntumba, Okonda, Serequeberhan, Kinyongo), Sage-philosophy (Oruka, Kaphagawani, Sogolo, Masolo) (Oruka/Masolo 1983), and feminism (Eboh, Oluwole, Boni, Ngoyi), to mention just a few names and schools. These traditions have been recently analysed by Jacob Mabe in his book on oral and written forms of philosophical thinking in Africa (Mabe 2005, 276-278; Ruch/Anyanwu 1981; Neugebauer 1989; Serequeberhan 1996). He has also edited the first comprehensive lexicon on Africa in German (Mabe 2004), with more than 1000 keywords including entries on «media» and the «Internet» (Tambwe 2004).

The Department of Philosophy at the University of South Africa has published a comprehensive reader *Philosophy from Africa*, edited by Pieter Coetzee and Abraham Roux (Coetzee/Roux 2002). Of the 37 contributors 33 are Africans speaking for themselves on the topical issues of decolonization, Afrocentrism in conflict with Eurocentrism, the struggle for cultural freedoms in Africa, the historic role of black consciousness in the struggle for liberation, the restitution and reconciliation in the context of Africa's post-colonial situation (Eze 1997), justice for Africa in the context of globalization, the pressures on the tradition of philosophy in Africa engendered by the challenges of modernity, the reconstitution of the African self in its relation to changing community, the African epistemological paradigm in conflict with the Western, and the continuity of religion and metaphysics in African thought. The second edition contains themes on gender, race and Africa's place in the global context. Although the book addresses a broad variety of themes there is no contribution dealing specifically with information and communication technologies from an ethical or

even philosophical perspective, although Paulin Houtondji addresses the problem of “Producing Knowledge in Africa Today” (Houtondji 2002). The terms «information» and «communication» are absent, not even listed in the index.

Is there a specific African philosophic and ethical perspective with roots in African languages, social experiences and values as analyzed for instance by John Mbiti, (1969), Chyme Gyekye (1996), Mutombo Nkulu (1997), Luke Mlilo and Nathanael Soédé (2003) and Jean-Godefroy Bidima (2004)? Yes there is, if we follow Mogobe Ramose’s contribution to this reader (Coetzee/Roux 2002) that bears the title “Globalization and ubuntu” (Ramose 2002), but also, for instance, Kwasi Wiredu’s contribution on the “conceptual decolonization in African culture” through an analysis of African languages and terminology (Wiredu 1995; Weidtmann 1998). I am not making a plea for ethnophilosophy as criticized for instance by Houtondji (1983), but for a dialogue between both cultures and languages, and the global and the local as envisaged in the 2004 symposium of the International Center for Information Ethics (Capurro, Frühbauer, Hausmanninger 2007). My position is related to Wiredu’s and Oladipo’s interpretation as a “third way in African philosophy” (Oladipo 2002) as well as to Oruka’s “sage philosophy” (Oruka 1990). My view aims at a critical analysis of the oral and/or written African traditions, as analyzed for instance by Anthony Appiah in his article for the Routledge Encyclopedia of Philosophy (Appiah 1998). I explicitly acknowledge modern reason without assuming that its manifestations are inviolable, particularly when they serve the purposes of colonialization. I locate ethical discourse between the particular and the universal. My aim, following the Kantian tradition, is universality, but I am aware, with Aristotle, that moral and political utterances are contingent, subject to different interpretations and applications based on economic interests and power structures. They are also objects of a critical analysis that envisages the good and seeks a humane world free from the dogmatic fixations of norms that merely reflect, implicitly or explicitly, particular points of view. In other words, ethics reflects on the permanent flow of human life and its modes of empirical regulation that make possible, on the basis of mutual respect, manifestations of humanity in unique and multiple forms. We are all equal, and we are all different.

According to Ramose, ubuntu is “the central concept of social and political organization in African philosophy, particularly among the Bantu-speaking peoples. It consists of the principles of sharing and caring for one another” (Ramose 2002, 643). Ramose discusses two aphorisms “to be found in almost all indigenous African languages,” namely: “Motho ke motho ka batho” and “Feta kgomo tschware mot-ho.” The first aphorism means that “to be human is to affirm one’s humanity by recognizing the humanity of others” and, on that basis, establish humane respectful relations with them. Accordingly, it is ubuntu which constitutes the core meaning of the aphorism. The second aphorism means “that if and when one is faced with a decisive choice between wealth and the preservation of life of another human being, then one should opt for the preservation of life” (Ramose 2002, 644). Following this analysis we can ask: what is the role of ubuntu in African information ethics? How is the intertwining of information and communication technology with the principles of communalism and humanity expressed in aphorisms such as “Motho ke motho ka batho” which can be translated as “people are other people through other people”? What is the relation between community and privacy in African information society? What kind of questions do African people ask about the effects of information and communication technology in their everyday lives?

One of the few detailed analysis of the relationship between ubuntu and information ethics, or more precisely, between ubuntu and privacy was presented by H. N. Olinger, Johannes Britz and M.S. Olivier at the Sixth International Conference of Computer Ethics: Philosophical Enquiry (CEPE 2005). They write:

«The African worldview driving much of African values and social thinking is “Ubuntu” (Broodryk, 2004). The Ubuntu worldview has been recognized as the primary reason that South Africa has managed to successfully transfer power from a white minority government to a majority-rule government without bloodshed (Murithi, 2000). The South African government will attempt to draft a Data Privacy Bill and strike an appropriate balance within the context of African values and an African worldview» (Olinger/Britz/Olivier 2005, 292).

According to the authors, Ubuntu ethical principles have been applied in South Africa in the following areas:

- ♦ Politics (the African Renaissance)
- ♦ Business (through collective learning, teamwork, sustainability, a focus on local community, and an alternative to extractive capitalism)
- ♦ Corporate governance (though the attitudes of fairness, collectiveness, humility)
- ♦ Restorative justice (through the use of dialogue, collective restitution and healing)
- ♦ Conflict resolution and reconciliation (through the Ubuntu ethos of the Truth and Reconciliation Commission, TRC) (Olinger/Britz/Olivier 2005, 295).

The authors emphasise the specificity of the Ubuntu worldview as a community-based mindset, opposed to Western libertarianism and individualism but close to communitarianism. The Nigerian philosopher Simeon Onyewueke Eboh has written a profound study on “African Communalism” (2004). Olinger, Britz and Olivier remark critically that the population of southern Africa has to rediscover Ubuntu because many have not experienced it, and also because many live in two different cultures, practicing Ubuntu in the rural environments and Western values in the urban environments. If this is the case, not only in South Africa but in other African countries then there is a lot of theoretical and practical work to be done!

The authors translate the aphorism “Umunto ungumuntu ngabanye abantu” (Nguni languages of Zulu and Xhosa) as “A person is a person through other persons” (Olinger/Britz/Olivier 2005, 293). According to Broodryk (2002), Ubuntu is an African worldview “based on values of intense humanness, caring, respect, compassion, and associated values ensuring a happy and qualitative human community life in a spirit of family.” This means that personal privacy – being a key ethical value in Western countries – might be considered as less important from an Ubuntu-based perspective, even if we accept that there are several conceptions of privacy in both the West and the East (Ess 2005, Capurro 2005). In a comparative study of ethical theories in different cultures, Michael Brannigan addresses African Ethics with the utterance “To Be is to Belong” (Brannigan 2005). An analysis of this thesis could lead to a foundation of African information ethics based not upon the abstract or metaphysical concept of Being of some classical Western ethical

theories, but upon the experience of Being as communal existence. The task of such an analysis would be to recognize the uniqueness of African perspectives as well as commonalities with other cultures and their theoretical expressions. This analysis could lead to an interpretation of ICT within an African horizon and correspondingly to possible vistas for information policy makers, responsible community leaders and, of course, for African institutions.

Johannes Britz chaired a session on ICT in Africa at the Ethics and Electronic Information in the Twenty-First Century (EE21) symposium at the University of Memphis (Mendina/Britz 2004). He said that an important condition of Africa's finding a place in the twenty-first century is a well-developed and maintained ICT infrastructure. Both Britz and Peter John Lor, former Chief executive of the National Library of South Africa, think that the present north-south flow of information should be complemented by a south-north flow in order to enhance mutual understanding. They plea for a shift toward the recognition of the "local" within the "global," following the idea of "thinking locally and acting globally." In ethical terms, this means respect for different local cultures and strengthening their active participation in intercultural dialogue (Lor/Britz 2004, 18). Although Africa is still far from a true knowledge society, there is hope of success on certain fronts, such as investment in human capital, stemming the flight of intellectual expertise, and the effective development and maintenance of IT infrastructure (Britz et al. 2006). Dick Kawooya (Uganda Library Association) stresses the ethical dilemma confronting librarians and information professionals in much of sub-Saharan Africa, namely concerns about general literacy, information literacy, and access to the Internet on the one hand, and "dwindling budgets" for educational institutions, particularly libraries, on the other (Kawooya 2004, 34). Michael Anyiam-Osigwe, chief executive of the Africa Institute for Leadership, Research and Development, stresses the importance of ICT towards attaining sustainable democracy in Africa (Anyiam-Osigwe 2004). According to Coetzee Bester, a former member of parliament in South Africa and co-founder of the Africa Institute for Leadership, Research and Development, the problem of ICT in Africa includes all stakeholders.

He writes:

«A program to reconstruct communities as holistic entities is necessary. This should include leadership, followers, agree-upon principles and values as well as effective interaction among all these elements” (Coetzee Bester 2004, 12).

A value-based reorientation implies personal awareness, an understanding of information, effective interactions between leaders and their communities without limitations of time and space, and mutual confidence in representative leadership.

In the already mentioned study on “Ethics and the Internet in West Africa” (Brunet/Tiemtoré/Vettraino-Soulard 2004) the authors identify six types of ethical issues related to the development of the Internet in Africa but also relevant for other countries, namely:

- ♦ Exclusion and inequity
- ♦ Culture (Internet Content)
- ♦ Internet costs and financing
- ♦ Sociotechnical aspects of Internet integration (resistance, uses)
- ♦ Political power
- ♦ Economic organization

There is no such thing as a morally neutral technology. This is not to say just that technologies can be used and misused, but to express the deeper insight that all technologies create new ways of being. They influence our relation with one another, they shape, in a more or less radical way, our institutions, our economies, and our moral values. This is why we should focus on information technology primarily from an ethical perspective. It is up to the African people and their leaders to question how to transform their lives by these technologies. African educational and research institutions should also reflect critically on these issues. In their analysis of the impact of “new technologies” on “ancient Africa” Willy Jackson and Issiaka Mandé point to the problem that the development of the information society in Africa “comes up against a lack of financing and the unsuitability of the legal and statutory frameworks” (Jackson/Mandé 2007, 175).

As Bob Jolliffe, senior lecturer in computer science at the University of South Africa, has pointed out there is an implicit connection between free software, free culture, free science, open access, and the South African Freedom Charter (Jolliffe 2006). A major task of information ethics in South Africa as well as in other African countries, is to align such ideals with concrete social, political, economic and technical processes. ICT in Africa should become a major contribution for opening “the doors of learning and culture” to use the wording of the Freedom Charter. The space of knowledge as a space of freedom is not, as Jolliffe rightly remarks, an abstract ideal. It has a history that limits its possibilities. It is a space of rules and traditions of specific societies, in dialogue with their foundational myths and utopian aspirations. We are morally responsible not only for our deeds but for our dreams. Information ethics offers an open space to retrieve and debate these information and communication myths and utopias.

The main moral responsibility of African academics is to enrich African identities by retrieving and re-creating African information and communication traditions. From this perspective, cultural memory is an ethical task if we want to create a humane community based not just on the number of people but on the relations between them, as the German Egyptologist Jan Assmann remarks following Friedrich Nietzsche in his *Genealogy of Morals* (Assmann 2000, Nietzsche 1999, vol. 5, 294-300). Cultural memory must be re-shaped again and again to build the core of a humane society. This means no more and no less than basing morality on memory and communication, thereby establishing information ethics at its core. The function of cultural memory is not just to express what belongs to the collective memory of a community, but to engage the will of its members to connect themselves through the task of creating it. Cultural memory is connective. It is related to our myths and to our dreams. We remember Nietzsche’s ambiguous warning: “You want to be responsible for everything! But not for your dreams!” (Nietzsche 1999, vol. 3, 117). I call this warning ‘ambiguous’ because Nietzsche, no less than Sigmund Freud, was well aware of the limits of human will and our tendency to repress or forget what we consider painful. The Egyptian god Thot is a symbol of cultural memory as a social task. He is the god of wisdom and writing as well as messenger of the gods, particularly of the sun god Re, and is associated with the goddess Maat, the personi-

fication of justice. Thot, the Greek Hermes, was represented as an ibis- (or a baboon) headed man with a reed pen and a palette, known in the Western tradition through Plato's criticism of writing in his *Phaedrus*.

I think that retrieving the African cultural memory with regard to information and communication norms and traditions is the main information challenge for African information ethics. It should recognize the different strategies of social inclusion and exclusion in the history of African societies, including traumatic experiences such as slavery and apartheid. Since the emergence of the Internet, this challenge is discussed under the heading of the digital divide. But African information ethics implies much more than just the access and use of this medium. The problem is not a technical one, but one of social exclusion, manipulation, exploitation and annihilation of human beings. It is vital that thought about African information ethics be conducted from this broader perspective.

Prospects

The final goal of ethics is not just to speak about the good but to do the good and to dream about it. We owe this insight about the relation between ethical thinking and action to Aristotle, the founder of ethics as a scientific discipline in the Western tradition. Our conference brings together scientists and politicians to discuss what could and should be thought and done to create a good African information society. This conference is unique in several respects. First, it deals with information ethics in Africa from an African perspective. Second, it encourages African scholars to articulate the challenges of a genuine African information society. Third, our conference is devoted to fundamental ethical challenges as listed in our programme:

Topic 1: Foundations of African Information Ethics

- ♦ Respect for human dignity - information based rights
- ♦ Freedom of expression
- ♦ Freedom of access to information
- ♦ Information wrongdoings, information corruption, information injustice

Topic 2: Cultural Diversity and globalization

- ♦ Protection and promotion of indigenous knowledge
- ♦ Global security, human security, privacy, transparency
- ♦ E-Government and related topics
- ♦ Cultural diversity and development.

Topic 3: Development, Poverty and ICT

- ♦ Using ICT for a better life in Africa: case studies
- ♦ Internet and exclusion (socio-political and economic exclusion)
- ♦ North-South flow of information and information imperialism
- ♦ Flight of intellectual expertise from Africa.

The expected outcomes of the conference can be summarized as follows:

- ♦ To agree on the Tshwane Declaration on Information Ethics in Africa.
- ♦ The establishment of the Africa Network for Information Ethics (ANIE) ANIE will cooperate with international partners such as the International Center for Information Ethics (ICIE), the International Society for Ethics and Information Technology (INSEIT) and the University of Wisconsin-Milwaukee. ANIE will be housed at the School of Information Technology, Department of Information Science at the University of Pretoria, South Africa. It will act as a platform for exchanging information about African teaching and research in the field of information ethics. It will provide the opportunity for scholars around the world who have a shared interest in African information ethics to meet each other and to exchange ideas. It will provide news on ongoing activities by different kinds of organizations that are involved in African information ethics and related areas.
- ♦ The establishment of the Information Society and Development Advisory Council to advise the South African government and other stakeholders on ethical issues pertaining to the development of an African information society.
- ♦ To publish a Reader on Africa Information Ethics that can be used as a textbook for students and scholars. It will contribute to the development of a distinct field of African information ethics.

- ♦ To ensure that African scholars in this field are part of the international scholarly community. This outcome will be achieved by the creation of a virtual research network linking disparate scholars. It will be coordinated and maintained by the African Center for Information Ethics.

- ♦ The initiation of research projects with the focus on grant proposals. During the conference scholars and practitioners from around the world will have the opportunity to meet in smaller groups to discuss and identify possible research opportunities in the field of African information ethics. It is envisioned that foundations such as the Gates and Ford foundations will be approach for funding. The focus of the research will specifically be on the practical implications of the ethical challenges associated with the use of information and knowledge sharing on the African continent.

- ♦ The establishment of a Summer School on Information Ethics that will be hosted at the School of Information Studies at the University of Wisconsin-Milwaukee. The main purpose of such a Summer School will be to train African practitioners and scholars on relevant issues pertaining to African information ethics.

- ♦ To publish the proceedings of this conference in the International Review of Information Ethics (IRIE) .

There is a short and a long history of information ethics in Africa. In the second part of my presentation I have pointed briefly to the short one. The long history concerns Africa's rich oral and written traditions throughout many centuries about different kinds of information and communication practices using different moral codes and media based on dynamic and complex processes of cultural hybridization. Critical reflection on this history promotes greater awareness of Africa's cultural legacy, which provides the foundations of the digital information and communication technologies that will create unique and genuinely African information societies. An information ethics opens a space of critical reflection for all stakeholders on established moral norms and values, it provides the catalyst for a social process, and is a space for retrieving the rich African cultural memory necessary to our field. This cultural memory permits to reshape African identities and contribute to the world's information and communication cultures.

Let us start this fascinating debate on information ethics for and from Africa with a well-known insight of Sir William Arthur Lewis: "The fundamental cure for poverty is not money but knowledge" Information and communication technology can, certainly, contribute to the goal of sharing knowledge in Africa. Let us think together about how to share knowledge using ICT in Africa for the sake of African people. I am convinced that the best way to do it is in a mood of joy. By this I mean the kind of joy that is uniquely African. The South African Coat of Arms, written in the Khoisan language of the /Xam people, has a wonderful phrase in its motto: !ke e: /xarra //ke

The /Xam people did not use abstract words such as 'unity' or 'diversity.' The motto can be translated as «diverse people unite» (Smith 2006). It addresses each individual effort to harness the unity between thought and action in and for an African community: Today, the /Xam language that once was spoken in a large part of Western South Africa no longer exists. Fortunately, it was recorded by a German linguist, Dr. Wilhelm Heinrich Immanuel Bleek, who was born in 1827 in Berlin. Dr. Bleek wrote the famous Comparative Grammar of South African Languages published in London in 1862 and 1869 (Bleek 1862/1869). By appointment of Sir George Grey, Governor of the Cape, Dr. Bleek was elected as curator of the South African Public Library in 1862. He occupied this position until his death in 1875. Thanks to Dr. Bleek the /Xam language survived in 12,000 pages taken down word-for-word from some of its last speakers, who gave us the gift of their myths, beliefs and rituals. Let us follow the example of Dr. Bleek by retrieving, saving and re-shaping the rich African cultural memory so necessary to our field.

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Biography

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Computer Ethics and “other Societies”: Relevance of ICT for India

Manju Dhariwal, Himadri S Majumdar and Raghubir Sharan

Introduction

The perception of usefulness of computer and associated technologies varies with society. This variation can be categorized on the basis of development and end-use of such technologies. One category would consist of those societies which have conceptualized, developed and created computer, information and communication technologies (which here are jointly denoted by ICTs). In these societies the development of ICTs has taken place through an ongoing reciprocal relationship in which society and technology have co-constructed each other. Therefore there is synergy between the demands of society and functionality of ICTs. Let us call this category of societies as ‘mainstream societies’. For ICTs the developed, predominantly western, societies represent the mainstream. Another category is of those societies which have received ICTs through transfer, diffusion and/or market forces. Let us denote these as ‘the other societies’. In these societies ICT have suddenly appeared. This suddenness sets one to think of ways of meaningful utilization of ICTs in these ‘other societies’. A discussion of some of these ways has been attempted in the present paper. We are aware that this is a complex task, which becomes even more difficult due to historical, political and cultural heterogeneity of the ‘other societies’. For the sake of simplicity we take up the example of only one such society – the Indian society in the first decade of 21st century. Indian society is divided on the basis of social and economic prowess. The socio-economic divide has historical roots while the techno-economic divide is a recent phenomenon. We will start our discussion by asking ourselves the following question:

If one decides (i) to develop a technology which would help de-marginalization of Indian society and (ii) take a decision to use mostly ICTs

to achieve this purpose, then are ICTs (iii) in their present available form capable of doing this or (iv) do they have to be substantially reshaped?

In this article we will try to address the four questions that we have raised above. Since our aim is to see use of ICT for the marginalized, the prelude would be to understand the nature of stratification of the Indian Society in Section 2. This consideration shows the inadequacy of ICT in its present form to envisage the benefits that are possible through legislative, political, social, economic and medical actions. Keeping this in view, the legislative measures that have been taken in India in the last two decades have been summarized in Section 3. It follows-up in Section 4 with the vision of great returns that will be available if presently available ICT tools are redesigned to support legislative, political and social measures. The paper is then concluded.

The considerations of this paper assume importance because in the last two decades disproportionately heavy emphasis is being placed by the policy makers of India on development of ICTs. This is being done under the hope that magic wand of ICTs will somehow provide food, shelter, medical facilities, moral values and enterprise necessary to reduce the pain of marginalization.

Nature of stratification of the Indian society

The phenomenon of stratification of society has attracted the attention of large number of scholars. The main concern has been with the 'inequality' that stratification causes and with 'equality' that is desirable. We share our concern on this matter with a noted Indian Sociologist, Andre Beteille, who remarked that though we take pride in announcing that we are presently in the age of equality, neither has the inequalities deposited by the past ceased to exist nor can we ensure that no new inequalities are expected to arise. According to him the important issue is that people no longer accept inequality in social life as a matter of course. In his own words:

«For every inequality that persists or is likely to arise, people now want a reason, and the reason that sufficed in the past are no longer found sufficient. On the other hand, no specific reason seems to be required for treating all persons equally...Even a hundred years ago people were not prepared to concede as much to equality as they are now prepared to

do. John Stuart Mill observed in the middle of the last century that his countrymen found the very idea of equality strange and offensive.» [1]

Equality, however, is not a default human wisdom. What was historical before has now become a survival strategy. Darwinian evolution creates the scope for discrimination and deprivation in an ever-growing world population of nearly 5 billion fighting for its limited resources. It is therefore not an easy task to establish equality for all. We can borrow a few more words from Beteille on this matter.

«Now it is one thing to expose the arbitrariness of the inequalities contained in existing institutional arrangements, but quite another to institute equality by an act of collective will. The gap between what may be called the critical and the constructive sides of equality bedevil students of society everywhere, but nowhere more insistently than in India today. Nothing seems to be easier than to expose the arbitrary, not to say perverse, nature of the inequalities deposited by successive historical epochs on Indian society; and nothing more difficult than to create conditions that will ensure equal enjoyment of even the barest necessities of life.» ([1], p 169).

This brings us to the Indian perspective of stratification that we want to address. Right to Equality exists already in the preamble of the constitution of India. Article 15 of Indian constitution demands “Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth” for the citizens of the republic [2]. That the constitution has been successful is evident from the fact that the country stands united with one-fifth of world population and amazing diversity in culture and language. However, a sixty year old constitution has very little strength of overpowering centuries of unequal practice.

Our concern, in context of this article, is in exploring the avenues by which ICTs may be used to help the underprivileged persons categorized in the lowest rung. A feel of the problems faced by these people can be gleaned by going through a news item that appeared recently in an Indian National Daily, The Hindu [3]. This report is about the plight of ‘Bonded Laborers’. Bonded labor is a form of slavery, where human beings are hired to work in shifting locations like brick kilns, mining quarries, construction sites, cash crop agriculture and several such activities. Their terms of employment are heavily loaded in the favor

of employers and their human rights are trampled upon with impunity. This report is about bonded laborers who were freed in 1989-1990 by implementation of legislations against this practice but, till now (March, 2009), the benefits promised to them have been denied by the state on one pretext or another. In this case legislations exist, but implementation is leaving much to be desired.

Legislation for blurring the divides

A hope that with time the divides between people of the world would vanish has kept the humanity going. The ideal is difficult to reach, but democratic societies appear to have the best chance for it. Fortunately, in India, in recent years, democracy (with all its imperfections) has been flourishing. This has made it possible to enact certain legislations which have great promise of achieving greater equality. To start, there is Article 46 of Directive principles of state Policy in the constitution [2], which states that *“the State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation.”* But the news item mentioned in section 2 shows the gap between formulation and implementation of this Directive Principle. To overcome this, apart from framing the law, a will to enforce the law on the part of the government and general awareness of the certain legislation on the part of common man is needed. A few of these steps have been enumerated below:

- (1) Like every science experiment, Governance can have two approaches: top-down or bottom-up. Each of these approaches has its advantage and disadvantage. At present in India a heavy top-down system of governance is dominant. However, a persistent demand for devolution of power to local bodies is gaining ground. Traditionally, local bodies (Panchayats) have been very common in India. Also, Mahatma Gandhi has advocated that ‘Panchayati Raj’, which would empower the people at the grass roots level, should form the core of governance. The importance of Panchayats is mentioned in the Indian Constitution in Article 40 [2] of Directive principles of state Policy which states that *“the State shall take steps to organize village panchayats and endow*

them with such powers and authority as may be necessary to enable them to function as units of self-government.” Additionally, for optimal representation of women and lower sections of society in these village panchayats, an amendment was passed in 1992 according to which one-third of total seats are now reserved for women and people of scheduled castes and tribes. Panchayats with such powers and authority as institutions of self-government enjoy rights with respect to preparation and implementation of schemes for economic development and social justice. Such government initiatives which ensure equal participation from all sections of society will go a long way in blurring of divides and upliftment of weaker sections.

- (2) Through legislation, steps have been taken towards initiating Poverty Alleviation Programs. An example of this is the National Rural Employment Guarantee Act-2005 (NREGA) [4]. Under this scheme persons below poverty line have been gainfully employed with guaranteed minimum wages which varies from state to state according to predefined criteria. This program has been in place for a very short time, but it has generated tremendous enthusiasm.

Demand is now on to start social audits to measure the efficacy of such programs. Spreading awareness about the strengths and weaknesses of Panchayati raj and NREGA and helping in conducting meaningful and effective social audits are two representative examples of the huge tasks that are facing the designers of ICT. These are very new tasks which designers of ICTs in Mainstream societies have not faced. These are unique problems of the ‘other Societies’. Hence a new outlook at all the phases of ICT design (Requirement, Specification, Design, Implementation, Verification and so on) has to be developed. Some of the developments in this area are given in the next section.

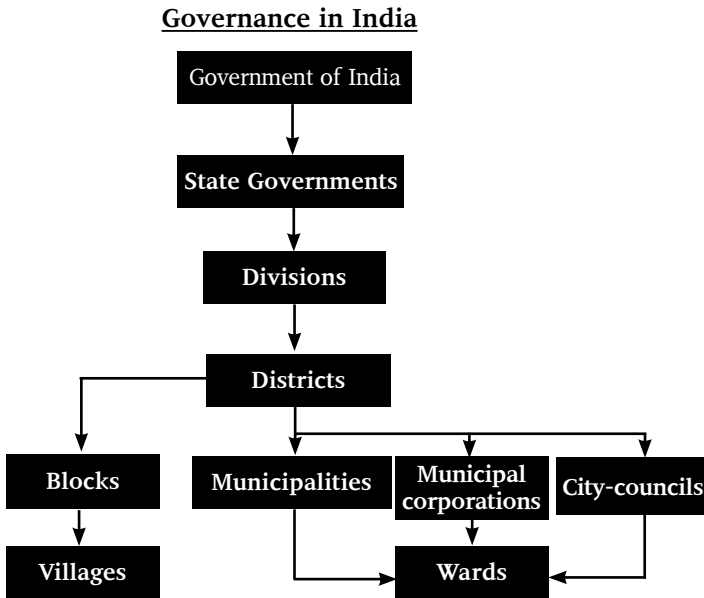
Relevance of Computers and ICTs in amelioration of conditions of underprivileged

We have now understood the basis of stratification in Indian society and the effort of the state in coping with it. One thing that has clearly emerged from the whole discussion is that the best bet for bridging the social gap is Information. Information can be in several forms like

education and social, health or political awareness. This is of particular relevance for a country like India with its physical vastness and population and its unique diversity. That information can dramatically change social structure is evident from the success of the telecommunication revolution in India since late eighties. The connectivity between people into the remotest part of the country has changed the social imbalance to a large extent. One more example of technology promoting equality is cable television. This has a two-pronged advantage. Firstly, television in itself establishes an audio-visual form of information for people and secondly, the onset of cable-television has empowered the people with the option of choice instead of the compulsory state-owned television. Impartial or multi-dimensional information have established a true democratic nature of society. These two technologies are now deeply integrated into the Indian fabric and is working wonders – not only for the urban population but for the greater rural population as well. ICT is one step further than the present state of information deliberation and exchange.

ICT is still in its infancy in terms of potential application in India. But it has the power of making information exchange a reality. A big state initiative in this respect has been the National Informatics Center of India (NIC) [5]. In 1968 Dr. Vikram Sarabhai, the founding fathers of Indian Space program, suggested the formation of National Informatics Organization towards fulfilling the goal of a self-reliant electronics industry and development of social-welfare in India. The Department of Electronics (DOE) came into existence in 1970. The Government constituted the Electronics Commission in February 1971. For policy formulation and implementation through meaningful, effective and in-depth studies in the field of electronics including computer industry, an Information, Planning and Analysis Group (IPAG) of the Electronics Commission was constituted in October 1971. The Electronics Commission and the DOE put forward a proposal to UNDP for assistance to set up a National Computer Centre in Delhi for building up national data bases, developing the methodologies for utilizing these, and for defining the various options and paths in decision-making at the national level. The UNDP agreed to fund the National Informatics Centre to the extent of US \$4.4 million.

NIC was set up with the objective to promote economic, social, scientific and technological activities, and also for macro-economic adjustment program of the Government, through the applications of information technology. To understand the enormity of the task handled by NIC we have to first understand the democratic structure of India presented in the cartoon below:



In India there are 35 states and union territories. Within them there are 671 districts. From there onwards the division grows by orders of magnitude with the villages and the wards summing up for the 1 billion people. NIC has now developed and implemented independent websites for all the districts and the websites for the next levels (blocks, municipalities etc,) are still in progress.

This initiative so far has established the knowledge chains and has also implemented the interactive process in some cases. The municipality of Visakhapatnam, a port city on the eastern coast provides a number of basic services online, including tap connection status, status of garbage pick-ups, sanitation tenders, and building plan status. The municipal corporation of Surat has an award-winning system for

addressing citizen complaints. Jabalpur -a city in the central Indian state of Madhya Pradesh uses a management information system that has helped the city to improve its resource mobilization.

Another part of the NIC website is the Agricultural Marketing Information Center. Information of crop and seed prices and their availability, national food-grain stock, information on new agricultural research - all are available in one place.

All the initiatives above are mostly the generative part of information. The information available has now to be processed and conveyed to the whole society. This is an uphill task and this is where ICT still falls short. Information generated is of no value if it does not reach the user. ICT is yet to become as widespread as mobile phones and televisions in India. But the potential and the answer lie in the existing technology. With the advent of mobile internet technology and internet protocol television it is just a matter of time when we see the transformation of the information exchange all over India. Some initiatives in this respect have already started. One example of this is kiosk-computing. The idea is to provide community-computing facilities and education in rural India. Drishtee [6] is a platform for rural networking and marketing services for enabling e-governance, education, and health services. It runs with state-of-the-art software that facilitates communication and information exchange within a localized intranet between villages and a district center. These district centers have been supplemented with a string of services which would have been otherwise difficult to access in remote rural areas. Services include, for example, Applications, Land Records, Mailing, a Virtual Bidding Marketplace, Online Grievance Redressal, and Market Information Systems.

In the villages, a local villager facilitates the services provided through Drishtee. He or she becomes a kiosk owner and takes it up as a self-employment opportunity, mostly financed by some of the government sponsored schemes. The kiosk owner is also trained to handle Drishtee services while catering to his or her customers. Local rural youth will assist entrepreneurs in running the kiosks on commercial lines. This employment thus leads to a new IT-literate generation in the country who can repay their meager loans (not more than 75,000 Rupees) with their earnings and become role models for the younger

generation. There were more than 43,000 such kiosks in 2003 and it will reach the 100,000 mark soon.

Drishtee's content expands along with the network's growth. It started with the Gyandoot kiosk in Dhar, a Stockholm Challenge Award Winner [7] and then extended to Sirsa, Panipat, Bhiwani, and Fatehabad in Haryana; Jalandhar in Punjab; Moradabad and Sultanpur in UP; Patna in Bihar; Jaipur in Rajasthan; and Bhawanipatna in Orissa. This has all the potential of becoming the world's largest intranet. All these initiatives, though at an early stage of development, augur well for use of ICT towards empowering the underprivileged.

Conclusion

We have entered the information age and information and communication technologies (ICTs) have assumed social and financial importance. The success story of ICTs in generating wealth and bringing comfort to a selected section of world population is common knowledge. Now, yet greater challenge lies in changing the nature of ICT from being exclusive to all-inclusive. Addressing this challenge would require a basic modification of the understanding of ICTs from a social perspective. The goal now is to make ICTs beneficial to even those sections of societies of the world who do not know or do not see the benefits of ICT. ICT alone does not have the power of bridging this social divide. But it can be the most important tool in efficient utilization of the efforts made through legislative and social steps. Our optimism is encouraged by the success, though limited, of some actions that have been recently initiated in India, which can serve as the perfect test-case for most of the world's underdeveloped nations.

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Legal issues in Biological Databases: A Sui Generis Approach

Athina Fragkouli & Marcello Corrales

Introduction

Databases play an important role in scientific research. Developments in the last decade have made databases essential for much biomedical research. The access to data and the ability to extract and re-utilize the data have always played an important part in scientific investigation. As always, intellectual property law raises legal questions concerning a proportionate balance between the right to access to information for scientists and the adequate protection of investment for the database maker. A disproportionate balance may either hinder the proliferation of new databases which are necessary and useful to scientific researchers or create a monopoly of biological data by the maker of a database. In this context two main questions might arise:

- a. Whether biological databases can be protected with sui generis right and -if so-
- b. How can this affect to scientific research?

Databases in the biological world.

To answer question a) at the outset, we need to have a look at the concepts which govern the database sphere.

According to the Database Directive¹, a database is “a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means².”

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1. Directive 96/9/EC of the European Parliament and the Council of March 11, 1996 on the legal protection of databases.
 2. Art. 1 (2) of the DIRECTIVE 96/9/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 1996 on the legal protection of databases [the Database Directive] at: <<http://europa.eu.int/ISPO/infosoc/legreg/docs/969ec.html>>last retrieved 2007/02/10

Even though, the Directive does not specifically mention the protection of databases containing biological data, the definition provided by the Directive is rather broad and allows a big room for interpretation.

The medium where a database resides is not completely specified. Therefore, it could be said that any embodiment of a database receives protection³. In the molecular biology field, for example, a database “contains nucleic acids and protein sequences, macromolecular structures and functions, expression pattern and networks of metabolic pathways and control cascades⁴.” According to Arthur M. Lesk, a biological database includes: a repository of data, a reasoned “organization” or “structure” of information termed a “schema”, and different tools to retrieve such data⁵.

Thus, from the foregoing definitions we can depict that biological databases possess identical technical features of those provided by the legal definition given by the Database Directive.

Copyright and Database right: A two-tear scenario

The Database Directive provides for a twofold protection. The first scheme of protection is as intellectual creation by copyright. In accordance to this, databases which, by reason of the selection or arrangement of their contents, constitute the author’s own intellectual creation shall be protected as such by copyright. No other criteria shall be applied to determine their eligibility for that protection⁶. In other words, a database must exhibit originality in order to be entitled to copyright protection.

The second scheme of protection is the so called *sui generis* right or simply the “database right” and focuses its attention on the protection of the investment in databases as a compilation of data.

3. Teris M. Sanks, Database Protection: National and International Attempts to Provide Legal Protection for Databases, at <<http://www.law.fsu.edu/journals/lawreview/downloads/254/sanks.pdf>>, page 6, last visited July 6th 2007.

4. Arthur Lesk, Introduction to Bioinformatics, 3rd. edition, Oxford University Press, 2008, p.9.

5. Arthur Lesk, p.9.

6. Art. 3 (1) of the Database Directive.

According to the Database Directive, the only precondition for a database to be protected by sui generis right is the substantial investment in obtaining, verifying or presenting the content of the database judged qualitatively or quantitatively⁷. The investment refers not only to money but also to time, effort, technical equipment and human resources⁸. At first sight it seems that all these preconditions are fulfilled in the case of a biological database taking into account that the structure of a biological database demands a great investment in equipment, in manpower etc., and all this investment objects the obtaining of the samples and any other related information, their verification and their presentation.

The main objective of the database right is to promote investment in the database production which means that only those databases which demonstrate a substantial investment are eligible for protection⁹. Therefore the answer to question a) whether biological databases can also be protected in the scope of the Database Directive must be answered affirmatively.

Effect in scientific research

As for question b) of, “how can this affect to scientific research?” we need to analyze the current situation in the light of the court rulings of the European Court of Justice (ECJ) and the German Court interpretations which are going to be expounded below.

In 2004 the ECJ ruled four cases¹⁰ regarding databases that contained sport information in the areas of football and horseracing. The countries involved were the United Kingdom, Finland, Greece and Sweden¹¹. Each ruling referred to similar facts in determining the eligibility measure for database protection in a distinction between the investment criterion in the “creation” of data and the investment crite-

7. Art. 7, of the Database Directive.

8. Recitals 7, 40, of the Database Directive 96/9/EC.

9. Jasper Bovenberg, *Genomics, Society and Policy*, p. 17, Vol. 1 No. 2 (2005).

10. *Fixtures Marketing Ltd v. Oy Veikkaus Ab* C-46/02 (Finland), *Fixtures Marketing Ltd v. AB Svenska Spel* C-338/02 (Sweden), *Fixtures Marketing Ltd v. OPAP* Case C-444/02 (Greece), *The British Horseracing Board Ltd v. William Hill Organization Ltd* C-203/02 (United Kingdom).

11. DG Internal Market and Services Working Paper, First Evaluation of Directive 96/9/EC on the legal protection of databases, Brussels, p. 13, December 12th 2005.

tion in the “obtaining” of data¹². These decisions provide the fundamental guidelines in order to clarify vital aspects of the Directive¹³.

The decisions established that investment in the “creation” of data, for instance, by drafting a list of events such as football fixtures and horseracing schedules, does not qualify for the substantial investment criteria stated in Article 7 (1) of the Database Directive. Therefore, the ECJ denies the protection of those databases the creator of which has invested only in generating the contained data¹⁴.

Out of these four cases the most prominent and complex refers to horse races information kept by the British Horseracing Board (BHB) against the off-track betting company William Hill that had obtained horseracing data from a third lawful licensed user of BHB’s database¹⁵.

To outline these cases in all brevity, BHB’s database is very complex and significant, containing different kind of data such as the names of the horses, trainers, owners and jockeys. Besides, accurate records of the performance of the horses, weight and handicapping were strictly kept. Moreover, the list of all races and telephone calls were recorded in a regular basis by about 30 operators baring annual costs of approximately 4 million pounds¹⁶.

The other three cases comprehend football fixtures of English and Scottish football as well as on-line betting activities¹⁷. For example, in *Fixtures Marketing Ltd v. AB Svenska Spel*¹⁸, the organizers of English and Scottish football operate a fixture list drawn up from all the 2000 matches per season in England and all the 700 matches in Scotland. That is to say, that data are electronically stored in chronological order and by reference to each team¹⁹.

12. Jens Gaster, “Obtinere” of Data in the Eyes of the ECJ: How to interpret the Database Directive after the *British Horseracing Board Ltd et al. v. William Hill Organization Ltd*, p. 135, *Cri* 5/2005.

13. Mark J. Davison and P. Bernt Hugenholtz, *Football Fixtures, Horseraces and Spin-offs: The ECJ Domesticates the Database Right*, E.I.P.R. p. 113, 2005.

14. Mark J. Davison and P. Bernt Hugenholtz, p. 113.

15. Mark J. Davison and P. Bernt Hugenholtz, p. 113.

16. See *BHB v. William Hill* at [12], [13], [14] and [15].

17. Mark J. Davison and P. Bernt Hugenholtz, p. 113.

18. C-338/02, *Fixtures Marketing Ltd v. AB Svenska Spel* (Sweden).

19. C-338/02 at [9].

In its relevant decisions the ECJ by defining the term “obtaining”, made a distinction between two kinds of databases: databases with created material and databases with collected material:»The expression ‘investment in ... the obtaining ... of the contents’ of a database must be understood to refer to the resources used to seek out existing independent materials and collect them in the database, and not to the resources used for the creation as such of independent materials”²⁰. In other words the crucial element to structure this crossroad is by defining the term “obtaining” which clearly alludes to the act of collecting and gathering already existing data previous to the creation of the database²¹.

“Creating” or “obtaining” in the scientific world?

It appears to be rather complicated to distinguish whether the data has been “collected” or “created” in relation to biological databases. This is due to the nature of such, which are based on different applications which enable scientist to collect and work on different datasets in order to make experiments and improve in nature. Besides, most of the times they are based in principles of access and sharing of information. Namely, in some cases biological data are extracted directly from the sources of nature such as genes, tissues, cells, organs, tumors, plants, etc., and some other times they are collected from other so called primary or composite databases such as NCBI²² PubMed²³, etc., which are regarded to be open sources to scientists.

Additionally, these kind of databases contain mainly either biological material as such (i.e. genes, samples, tissues, cells, etc., also known

20. Thomas Hoeren, EuGH: Datenbankschutz, MMR 2005, 29-36 (35), see also Heiko Sendrowski, Zum Schutzrecht “sui generis” an Datenbanken, GRUR 2005, 369-377 (371).

21. Bernt Hugenholtz, “Abuse of Database Right: Sole-source information banks under the EU Database Directive” available at <http://www.ivir.nl/publications/hughenholtz/abuseofdatabaseright.html> also published in F. Lévêque & H. Shelanski (eds.), *Antitrust, patents and copyright: EU and US perspectives*, Cheltenham: Edward Elgar 2005, pp. 203-219.

22. National Centre for Biotechnology Information <http://www.ncbi.nlm.nih.gov/>

23. PubMed is regarded to be a bibliographic database which contains thousands of publications regarding biological experiments therefore a prominent source for research, <http://www.ncbi.nlm.nih.gov/sites/entrez?db=PubMed>

as «biobanks»²⁴) or the result of further observations regarding this material (DNA sequences or protein sequences, etc.)²⁵. The first group of material is considered rather as collected because it already exists. Nevertheless not anybody can obtain this kind of material, for this requires the knowledge of experts and special means and experience²⁶. The second group of material could be characterized as created because it is the result of a specific process of the biological material²⁷. It is however comparable with meteorological observations or geographical information. In this sense, the ECJ rulings create a very fine line very difficult to determine in the scientific sphere. Up to now there are not national court decisions referring to this problematic.

To palliate this situation the German Federal Supreme Court of Justice (Bundesgerichtshof) already came up with a solution in the HIT BILANZ case²⁸. In this case, the plaintiff was collecting data regarding music hit-songs, played at the German radio, as well as the sale numbers of the relevant CDs. Using this data, the plaintiff made music-charts named "Airplay-Chart" and "Music-Sale-Charts", where the actual ranking of a song and relevant information, such as title, singer, etc., were published weekly in a couple of magazines. On the other hand, the defendant made a list of singers and their hits, named HIT BILANZ, which was sold in bookstores and the Internet. The list was arranged and categorized according to different criteria such as alphabetical order, the number of weeks the hit was in charts, etc.

24. UK Biobank: Protocol for a large-scale prospective epidemiological resource, p.12, available at <http://www.ukbiobank.ac.uk/docs/UKBProtocolfinal.pdf>, last visited on 22.11.2008.

25. See also Mahesh Madhavan, Copyright versus Database Right of Protection in the UK: The Bioinformatics Bone of Contention, *The Journal of World Intellectual Property* January 2006 9 (1), 61–90.

26. Wiebe Andreas, *Europäischer Datenschutz nach "William Hill" – Kehrtwende zur Informationsfreiheit?*, CR 2005,169-174 (171), Sendrowski, n. 4 above (373), Hoeren, n. 4 above (35), Matthias Leistner, *British Horseracing Board v. William Hill*, IIC 2005, 592-595 (593-594).

27. See also Mahesh Madhavan, Copyright versus Database Right of Protection in the UK: The Bioinformatics Bone of Contention, *The Journal of World Intellectual Property* January 2006 9 (1), 61–90.

28. BGH, 21.7.2005- I ZR 290/02 K&R, 2006 (39) at: <http://juris.bundesgerichtshof.de/cgi-bin/rechtsprechung/document.py?Gericht=bgh&Art=en&sid=1e4bf938b9f4bcc4ad2064183135ec6e&client=3&nr=33566&pos=0&anz=6>

The defendant did not refuse that the list was made of data that the plaintiff's music-chart contained, which was published in a specific magazine but rather alleged that due to the re-arrangement of data there was not infringement of the database right. The Federal Supreme Court in its decision confirmed the infringement of the *sui generis* right and indicated a way to check whether the data in a database can be considered as created or collected; if a potential competitor with similar economic abilities could also provide the same data, then the database is protected. In other words the data is considered as collected as far as anybody with similar knowledge and means could find the same data²⁹.

In addition, the District Court (Landgericht) of Munich issued a decision³⁰ in relation to geographic maps, a similar kind of databases in comparison to those biological databases, in the sense that the collection of geographic data requires *inter alia* specific knowledge. In this case the plaintiff, the federal state of Bavaria, was producing topographic maps of Bavaria in printed form. The defendant on the other hand was publishing tourist maps and to this end he obtained information from the plaintiff's maps. Respectively, the plaintiff argued the infringement of the database right. According to the District Court, the investment in obtaining the relevant data through aerial photography is not regarded to be an investment in the creation of new data, since the data already existed and anybody could invest in order to obtain it. Accordingly, the data of a geographical map must be considered as collected, because anybody with certain knowledge, providing a similar investment, would have come to the same result. Therefore geographic maps are protected by *sui generis* right.

Comparably the same could be said about biological databases³¹. In the case of biological data, for instance, should be considered as an investment not for the creation of the data but for the creation of the

29. BGH, 21.7.2005- I ZR 290/02 K&R, 2006 (39), see also Matthias Leistner, Last exit withdrawal?, K&R 2007, 457-468 (462).

30. Landgericht München I, Urteil vom 9.11.2005-21 O 7402/02 (Topografische Kartenblätter), GRUR 2006, 225.

31. See also Malte Grützmaker, BGH Datenbankschutz – HIT BILANZ, CR 2006, 14-16 (15).

relevant database because someone with similar expertise and technical resources would have arrived to the same observations and measurements, in collecting thus to the same biological data. Therefore, according to the German Court's theory, biological databases may be protected with the *sui generis* right. In any case drawing this thin line in the context of biological databases is extremely difficult and subject to future controversies.

By accepting these considerations, the owner of a biological database has the rights of a database's maker. Accordingly, the extraction and the re-utilization of a database's content is prohibited not only in relation to the whole database but also in relation to a substantial part of it evaluated qualitatively or quantitatively³². Furthermore, the ECJ judged that a part of a database's content can be considered as qualitatively substantial, if the investment required for its obtaining, verification or presentation has been substantial. As a result, a quantitatively insubstantial part of the content may represent in terms of obtaining, verification or presentation, significant human, technical or financial investment³³. In this respect, it seems that, although Recital 45 of the Database Directive states that «the right to prevent unauthorized extraction and/or re-utilization does not in any way constitute an extension of copyright protection to mere facts or data», a kind of exclusive right to simple data could not be avoided. The extraction and re-utilization of a part, the collection of which requires an investment and which could be consisted of one single information³⁴, is prohibited, even if this information is no longer in the database. And that is because, according to the ECJ, the information contained in a database could also be protected outside the database³⁵.

Since the database right refers to databases with collected information it is likely that the information can be found elsewhere³⁶. None-

32. Art 7(1).

33. BHB n. 3 above [71], more about it in Sendrowski, n. 4 above (375), see also Wiebe, n. 7 above (173).

34. See also Annemarie Beunen, Protection of databases The European Database Directive and its effects to Netherlands, France and the United Kingdom, Nijmegen 2007, 192.

35. BHB n. 3 above [52].

36. Bernt Hugenholtz in Dreier/Hugenholtz, Concise European Copyright Law, AH Alphen aan den Rijn 2006, 330.

theless, when it comes to information that, even though it can be considered as collected, its collection requires experts with special skills and knowledge -such as results of experiments or observations-, then this information can possibly not be found somewhere else.

The problem in relation to the biological databases is obvious: Each data -or at least the majority of data- collected in a biological database is the result of a great investment. Thus the sui generis right creates an absolute and exclusive right to each data a biological database may contain. But this issue is even more confusing when it comes to the use of this data for scientific research, a use that traditionally constitutes an exception in copyright.

According to article 9 of the Database Directive, the rights of a lawful user of a database can be extended by any Member State so that he can without the authorization of its maker, extract or re-utilize a substantial part of its contents ...in the case of extraction for the purposes of illustration for teaching or scientific research, as long as the source is indicated and to the extent justified by the non-commercial purpose to be achieved.

The problems that arise in respect with the aforementioned provisions are the following:

- ♦ Member States may not extend the rights of a lawful user to this end.
- ♦ In case that Member States provide this extension, the researcher must be a lawful user -a term that has not been defined yet.
- ♦ The researcher has the right to extract the material-information but he/she cannot re-utilize it.

Duration of the Database Right

Another issue that may create a restriction in access to data, and therefore undermine scientific research is the 15 years timeframe of protection which starts running from the date of completion of the making of the database³⁷. According to Article 10 (3) of the Database Directive, any substantial change, evaluated qualitatively or quantitatively, to the contents of a database, including any substantial change

37. Art. 10 (1) of the Database Directive.

resulting from the accumulation of successive additions, deletions or alterations, which would result in the database being considered to be a substantial new investment, evaluated qualitatively or quantitatively, shall qualify the database resulting from that investment for its own term of protection. Within biological databases this means that any substantial change to the content of its databases in the obtaining, verification or presentation of the contents, or the correction and updating of data, or the deletion of old data which brings new input to the content of the database, etc. can grant another 15 years of protection successively.

Conclusion

The only precondition for a database to be protected by the *sui generis* right is the substantial investment in obtaining, verifying or presenting the content of the database judged qualitatively or quantitatively. The investment refers to money, time, human resources and effort. It seems that all these preconditions are fulfilled in the case of many biological databases taking into account that they demand a substantial investment in technical equipment, human resources, etc. and all this investment objects the obtaining of the data and any other related information, their verification and their presentation.

The implications of the four ECJ decisions are of significant importance to our discussions for mainly two reasons:

First, the ECJ took a restricted opinion regarding the framework of the Database Directive in its view of protecting the investment in the “generation of databases as storage and processing tools for information, not investment in generating the information itself”³⁸. In each case of the fixture marketing lists the defendants have been operating without a license as to the BHB v. William Hill case, finally ruling that those databases do not hold database protection³⁹. It seems that some biological databases containing “unique” data may belong to those cases of the British Horseracing Board and Fixture marketing Ltd. illustrated above.

38. Colston C. & Middleton K., *Modern Intellectual Property Law*, 2005, 2nd ed., Cavendish Publishing Ltd, p. 285.

39. Chris Reed and John Angel, *Computer Law: The Law and Regulation of Information Technology*, p. 417, Oxford University Press, Sixth Edition, 2007.

Second, it also seems that some other biological databases which only collect data clearly falls within the scope of protection considering that the source of its collection refers to the obtaining of already existing biological data collected from different sources coming from either the nature itself or other databases.

Third, the most controversial case is when the data are a result of scientific observations and experiments. This data might be considered as created because they might not exist in the nature as such, but it might also be considered as obtained, since anyone with the same means and knowledge can be led to the same data. The German courts seem to be in favor of the second solution regarding other kinds of databases. In particular this was the solution the German court gave in relation with databases contained geographical data, a comparable kind of databases.

Finally, the application of *sui generis* right to biological databases typically made by specific contributors can affect the study of researchers, working in the “biological” field, who are not able to collect this information with their own means and therefore base their observations on the pre-existing databases. Following, the detailed arrangements for sharing the rights on the database could be prohibitive to further research and development. Moreover, keeping in mind that by each update of the database the 15 year period of protection may start to run for another equal period of time and since biological databases are updated in daily basis, substantial changes can create a monopoly of its content information.

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The Orphan Works Problem

The copyright conundrum of digitizing large-scale audiovisual archives, and how to solve it

Bernt Hugenholtz & Stef van Gompel

Introduction

“New technologies breathe new value into old content⁴⁰.” The history of the media provides ample illustrations of this simple truism. The break-through of television broadcasting in the 1950’s and 1960’s created huge secondary markets for existing cinematographic works. The proliferation of video recorders in the 1980’s gave new life to popular television programs (e.g. Monty Python’s Flying Circus), and further increased the commercial life-span of movies, new and old. With the introduction of each new medium, a new shackle is added to the existing “chain of exploitation”.

New digital media provide unprecedented opportunities for reutilizing ‘old’ existing content. Classic films may be reissued on DVD; hits from long forgotten artists may be re-released on compilation CD’s; archived television news items may serve as input to multimedia encyclopaedias; old photographs may be incorporated into digital collages; film clips may become part of computer games or educational software; newspaper articles may be republished on internet websites; etc.

Digitization also allows broadcasting organisations, archives and libraries to create vast digital repositories of pre-existing audiovisual content. Examples include the BBC Creative Archive that offers UK viewers full online access to old BBC television and radio programmes⁴¹; and the INA-Média database which provides professional users online access to the digitized contents of the Institut National de l’Audiovisuel (the French National Audiovisual Institute – INA)⁴².

40. E. Atwood Gailey, “Who owns digital rights?”, 18 Communications and the Law 27.

41. BBC Creative Archive, <<http://creativearchive.bbc.co.uk/>> (last visited 2 August 2009).

42. INA-Média, <http://www.inamedia.com>

Digitizing existing content usually involves works protected under copyright, as well as performances protected by so-called neighbouring (related) rights. Although national copyright laws in Europe often allow archives and libraries to engage in acts of digital archiving without the consent of the rightholders concerned⁴³, permission is required if the digitized content is to be disseminated or otherwise made available to the public. Apart from relatively rare situations where the content is in the public domain⁴⁴, a prospective user is required to clear all the rights for the use(s) he wishes to make. This process of clearing rights will be obstructed if one or more right owners remain unidentifiable or untraceable after a reasonable search has been conducted by a person intending to use this work. This, in a nutshell, is the problem of “orphan works” that is the topic of this paper. Being unable to acquire permission from the right owner(s) concerned makes it impossible to legally reutilize the work. This is especially problematic when it comes to works of multiple ownership, such as television productions or other audiovisual works, for which numerous right owners might need to be traced in order to negotiate and secure permission for using these works.

By impeding the clearance of copyright and related rights, the orphan works problem may frustrate entire reutilization projects and prevent culturally or scientifically valuable content being used as building blocks for new works. To unlock the potential of pre-existing content, therefore, it is essential that legal solutions be provided to adequately address this problem. The need for solutions to the orphan works problem has been recognized at the European policy level, both by the European Union and the Council of Europe. As part of the “i2010: Digital Libraries” initiative, the European Commission has adopted a

43. Article 5(2)(c) of the EC Directive on Copyright in the Information Society (“Copyright Directive”), which provides for an exception in favour of archives or publicly accessible libraries, educational institutions or museums, to make specific acts of reproduction for non-commercial purposes. This allows Member States to introduce a statutory exception to permit these institutions to make – analogue or digital – reproductions for purposes of preservation or restoration of works available in their collections. Most European countries have adopted provisions of this kind.

44. In Europe and the US copyright expires 70 years after the author’s death. Neighbouring rights expire 50 years after the performance of a work, or 50 years after the first publication of a sound recording.

Recommendation⁴⁵ in which it calls upon the Member States to create mechanisms to facilitate the use of orphan works and to promote the availability of lists of known orphan works and works in the public domain. In response to the Recommendation the European Council invites Member States, within the indicative timetable, to have mechanisms in place to facilitate digitization of, and online access to, orphan works by the end of 2008. The Commission is invited to propose solutions for certain specific rights issues, such as orphan works, and to ensure their effectiveness in a cross-border context⁴⁶.

In the same vein, the Council of Europe has invited its Member States to examine and, if appropriate, develop initiatives to remedy the situation where it proves to be impossible for public service broadcasters to obtain the necessary authorizations and to clear the necessary rights for the exploitation of protected radio and television productions held in their archives, *inter alia*, because not all rightholders involved can be identified⁴⁷.

This article paper examines and evaluates possible solutions to the orphan works problem. First, Section 2 defines orphan works and estimates the actual size of the problem. Thereafter, Section 3 proposes and assesses six different possible solutions to the problem, and points out advantages and drawbacks to each model. Section 4 concludes.

Orphan Works

An orphan work can be defined as a copyright protected work (or subject matter protected by related rights), the right owner of

45. Commission Recommendation 2006/585/EC of 24 August 2006 on the digitisation and online accessibility of cultural material and digital preservation, OJ L 236/28, 31 August 2006. Pursuant to the Recommendation the European Commission has set up a 'High Level Expert Group on Digital Libraries', which has charged a Copyright Subgroup with the task of proposing workable solutions. See Final Report on Digitisation, Orphan Works, and Out-of-print Works, June 2008, http://ec.europa.eu/information_society/activities/digital_libraries/doc/hleg/reports/copyright/copyright_subgroup_final_report_26508-clean171.pdf

46. Council conclusions on the digitisation and online accessibility of cultural material and digital preservation, OJ C 297/1, 7 December 2006.

47. Council of Europe, Declaration on the exploitation of protected radio and television productions held in the archives of broadcasting organisations, adopted by the Committee of Ministers on 9 September 1999 at the 678th meeting of the Ministers' Deputies.

which cannot be identified or located by someone who wants to make use of the work in a manner that requires the right owner's consent. Where the right owner cannot be found, even after a reasonably conducted search, the prospective user has no choice but to either reutilize the work and bear the risk of an infringement claim or to completely abandon his intention to use the work. In the latter case, a productive and beneficial use of the work will be forestalled. This is clearly not in the public interest, in particular where the right owner, if located, would not have objected to the use of his work⁴⁸.

The actual size of the orphan works problem, in economic and social terms, has yet to be assessed. At the EU level, two major consultations were organized in which this question was addressed. On the basis of a Commission Staff Working Paper on certain legal aspects relating to cinematographic and other audiovisual works, stakeholders in the audiovisual field were asked whether they faced any difficulties in identifying rightholders, which create obstacles to the exploitation of audiovisual works⁴⁹. In the context of the "i2010: Digital Libraries" initiative, the Commission asked stakeholders whether they perceive the issue of orphan material to be economically important and relevant in practice⁵⁰.

Neither of these consultations has resulted in firm quantitative data. Although there are estimates that well over forty per cent of all creative works in existence are potentially orphaned⁵¹, this has not been corroborated by solid data. The consultations only revealed that the issue is perceived by several stakeholders, particularly by audiovisual and cultural institutions (mostly public broadcasters,

48. US Copyright Office, "Report on Orphan Works" (January 2006), <http://www.copyright.gov/orphan/orphan-report-full.pdf>, p. 15.

49. Commission Staff Working Paper on certain legal aspects relating to cinematographic and other audiovisual works, SEC (2001) 619, Brussels, 11 April 2001.

50. Commission Staff Working Document, Annex to the Communication from the Commission "i2010: Digital Libraries", Questions for online consultation, SEC (2005) 1195, Brussels, 30 September 2005.

51. Estimate provided by the British Library. See: British Library, "Intellectual Property: A Balance - The British Library Manifesto" (September 2006).

libraries and archives), as a real and legitimate problem⁵². No hard evidence was provided, however, on the degree to which orphan works present a problem for the actual use of these works or on the frequency with which orphan works impede creative efforts.

When assessing the problem of orphan works, it must be emphasized that the question of finding a rightholder is first and foremost a matter of conducting a thorough search. Although tracing rightholders may sometimes be a laborious and costly task, a potential user is nevertheless obliged to spend sufficient hours and resources in seeking a licence. It is completely normal and inevitable that transaction costs are involved in the process of rights clearance. Legal solutions to the orphan works problem, therefore, should not be informed by the desires of stakeholders for whom a reasonable investment in rights clearance is not a priority. Regulatory or legislative intervention can only be justified to the extent that there is a structural impediment.

Possible Solutions to the Orphan Works Problem

In addressing the issue of orphan works, several alternatives may be considered. These alternatives, which can be grouped into six categories, are discussed below.

Rights Management Information

The orphan works problem is first and foremost an information problem. The difficulties in locating right owners are largely caused by a lack of metadata: (i) not all works carry a statement indicating the authorship or copyright ownership of the work; (ii) the copyright ownership information on the work may be outdated due to a change of ownership; and (iii) there is a general lack of adequate copyright registers or other publicly accessible records. Any forward looking solution to the orphan works problem therefore should include mechanisms

52. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on certain legal aspects relating to cinematographic and other audiovisual works, COM (2001) 534 final, Brussels, 26 September 2001, p. 14; Results online consultation "i2010: Digital Libraries", <http://tinyurl.com/yujl54>, p. 5.

that encourage the supply of rights management information⁵³ (metadata) to the public. If adequate metadata are made publicly available, this could lower the transaction costs that are involved in identifying rightholders and thus facilitate the clearance of rights.

Introducing a statutory obligation upon authors or right owners to provide information on copyright ownership, however, would be at odds with the norms of international copyright, in particular the Berne Convention⁵⁴, if this would make the existence or exercise of copyright contingent upon formal requirements. Except for purely national situations, it is prohibited under the Berne Convention to establish mandatory registration systems or to mandate a copyright notice, including information on the identity and whereabouts of a copyright owner and the date of copyright, on each copy of the work. On the other hand, it is not prohibited to establish measures that stimulate right owners to voluntarily provide information concerning copyright ownership and licensing conditions.

A number of measures could be employed to promote the voluntary supply of information. First, authors and right owners could simply be encouraged to provide copyright information or, for digital works, to incorporate adequate rights management information. With respect to the latter, an important role could be played by DRM (digital rights management) systems. Since DRM systems may include large databases of rights management information to support the process of authorizing and monitoring the online use of copyrighted works, they can contribute to a significant extent to efficient rights clearance in the online environment.

In addition, authors or right owners might be stimulated to offer Creative Commons (CC) licences⁵⁵ or similar 'open content' licences⁵⁶. CC licences are standardized licensing and contract schemes that right-

53. Rights management information covers not only information identifying the work, the author and the copyright owner, but also information indicating the terms and conditions of use of a particular work, and any numbers or codes that represent such information. See Art. 7(2) Copyright Directive.

54. Berne Convention for the Protection of Literary and Artistic Works, Art. 5(2).

55. Creative Commons, <http://creativecommons.org>.

56. Among the alternative licences is the "Creative Archive Licence" as used by the BBC to license content from its Creative Archive, http://creativearchive.bbc.co.uk/licence/nc_sa_by_ne/uk/prov

holders can attach to a work, permitting any possible user to use the work under the specific terms of that licence. Rightholders can choose between a variety of CC licensing terms, allowing them to decide a priori under what conditions they would allow the reutilization of their works and which rights they would thereby wish to reserve. As the CC licensing conditions are subsequently attached to copies of the work, this creates transparency for the prospective user and thus facilitates the licensing process considerably.

Finally, rightholders could be induced to voluntarily record ownership of copyright in databases established and maintained for the purpose of providing information regarding the copyright status of works. Such an initiative could consist of facilitating either the creation of rights management information databases by public or private entities⁵⁷, or the establishment of voluntary registration systems under national (or international) copyright law⁵⁸. In this respect, an important role could be played by collecting societies, given that they already hold large records of rights management information relating to their repertoire.

While enhancing the supply of rights management information is perhaps an effective way of diminishing the orphan works problem in the future, such measures cannot provide a complete solution to the current problem as for many “old” works the required information is simply unavailable. Therefore, other measures need to be considered.

Extended Collective Licensing

A second alternative would be to stimulate the collective management of copyright in works that are most suitable for digital reutilization. This would have the advantage that, because of the concentration of rightholders in a collecting society, prospective users would face fewer difficulties in finding the copyright owner whose work they intend to use. Where a collecting society has been established and that

57. See, e.g., “Cannes market”, an online database on rights in films, <http://www.cannesmarket.com>

58. See the Survey of national legislation on voluntary registration systems for copyright and related rights, WIPO document (SCCR/13/2), 9 November 2005. A good example is the International Register of Audiovisual Works, as provided for by the WIPO Treaty on the International Registration of Audiovisual Works, Geneva, 18 April 1989.

society represents a significant part of the rightholders in a given field, there is a reasonable likelihood that the society will also represent the particular copyright owner the user is looking for.

Nonetheless, if the copyright owner is not represented by that collecting society, a user may still face considerable uncertainties. This can be illustrated by the general agreement concluded between INA and five French collecting societies (SACEM, SACD, SCAM, SDRM and SESAM)⁵⁹, which authorizes INA to use the collecting societies' audiovisual and sound catalogue, to the extent that it is available in its archive, for any mode of exploitation (including Internet and mobile telephony). Although this agreement greatly facilitates and simplifies the exploitation of INA's archives, it does not cover the repertoire of rightholders who are not members of any of the contracting societies. Consequently, the obstacle remains that INA still needs to identify and locate these, perhaps unknown, rightholders to clear the rights of the works not covered by the agreement⁶⁰.

Accordingly, because of the freedom of the right owner to decide whether or not to authorise a collecting society to represent and exercise his or her rights, a system of voluntary collective rights management as described here would not provide a complete answer to the problem of orphan works. There is a legal technique, however, by which this shortcoming can be overcome. This is the so-called "extended collective licence", which is applied in various sectors in Denmark, Finland, Norway, Sweden and Iceland⁶¹.

A system of extended collective licensing is characterized by the combination of a voluntary transfer of rights from rightholders to a collecting society with a legal extension of the repertoire of the society to encompass those rightholders that are not members of the society.

59. "L'Ina et la SACEM, la SACD, la SCAM, la SDRM et SESAM s'accordent sur les conditions d'utilisation des oeuvres audiovisuelles et sonores sur de nouveaux modes d'exploitation d'image et de son", 3 October 2005, <http://www.scam.fr/Telecharger/DocumentsInfos/Communique/cp03-10-05accordINA-SPRD.pdf>

60. J.-F. Debarnot, "Les droits des auteurs des programmes du fonds de l'INA exploités sur son site internet", *Legipresse* no. 232 (2006), p. 93-94.

61. T. Koskinen-Olsson, "Collective management in the Nordic countries", in: D. Gervais (ed.), *Collective management of copyright and related rights*, The Hague: Kluwer Law International 2006, p. 257-282.

Statutory provisions thereby give extended effect to the clauses in a collective licensing contract, which is concluded between a representative organization of right owners and a (certain group of) user(s). A precondition is that a substantial number of rightholders in a given category are represented by the contracting organization.

In the Nordic countries, an extended collective licence is applied, for example, to musical works for use in radio and television broadcasts. This means that when a broadcaster obtains a licence for the broadcasting of musical works from a collecting society representing a substantial number of music composers and lyricists, the licence is extended by law to also cover those music composers and lyricists not represented by the collecting society. Hence, the extended collective licence automatically applies to all rightholders in the given field. Normally, the licence applies to both domestic and foreign right owners. It also applies to deceased rightholders, in particular where estates have yet to be arranged, and to unknown or untraceable rightholders. This greatly facilitates the clearance of rights, since a user may obtain a licence to use all works covered by the licence without the risk of infringing the rights of right owners who otherwise would not be represented. In fact, the rationale of the system of extended collective licensing has always been to facilitate the licensing in case of mass uses, for which it would be impossible for users to clear all the necessary rights⁶².

Nevertheless, to protect the interests of right owners who are not members of the collecting society and who do not wish to participate in the extended collective licensing scheme, the legislation in the Nordic countries provides right owners with the option to either claim individual remuneration or to “opt out” from the system altogether⁶³. Rightholders who choose the latter are no longer covered by the extended collective licence. Therefore, the Nordic system of extended collective licensing, albeit highly practical and attractive, cannot provide complete certainty to prospective users.

Difficulties may arise, moreover, as to the practical implementation of an extended collective licensing regime. Since the success of an

62. H. Olsson, “The Extended Collective License as Applied in the Nordic Countries”, Kopinor 25th anniversary international symposium, Oslo, 20 May 2005, par. 3.

63. Olsson (2005), *supra*, par. 6.4.

extended collective licence fully depends on the conclusion of contracts between collecting societies that represent a sufficient number of rightholders, collecting societies should already be operating in those fields where the orphan works problem is most pressing. This is currently not the case in all European countries. In the audiovisual field in particular, collective rights management is still rather underdeveloped. Right owners in this field, such as film producers and distributors, are generally reluctant to have their rights administered collectively, as they generally prefer to exercise their rights individually.

Indemnity or Security

Another (at best partial) solution to the problem of orphan works would be to allow a private organization representing rightholders to grant an indemnity or security to a prospective user who, after a reasonable search, has not been able to identify and locate a copyright owner. In some countries there already exist voluntary arrangements of this kind. In the Netherlands, for example, a system is in place whereby a prospective user of a photograph can request *Foto Anoniem*⁶⁴ (a foundation linked to a Dutch organization for professional photographers) to assist in finding the copyright owner of a photographic work. To that end Foto Anoniem has at its disposal a vast directory of photographers. In the majority of cases, Foto Anoniem is indeed able to trace the name and address, and to put the user in contact with the photographer. Nonetheless, if the photographer cannot be found, Foto Anoniem will grant the user legal protection by means of an indemnity. In the indemnity clause, Foto Anoniem commits itself to protect the user against liability for copyright infringement. To obtain indemnity, a user must pay fair compensation, which generally relates to the usual licence fee for publication of a photo. The compensation is reserved to disburse right owners in the event they are identified.

Although the grant of an indemnity or security provides a measure of legal certainty and relief to users of pre-existing content, i.e. by protecting him or her against financial liability, it does not as such prevent a copyright owner from invoking his exclusive rights should he eventually come forward. Despite the indemnity or security granted

64. Stichting Foto Anoniem, <http://www.fotoanoniem.nl>

to the user, a rightholder could still seek injunctive relief, which would prohibit any further use of the work. It is apparent, therefore, that this alternative does not provide a complete solution to the problem of orphan works.

Compulsory Licence to Use an Orphan Work

A more solid way to provide legal certainty would be to allow a user to apply to an administrative body to obtain a licence to use a particular work in those cases where the identity or whereabouts of the right owner cannot be ascertained by reasonable inquiry. Such a system has been established in Canada⁶⁵. Under the Canadian scheme the Canadian Copyright Board must be satisfied that the applicant has made “reasonable efforts” to find the copyright owner before a licence is issued. As a rule, a user may request, by a single application, a licence for multiple orphan works.

It is not necessary that “every effort” has been made to trace the rightholder, but an applicant must prove that he has conducted a “thorough search”. To that end, the Copyright Board advises the applicant to contact different collecting societies and publishing houses; to consult indexes of national libraries, universities and museums; to check registration systems of copyright offices; to investigate inheritance records, and to simply search the Internet⁶⁶.

Once the Copyright Board is convinced that the applicant, despite reasonable efforts, cannot locate the copyright owner, it may grant a licence, irrespective of whether the work is of domestic or foreign origin. The licence granted permits the applicant to use the copyrighted material without the explicit consent of the copyright owner. The licence is non-exclusive and limited to the Canadian territory. The licence stipulates a royalty fee, which should correspond to an ordinary royalty rate as would have been made in consideration of consent being given. The royalty fee is usually paid directly to the collecting society that would normally represent the untraceable right owner, but in some cases users are required to deposit the fee into an escrow account or trust fund.

65. Art. 77 of the Canadian Copyright Act.

66. Copyright Board of Canada, “Unlocatable Copyright Owners Brochure” (July 2001), <http://www.cb-cda.gc.ca/unlocatable/brochure-e.html>

If the right owner surfaces, he may collect the royalties fixed in the licence. If no copyright owner comes forward within five years after the expiry of the licence, the collected royalty fee may be used for other purposes than those relating to the use in question.

Similar regimes exist in Japan, South Korea, India and the UK⁶⁷. The rules, however, vary widely in application and scope. In the UK, for example, the power to issue a licence is limited to the making of a copy of a recorded performance. Not all of these regimes, therefore, provide an inclusive remedy to the orphan works problem.

The main advantage of the Canadian system is that it provides the user with adequate legal certainty to be able to use an orphan work. Where a user is granted a licence, he is authorized to use an orphan work, without the risk of an infringement claim should the right owner come forward. At the same time, the legitimate interests of the right owners concerned are not unnecessarily prejudiced. First, a verification of the good faith of a user is performed by an independent public body, which can take due account of the need to keep the legitimate interests of right owners and users in equilibrium. Second, it is determined on a case-to-case basis whether a licence is issued and thus an exception to the exclusive right of the right owner is made. Third, the licence issued is not all-inclusive, but granted to a particular user for a specific kind of use only. Finally, the system does not result in a loss of income for rightholders. If a rightholder shows up, he is compensated.

Limited liability

Yet another solution would be to introduce a rule that would limit the liability of those users who use an orphan work after an unsuccessful but reasonable search for the right owner has been conducted. This solution was proposed by the US Copyright Office⁶⁸, and subsequently introduced, with some minor amendments, as a bill – the “Orphan Works Act of 2006” – in the US House of Representatives⁶⁹.

67. Art. 67 Japanese Copyright Act; art. 47 South Korean Copyright Act; art. 31a Indian Copyright Act; art. 190 UK Copyright, Designs and Patents Act.

68. US Copyright Office, “Report on Orphan Works” (January 2006), <http://www.copyright.gov/orphan/orphan-report-full.pdf>, p. 15.

69. Orphan Works Act of 2006, H.R. 5439, Introduced in the House of Representatives, 109th Congress, 2nd Session, 22 May 2006. The bill has expired with the end of the Bush presidency.

In general, the liability rule permits bona fide users who have been unable to identify and locate a copyright owner, to make use of the work, subject to a limitation on the remedies that the right owner could obtain against the user if he were to subsequently come forward and file a claim. To qualify for this limitation, the user is required to prove that he has performed a “reasonably diligent search” and, if possible and reasonably appropriate under the circumstances, to provide attribution to the author and copyright owner of the work.

According to the bill, a “reasonably diligent search” includes, at a minimum, review of the information maintained by the Register of Copyrights. Moreover, to be “reasonably diligent”, a search should normally include the use of reasonably available expert assistance and reasonably available technology. A user cannot be successful in his or her claim by referring solely to the lack of identifying information on the copy of the work. In any event, it is for the court to decide whether a search has been reasonably diligent in the given circumstances.

If a user meets the burden of proof that he has conducted a reasonably diligent search and has provided attribution to the true author or right owner, a closed set of remedies is available should the right owner resurface and initiate litigation over the use of the work. First, monetary relief is limited to “reasonable compensation” for the use made. In general, this reasonable compensation should correspond to a reasonable licence fee, i.e., as would have been established in negotiations between the user and the right owner before the infringing use commenced. However, where the use was non-commercial and the user expeditiously ceases the infringement upon a notice by the right owner, no monetary relief is due at all.

In addition, the liability rule provides for a limitation on injunctive relief. Where the orphan work has been incorporated into a derivative work (e.g., a motion picture or documentary film), the copyright owner cannot obtain full injunctive relief to prevent the exploitation of the derivative work, provided that the user pays the right owner a reasonable amount of compensation and provides for sufficient attribution. Full injunctive relief is available, however, where an orphan work has simply been republished or posted on the Internet without any transformation of its content.

Although a US style liability rule certainly has its merits, it is questionable whether such a rule would substantially improve the legal position of users of orphan works in Europe. In sharp contrast to the United States, pecuniary damages in most European countries for acts of copyright infringement are relatively low, and usually amount to no more than the amount of the license fee a right holder would have received if permission were granted in advance⁷⁰. Only to the extent that the liability rule would also limit injunctive relief, as in the US proposal, would it improve the legal certainty for users who incorporate an orphan work into a derivative work.

Statutory Limitation

A final alternative would be the introduction of a statutory exception or limitation that would allow the reutilisation of orphan works under certain strict conditions. This solution has been proposed by the British Screen Advisory Council (BSAC)⁷¹. The essence of the BSAC proposal is as follows. If a person has not been able to find the copyright owner of a work after having made “best endeavours” to trace him, that person may use the work under the proposed exception to copyright. Whether someone has made “best endeavours” is to be tested and judged against the particular circumstances of each case.

A precondition for the proposed exception to apply is that the work is marked as used under the exception. This should alert a right owner who emerges that the work has been used under the exception and that he may claim the “reasonable royalty” to which he is entitled, rather than sue for infringement. The amount of the royalty should be agreed by negotiation. If the parties cannot reach agreement, BSAC sees a role for the UK Copyright Tribunal to establish the amount to be paid.

Once the copyright owner has emerged, a user who intends to continue using the orphan work would need to negotiate the terms of

70. In the US, users face the risk of becoming liable for payment of statutory damages of up to USD150,000 for each wilfully committed infringement (Art. 504 US Copyright Act). In Europe, on the other hand, damages are ordinarily based on the actual losses incurred by the infringement.

71. “Copyright and orphan works”, a paper prepared for the Gowers review by the British Screen Advisory Council, 31 August 2006, <http://www.bsac.uk.com/reports/orphanworkspaper.pdf>.

use with the right owner in the usual way. Where the work has been integrated or transformed into a derivative work, however, it would be unreasonable if the right owner could prevent the further exploitation of the entire work by simply refusing permission to use the work in question. BSAC proposes that in such cases, users should be allowed to continue using the work, provided that a reasonable royalty is paid and sufficient acknowledgement is given to the right owner.

Although the BSAC proposal certainly has its merits, from a perspective of EU law the proposal is unrealistic, since Article 5 of the EU Copyright Directive, which has harmonized limitations and exceptions in all Member States of the EU, does not permit this type of exception. Moreover, it is not sure whether such an exception would pass the “three-step test” of Art. 5(5) of the Directive, which sets limits to the scope and breadth of statutory limitations and exceptions of copyright.

Conclusion

Of the six possible solutions to the orphan works problem, two seem to stand out: the Nordic model of extended collective licensing, and the Canadian system of compulsory licensing. While the Nordic model has the advantage of steering close to the tradition of collective rights management that has a proven track record particularly in Europe, the Canadian model provides maximum legal certainty. As the problem of orphan works becomes more acute and threatens to undermine increasing numbers of digitisation projects, it is hoped for that national legislatures in Europe and elsewhere, inspired by either of these models, introduce legislative solutions.

Biographies

Bernt Hugenholtz is Professor of Intellectual Property Law and Director of the Institute for Information Law of the University of Amsterdam (IVIIR). In 1989 he received his doctor's degree cum laude from the University of Amsterdam, where he defended his thesis on copyright protection of works of facts. He has written numerous books, studies and articles on a variety of topics involving copyright, information technology, new media and the Internet. At the University of Amsterdam he teaches courses in copyright law, international copyright law and industrial property law. He was a member of the Amsterdam Bar and partner

of the law firm Stibbe between 1990 and 1998. Since 2003 he has been a deputy judge at the Court of Appeal in Arnhem.

Prof. Hugenholtz is a member of the Dutch Copyright Committee that advises the Minister of Justice of the Netherlands, and has acted as a consultant to the World Intellectual Property Organisation (WIPO), the European Commission, and several national governments. He has been on international missions representing WIPO in China and Indonesia, and is a regular speaker at international conferences.

Prof. Hugenholtz is General Editor of the Information Law Series, which is published by Kluwer Law International. Since 2007 he is also a member of the Faculty of Law of the University of Bergen, Norway (UiB) <http://www.uib.no/en>

Stef van Gompel studied Law at the University of Amsterdam, where he obtained his law degree (LL.M.) cum laude in 2005. He specialised in Intellectual Property Law and Media and Information Law. He wrote his master's thesis on the regulation of collective management societies in Europe. In 2004, he started as an intern at IViR, where he participated in a variety of research projects in different areas of Information Law.

Before studying Law, he studied Music Management at the Fontys Business College of Higher Education in Tilburg, where he graduated in 1999. During an internship at the collective management society, SENA, he conducted research on the legal framework and the distribution regulations of collective management societies concerning the right to equitable remuneration for performing artists in seven EU Member States.

He is currently writing his Ph.D. thesis on the history of, rationales for, and possible future of, the prohibition of copyright formalities.

Introduction to “Born Digital: Understanding the first generation of Digital Natives”

Palfrey John & Gasser Urs

You see them everywhere. The teenage girl with the iPod, sitting across from you on the subway, frenetically typing messages into her cell phone. The whiz kid summer intern in your office who knows what to do when your e-mail client crashes. The eight-year-old who can beat you at any video game on the market-and types faster than you do, too. Even your niece's newborn baby in London, whom you've never met, but with whom you have bonded nonetheless, owing to the new batch of baby photos that arrive each week.

All of them are “Digital Natives.” They were all born after 1980, when social digital technologies, such as Usenet and bulletin board systems, came online. They all have access to networked digital technologies. And they all have the skills to use those technologies. (Except for the baby-but she'll learn soon enough.)

Chances are, you've been impressed with some of the skills these Digital Natives possess. Maybe your young assistant has shown you a hilarious political satire online that you never would have found on your own, or made presentation materials for you that make your own PowerPoint slides seem medieval by comparison. Maybe your son has Photoshopped a cloud out of a family vacation photo and turned it into the perfect Christmas card. Maybe that eight-year-old made a funny video on her own that tens of thousands of people watched on YouTube.

But there's also a good chance that a Digital Native has annoyed you. That same assistant, perhaps, writes inappropriately casual e-mails to your clients-and somehow still doesn't know how to put together an actual printed letter. Or maybe your daughter never comes down for dinner on time because she's always busy online, chatting with her friends. And when she does come down to dinner, she won't stop texting those same friends under the table.

Maybe you're even a bit frightened by these Digital Natives. Your son has told you, perhaps, that a boy in his ninth-grade class is putting

up scary, violent messages on his Web page. Or you heard about that ring of college kids who hacked into a company website and stole 487 credit-card numbers before getting caught by police.

There is one thing you know for sure: These kids are different. They study, work, write, and interact with each other in ways that are very different from the ways that you did growing up. They read blogs rather than newspapers. They often meet each other online before they meet in person. They probably don't even know what a library card looks like, much less have one; and if they do, they've probably never used it. They get their music online -often for free, illegally-rather than buying it in record stores. They're more likely to send an instant message (IM) than to pick up the telephone to arrange a date later in the afternoon. They adopt and pal around with virtual Neopets online instead of pound puppies. And they're connected to one another by a common culture. Major aspects of their lives -social interactions, friendships, civic activities- are mediated by digital technologies. And they've never known any other way of life.

Beginning in the late 1970s, the world began to change-and fast. The first online bulletin board system (or “BBS,” for short) let people with clunky computer equipment and access to telephone lines swap documents, read news online, and send one another messages. Usenet groups, organized around topics of interest to communities of users, became popular in the early 1980s. E-mail began to enter popular usage later in the 1980s. The World Wide Web made its debut in 1991, with easy-to-use browsers widely accessible a few years later. Search engines, portals, and e-commerce sites hit the scene in the late 1990s. By the turn of the millennium, the first social networks and blogs cropped up online. In 2001, Polaroid declared bankruptcy, just as sales of digital cameras started to take off. In 2006, Tower Records liquidated its stores; by 2008, iTunes had become the largest music retailer in the United States. Today, most young people in many societies around the world carry mobile devices-cell phones, Sidekicks, iPhones-at all times, and these devices don't just make phone calls; they also send text messages, surf the Internet, and download music.

This is the most rapid period of technological transformation ever, at least when it comes to information. The Chinese invented the printing press several centuries before Johannes Gutenberg developed the

European printing press in the mid-1400s and churned out his first Bibles. Few people could afford the printed books made possible by presses for another several centuries. By contrast, the invention and adoption of digital technologies by more than a billion people worldwide has occurred over the span of a few decades. Despite the saturation of digital technologies in many cultures, no generation has yet lived from cradle to grave in the digital era.

No major aspect of modern life is untouched by the way many of us now use information technologies. Business, for instance, can be done more quickly and over greater distances, often with much less capital required to get up and running. Politicians e-mail their constituents, offer video introductions to their campaigns on their websites, and provide volunteers with sophisticated digital tools to organize events on their own. Even religion is being transformed: Priests and pastors, imams, rabbis, gurus, and even Buddhist monks have begun to reach their faithful through their weblogs.

Most notable, however, is the way the digital era has transformed how people live their lives and relate to one another and to the world around them. Some older people were there at the start, and these “Digital Settlers”—though not native to the digital environment, because they grew up in an analog-only world—have helped to shape its contours. These older people are online, too, and often quite sophisticated in their use of these technologies, but they also continue to rely heavily on traditional, analog forms of interaction. Others less familiar with this environment, “Digital Immigrants,” learned how to e-mail and use social networks late in life. You know them by the lame jokes and warnings about urban myths that they still forward to large cc: lists. Those who were born digital don’t remember a world in which letters were printed and sent, much less handwritten, or where people met up at formal dances rather than on Facebook. The changing nature of human relationships is second nature to some, and learned behavior to others.

This narrative is about those who wear the earbuds of an iPod on the subway to their first job, not those of us who still remember how to operate a Sony Walkman or remember buying LPs or eight-track tapes. Much is changing beyond just how much young people pay (or don’t pay) for their music. The young people becoming university students

and new entrants in the workforce, while living much of their lives online, are different from us along many dimensions. Unlike those of us just a shade older, this new generation didn't have to relearn anything to live lives of digital immersion. They learned in digital the first time around; they only know a world that is digital.

Unlike most Digital Immigrants, Digital Natives live much of their lives online, without distinguishing between the online and the offline. Instead of thinking of their digital identity and their real-space identity as separate things, they just have an identity (with representations in two, or three, or more different spaces). They are joined by a set of common practices, including the amount of time they spend using digital technologies, their tendency to multitask, their tendency to express themselves and relate to one another in ways mediated by digital technologies, and their pattern of using the technologies to access and use information and create new knowledge and art forms. For these young people, new digital technologies -computers, cell phones, Sidekicks- are primary mediators of human-to-human connections. They have created a 24/7 network that blends the human with the technical to a degree we haven't experienced before, and it is transforming human relationships in fundamental ways. They feel as comfortable in online spaces as they do in offline ones. They don't think of their hybrid lives as anything remarkable. Digital Natives haven't known anything but a life connected to one another, and to the world of bits, in this manner.

Digital Natives are constantly connected. They have plenty of friends, in real space and in the virtual worlds-indeed, a growing collection of friends they keep a count of, often for the rest of the world to see, in their online social network sites.¹ Even as they sleep, connections are made online, in the background; they wake up to find them each day. Sometimes, these connections are to people the Digital Native would never have had a chance to meet in the offline world. Through social network sites, Digital Natives connect with and IM and share photos with friends all over the world. They may also collaborate creatively or politically in ways that would have been impossible thirty years ago. But in the course of this relentless connectivity, the very nature of relationships -even what it means to “befriend” someone- is changing. Online friendships are based on many of the same things as traditional

friendships-shared interests, frequent interaction-but they nonetheless have a very different tenor: They are often fleeting; they are easy to enter into and easy to leave, without so much as a goodbye; and they are also perhaps enduring in ways we have yet to understand.

Digital Natives don't just experience friendship differently from their parents; they also relate to information differently. Consider the way Digital Natives experience music. Not so long ago, teenagers would go to a friend's house to listen to a new record. Or music could signal a shared intimacy: A teenage girl would give her new boyfriend a mixed tape, with song names carefully written onto the cassette lining, to signal her growing affection. Not everything has changed: Digital Natives still listen to copious amounts of music. And they still share lots of music. But the experience is far less likely than before to take place in physical space, with friends hanging out together to listen to a stereo system. The network lets them share music that they each, then, can hear through headphones, walking down the street or in their dorm rooms, mediated by an iPod or the iTunes Music System on their hard drive. The mixed tape has given way to the playlist, shared with friends and strangers alike through social networks online. A generation has come to expect music to be digitally formatted, often free for the taking, and endlessly shareable and portable.

Digital Natives are tremendously creative. It is impossible to say whether they are more or less creative than prior generations, but one thing is certain: They express themselves creatively in ways that are very different from the ways their parents did at their age. Many Digital Natives perceive information to be malleable; it is something they can control and reshape in new and interesting ways. That might mean editing a profile on MySpace or encyclopedia entries on Wikipedia, making a movie or online video, or downloading a hot music track-whether lawfully or not. Whether or not they realize it, they have come to have a degree of control over their cultural environment that is unprecedented. Digital Natives can learn how to use a new software program in a snap. They seemingly can take, upload, and edit pictures to share with friends online in their sleep. Digital Natives, at their most creative, are creating parallel worlds on sites like Second Life. And after they do, they record parts of that world and post a video of it on YouTube (if they live in California) or Daily Motion (if they live

in Cannes) in a new art form called “machinima.” Digital Natives can rework media, using off-the-shelf computer programs, in ways that would have seemed impossible a few short decades ago.

Digital Natives are coming to rely upon this connected space for virtually all of the information they need to live their lives. Research once meant a trip to a library to paw through a musty card catalog and puzzle over the Dewey Decimal System to find a book to pull off the shelves. Now, research means a Google search-and, for most, a visit to Wikipedia before diving deeper into a topic. They simply open a browser, punch in a search term, and dive away until they find what they want -or what they thought they wanted. Most Digital Natives don’t buy the newspaper-ever. It’s not that they don’t read the news, it’s just that they get it in new ways and in a wide variety of formats. And they have little use for those big maps you have to fold on the creases, or for TV listings, travel guides, or pamphlets of any sort; the print versions are not obsolete, but they do strike Digital Natives as rather quaint. These changes, to be sure, are not all good, but they will be enduring.

Indeed, many aspects of the way in which Digital Natives lead their lives are cause for concern. Digital Natives’ ideas about privacy, for instance, are different from those of their parents and grandparents. In the process of spending so much time in this digitally connected environment, Digital Natives are leaving more traces of themselves in public places online. At their best, they show off who they aspire to be and put their most creative selves before the world. At their worst, they put information online that may put them in danger, or that could humiliate them in years to come. With every hour they log online, they are leaving more tracks for marketers -and pedophiles, for that matter- to follow. There’s more about them for admissions officers and potential employers -and potential dates- to find. The repercussions of these changes, in the decades to come, will be profound for all of us. But those who are growing up as Digital Natives are on track to pay the highest price

Digital Natives will move markets and transform industries, education, and global politics. The changes they bring about as they move into the workforce could have an immensely positive effect on the world we live in. By and large, the digital revolution has already made

this world a better place. And Digital Natives have every chance of propelling society further forward in myriad ways -if we let them.

But make no mistake: We are at a crossroads. There are two possible paths before us -one in which we destroy what is great about the Internet and about how young people use it, and one in which we make smart choices and head toward a bright future in a digital age. The stakes of our actions today are very high. The choices that we are making now will govern how our children and grandchildren live their lives in many important ways: how they shape their identities, protect their privacy, and keep themselves safe; how they create, understand, and shape the information that underlies the decision-making of their generation; and how they learn, innovate, and take responsibility as citizens. On one of these paths, we seek to constrain their creativity, self-expression, and innovation in public and private spheres; on the other, we embrace these things while minimizing the dangers that come with the new era.

Fear is the single biggest obstacle to getting started on that second path, the one where we realize the potential of digital technology and the way that Digital Natives are using it. Parents, educators, and psychologists all have legitimate reasons to worry about the digital environment in which young people are spending so much of their time. So do corporations, who see their revenues at risk in industry after industry recorded entertainment, telephony, newspapers, and on and on. Lawmakers, responding to this sense of crisis, fear that they will pay a high price if they fail to act in the traditional manner to right these wrongs.

The media feeds this fear. News coverage is saturated with frightening stories of cyberbullying, online predators, Internet addiction, and online pornography. Of course parents worry. Parents worry most that their digitally connected kids are at risk of abduction when they spend hours a day in an uncontrolled digital environment where few things are precisely as they seem at first glance. They worry, too, about bullying that their children may encounter online, addiction to violent video games, and access to pornographic and hateful images.

Parents aren't the only ones who fear the impact of the Internet on young people. Teachers worry that they are out of step with the Digital

Natives they are teaching, that the skills they have imparted over time are becoming either lost or obsolete, and that the pedagogy of our educational system cannot keep up with the changes in the digital landscape. Librarians, too, are reimagining their role: Instead of primarily organizing book titles in musty card catalogs and shelving the books in the stacks, they serve as guides to an increasingly variegated information environment. Companies in the entertainment industry worry that they'll lose their profits to piracy, and newspaper execs fear their readers are turning to Drudge, Google, blogs, or worse for their news.

As parents of Digital Natives, we take both the challenges and the opportunities of digital culture seriously. We share the concerns of many parents about the threats to the privacy of our children, to their safety, and to their education. We worry about the crush of too much information and the impact of violent games and images online. But as a culture of fear emerges around the online environment, we must put these real threats into perspective; our children and future generations have tremendous opportunities in store for them, not in spite of the digital age, but because of it.

We see promise in the way that Digital Natives are interacting with digital information, expressing themselves in social environments, creating new art forms, dreaming up new business models, and starting new activist ventures. The purpose of this book is to separate what we need to worry about from what's not so scary, what we ought to resist from what we ought to embrace.

There is a huge risk that we, as a society, will fail to harness the good that can come from these opportunities as we seek to head off the worst of the problems. Fear, in many cases, is leading to overreaction, which in turn could give rise to greater problems as young people take detours around the roadblocks we think we are erecting. Instead of emphasizing education and giving young people the tools and skills they need to keep themselves safe, our lawmakers talk about banning certain websites or keeping kids under eighteen out of social networks. Instead of trying to figure out what's going on with kids and digital media, the entertainment industry has gone to war against them, suing its young customers by the tens of thousands. Instead of preparing kids to manage a complex and exploding information environment, governments around the world are passing laws against certain kinds of

publications, making the banning of books look like a quaint, harmless activity. At the same time, we do next to nothing in terms of taking the kinds of steps that need to be taken if we are to address the real concerns facing kids.

Our goal in this book is to present the good and the bad in context and to suggest things that all of us -parents, teachers, leaders of companies, and lawmakers- can do to manage this extraordinary transition to a globally connected society without shutting the whole thing down.

Biographies

John Palfrey is Professor of Law and a Vice Dean at Harvard Law School. He is a faculty director of the Berkman Center for Internet & Society. He has published extensively on the Internet's relationship to Intellectual Property, international governance, and democracy. He chairs the Internet Safety Technical Task Force, made up of leading Internet service companies and nonprofit groups focused on children's safety. He is a regular commentator on network news programs, CNN, MSNBC, CNBC, Fox News, NPR and BBC. He lives in Cambridge, Massachusetts.

Urs Gasser is the Berkman Center for Internet & Society's Executive Director. Before joining the Berkman Center in this capacity, he was Associate Professor of Law at the University of St. Gallen (Switzerland), where he led the Research Center for Information Law as Faculty Director. Before joining the St. Gallen faculty, Urs Gasser spent three years as a research and teaching fellow at the Berkman Center for Internet & Society at Harvard Law School, where he was appointed Faculty Fellow in 2005. At the Berkman Center, he was the lead fellow on the Digital Media Project, a multi-disciplinary research project aimed at exploring the transition from offline/analog to online/digital media. He also initiated and chaired the Harvard-Yale-Cyberscholar Working Group, and was a visiting researcher at Harvard Law School in the 2003/04 academic year.

Is history repeating itself for digital beings?

Simon Rogerson

It is so easy to be taken in by the positive spin surrounding ICT. We are bombarded with the latest declarations about new technological advances which will make our lives easier and more enjoyable, saving us time and money. Technologists, traders and politicians extol the virtues of new applications and decry any attempt to hold on to existing ways of doing things. More and more of the services and products we consume and the way we interact with public agencies, such as the Inland Revenue, are made available online. This essay explores this virtual world and discusses the concept of digital beings and the impacts that this concept has on the way the virtual world is treated.

The online context seems more than simply an application area. Hendler et al (2008) explain that this application area acts as a social machine which enables different social processes to take place. It is a space or virtual world where in some sense we can exist. For example, Panteli and Duncan (2004) describe the virtual world as a theatre where plays are enacted by actors who take on different roles and follow different scripts. Others direct or watch these plays. Together they define the nature of the virtual situation. ICT provides the tools, equipment, costumes and other facilities that enable plays to be performed. Panteli and Duncan use this concept to investigate the creation and operation of virtual teams but clearly it can be used for every activity in the virtual world. Previous work by Panteli and Dibben (2001) on virtual organizations implies that such organizations must be populated by virtual workers. It is interesting that Panteli and Dibben recognise that these virtual workers do other things than simply undertaking work tasks when they discuss the idea that virtual workers will exhibit not only work ethic characteristics but also playfulness characteristics. This is in line with Introna (2005) who explains that ICT changes human existence particularly regarding sociality and community. Such ideas establish a sense of people or digital beings existing in a virtual space. This is important since eventually many, if not all, of these services, products and interac-

tions will only be available online, thus forcing us to live, work, learn and socialize in the virtual world.

One argument put forward is that for us to communicate in general and, in particular, receive and supply services and products in the virtual world we need a digital persona. Balnaves and Luca (2005) suggest this is a form of agency which simply acts as a mechanism by which information can be shared. Want (2008) discusses the mobile phone as an agent, arguing that it acts as a pervasive proxy mediating with services and other phones on behalf of the owner. Agency is discussed by Lanfranco (1995) but the implied meaning is different. The digital persona is recognized as residing in the virtual workplace being an effective participant in both local and global activities. This suggests that Lanfranco focus is more on a digital being rather than agent as described by Balnaves and Luca and used by Want.

The notion of digital being needs to be explored. Advancing ICT has changed the way in which we should consider self. Self, as defined by Locke (1997), is a conscious thinking thing regardless of substance. He postulates that self must be fixed in a body. However in today's context it is reasonable to acknowledge that this body is likely to have both physical and virtual components. Indeed, Introna (2005) recognizes this is Ihde's embodiment I-technology-world relationship where ICT and humans coalesce. The concept of self has been discussed at length by Kant who put forward at least seven propositions about the consciousness and knowledge of self (Brook, 2008). It is the last of these propositions which Brook (2008) examines that is useful here. It concerns the thesis of conscious of self as a single, common subject of experience. The individual may have a variety of experiences but it is the combination of these viewed as a whole which defines self. So, for example, an individual may have experiences both in the physical world and virtual world but the individual self is the totality of these experiences. This holistic view of self fits with Heidegger's concept of Dasein where the human being is a whole rather than a compound of mind and body (Olafson, 2009).

It is the Dasein which Kim (2001) uses to explore the phenomenology of digital beings. In the context of this paper Kim's use of the term digital beings is better replaced by digital entities thus reserving digital beings for "living virtual entities" who use "non-living" digital entities

in their virtual world. Just as in the physical world where humans have physical trappings such as paintings, keys and jewellery, in the virtual world, digital beings have digital trappings such as digital photographs, electronic papers and passwords. Kim (2001, 107) argues that as Daseins we can encounter others in the virtual world and that it “will fundamentally change the ways in which human beings interact with one another and open up new horizons...”. In this way human beings are extended as they are both physical and digital. It is time to recognize that in some sense we now live in two worlds, one physical and one virtual. If this is true then we need to reconsider how the virtual world should be perceived, used and regulated.

In this virtual world we exist through a myriad of personal data and electronic interaction. We are digital beings who live in data repositories and travel along the conduits of data communication, taking with us our digital trappings wherever we roam. In order to live and prosper in the virtual world an individual must be visible, credible and creditable. As digital beings, we each develop electronic persona across a range of digital media and through digital icons such as digital signatures, electronic curriculum vitae, electronic patient records and electronic purses, we come to exist electronically and our needs are addressed through having these digital icons. Without them we cannot function and become invisible. It is how these dilemmas are resolved across national and international legislation and regulation that will establish clear rights of citizens in the virtual world. However, our digital persona is not simply characterised by our digital icons. The sense of self is completed through the relationships with others (Prosser and Ward, 2001). These are represented in the virtual world by such things as emails, Second Life encounters and chat room dialogues. It can be seen that the electronic persona comprises a complex array of digital data and communication. For example, Doany (2007) explains that electronic persona can be co-constructed by a blog’s owner or author and a blog’s visitors.

Conceptual muddles abound in the virtual world. Consider the relationship between data and self. Society has long recognised that taking or using property without permission is wrong. This stems from Locke’s claim that the labour of our body and the work of our hands properly belong to us (Uzgalis, 2007). This extends not only to physical property but also to intangibles such as ideas and data these being col-

lectively recognized as intellectual property. For example, we expend energy and use our minds when we key in self-profiling data, produce dialogue in a chat room or make and upload a YouTube video. The concept of ownership is culturally sensitive. Whilst there is reasonable agreement in countries of the West that individuals or groups of individuals have intellectual property rights (IPR), interpretations in other countries and situations are sometimes different (Spinello 1995). For example, IPR safeguards in countries of the Far East are minimal mainly due to a different philosophy that tends to treat intellectual property as communal or social property. In the poorer developing countries the view often taken is that the right to livelihood takes precedence over other claims on which IPR are based. It is only when prosperity increases that there is shift from a social well-being interpretation of IPR to one with more emphasis on the individual. Regardless of whether the emphasis is on individual ownership or community ownership, there is a significant problem with the fundamental concept of data ownership when considering digital beings in the virtual world.

Conduits and repositories are owned by others but the claim that our personal data and electronic interactions are owned by others is tantamount to accepting that we, as digital beings, can be owned by others, albeit in some form of distributed cooperative. With ownership comes the right to use, trade and dispose. Existing legislation such as data protection is concerned with the legitimate use of data items. It does not consider data items to be the organs of a digital being and so is not concerned with the wellbeing of digital beings protecting them against colonialism, servitude and slavery.

We must therefore revisit human rights. Human rights are concerned with how people should be treated by governments and organizations. In the context of this paper organizations include, for example, Internet service providers, social networking providers, electronic traders, voice of network communication companies and blogging service providers. Human rights should be judged as minimum standards and international norms (Nickel, 2006). In the virtual world this presents new challenges, such as sustaining free-will, curtailing colonialism and avoiding slavery.

Free-will is an integral part of human rights. Free-will is the capacity to choose a particular course of action from a variety of alterna-

tives (O'Connor, 2005). There are many threats to free-will. In the context of existence in a virtual world causal and psychological threats are the most significant. O'Connor (2005) argues that causal threat is founded on control of which there are two types. Regulatory control restricts our free-will through constraining our ability to follow potential alternative courses of action. For example, data protection regulation restricts the courses of action in how we can collect, store and use personal data. Guidance control focuses on the actual sequence of actions we wish to take. Free-will is curtailed if this guidance is not self-controlled but controlled by a third party. For example, a systems development manager controls developers to ensure processing of data within a system adheres to corporate requirements. Light-touch or heavy-touch management control defines the level of freedom in system development. Psychological threat to free-will involves relating likely outcomes to potential actions. For example, inference by a manager of reduced career opportunities for a subordinate if a particular course of action is taken is a psychological threat to free-will of that subordinate. Free-will is linked to personal autonomy which Buss (2008) explains provides authority over one's own actions.

According to Kohn (2006) colonialism involves the domination of one set of people on an indigenous population. New groups of people arrive and inhabit new territory as permanent settlers while maintaining allegiance with the territory of origin. The virtual world is experiencing colonialism. New settlers such as electronic traders and service providers are establishing permanent presences. Their actions, demands and policies remain aligned to the physical organizations from which they came. The existing indigenous virtual population is being pressurized into conforming with the norms of the new settlers.

But what of servitude and slavery? Slavery is defined by Bales and Robbins (2001, 32) as "a state marked by the loss of free-will where a person is forced through violence or threat of violence to give up the ability to sell freely his or her own labour power". Building upon this definition of Bales and Robbins provides a reasonable test for the existence of slavery. The test has three elements. The first is the control of one person over another. The second is the appropriation of labour power. The third is the enforcement of the first two elements through actual or threat of violence or coercion or persuasion.

The existence of digital slavery can now be tested. Control exists through, for example, the terms and conditions that we have to adhere to for using Internet Service Providers or Voice over Internet services. As such control is always present. The appropriation of labour power is not always present but can be. For example, the effort expended in producing blogs or wiki entries means that the author has a claim to that property but it can be and is purloined by the blog or wiki facility provider. In this way there is an appropriation of labour power. Certainly no physical violence occurs in the virtual world but there is coercion and persuasion at times. The terms and condition for using some of the services or virtual living areas are examples of this where the attraction of use or access means we are persuaded to succumb to restrictive terms we might otherwise reject. There appears to be situations therefore in the virtual world where the test of three elements is passed showing that digital slavery exists.

The Universal Declaration of Human Rights states that “No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.” Today that must include both physical slavery and digital slavery. Over two hundred years ago in 1807 the Abolition of the Slave Trade in Britain heralded the beginning of the end of slavery as a legal and legitimate state of being, although it was not until 1833 that the abolition finally occurred with the outlawing of slavery in British territories. The parallels between physical slavery and digital slavery are striking.

The economic imperative which led to the growth of slavery was the need for substitute labour to replace the indigenous population of America wiped out by European diseases coupled with the demand for increasing labour as the new world economy expanded. Similarly, there is an economic imperative fuelling the growth in digital slavery. This is the result of the need to develop the conduits to sustain virtual trading and thus create new economic wealth.

Slavery thrived through a combination of power and ignorance. Some of the first slaves to be traded in West Africa were “sold” to European traders by powerful local chiefs, complicit in the subjugation of their own people. The trade continued to flourish partly as a result of cultural differences between the owners and their slaves. The former believing, in some cases, that the latter were almost sub-

human, and so their enslavement could be justified in the same way as ownership of any other animal. The same combination of power and ignorance has enabled digital slavery to flourish as well. There remains public ignorance about ICT in terms of its capabilities, limitations and applications. It is this which has enabled personal data items to be considered as proxies rather than organs of data subjects. It is the technologists who have knowledge and with that knowledge comes immense power based on the control of conduits and the nature of information available for us to consume. These are the techno-barons and info-barons of the virtual world. It is this power which has resulted in society becoming increasingly dependent upon technology. In these conditions digital slavery can incubate.

The winners and losers in physical slavery are obvious. Those enslaved will lose and be forced to live in a world of oppression and degradation whilst the owners of slaves benefit economically and socially. In digital slavery we are all losers because at some point even so-called owners will themselves be enslaved as they themselves seek to consume products and services which are only provided online. In 200 years the wheel seems to have turned full circle. Digital slavery exists, unrecognized, unnoticed, unfettered, and, in many cases, unconsciously supported and promoted. Governments, for example, with the creation of biometric identification, have created the shackles of slavery. Digital beings are traded online as owners try to maximize market share and increase profit. Such trading is unacceptable and contravenes human rights. It is now time to call for its abolition and so mark the end of digital slavery. Then history will have totally repeated itself.

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Biography

Simon Rogerson is Director of the Centre for Computing and Social Responsibility at De Montfort University, UK. He is Europe's first Professor in Computer Ethics and was named one of the world's top five experts in the field at the World Technology Awards 2003. He received the 2000 IFIP Namur Award for outstanding contribution to the creation of awareness of the social implications of information technology and was awarded a Visiting Research Professorship for 2005 to the Centre for Applied Philosophy and Public Ethics, at Australian National University, Canberra. In 2005 he became the first non-American to be given the prestigious SIGCAS Making a Difference Award by the ACM. He is a member of the BCS Ethics Forum Strategic Panel, and Vice President and Chair of Council of the Institute for the Management of Information Systems.

Following a successful industrial career where he held managerial posts in the computer field, he now combines research, lecturing and consultancy in the management, organisational and ethical aspects of information and communication technologies. He has published widely and presented papers, many by invitation, throughout the world. He regularly advises government and industry policy makers on ethics and ICT. His current research focuses on technological assessment, ethical systems development and qualitative stakeholder analysis. He is co-editor the Journal of Information, Communication and Ethics and Society. He conceived and co-directs the ETHICOMP conference series on the ethical impacts of ICT and is responsible for creating the world's leading reference World Wide Web site on computer ethics.

Effective Copyright Enforcement on the Internet

Evangelia Vagena

During the last sixteen years we have been witnessing the emerging of a new digital environment which had a profound impact on transactions. Digitisation and dematerialisation created the impression of a new uncontrolled environment where everything could be offered for free. Moreover, internet was seen by the first navigators a “forum without keepers” where everything could be said and done without consequences.

Nevertheless, it was soon realised that the digital world is subject to the same legal framework regulating the material one. The goods that we are trying to protect, the illegal actions we are trying to prevent in the digital environment are the same as in the analogue one.

Copyright⁷² has been mostly affected by the digital revolution which raised difficult and crucial questions for its survival, both from a theoretical and a practical perspective.

The main contemporary threats for copyright originate from the facility to copy⁷³ and the facility to exchange⁷⁴ protected work as well as from the simultaneous difficulty of enforcing copyright in the digital environment. This difficulty arises on one side from the constant technical evolution which makes it possible to override any protective measures taken by the right holders and on the other side from the existing legal framework which prevents the identification of internet users suspected of copyright infringements and provides for an immunity regime concerning the ISPs liability in relation to the content transmitted and the activities taking place via their services.

72. Copyright is used in this text as the translation of “droit d’auteur”, “authors’ rights” which most of the civil law countries follow and not in the strict legal sense it has in Anglo-Saxon countries with the common law legal system, due to the lack of an equivalent translation. For an extended analysis on the difference of these two systems see Strowel Alain, *Droit d’auteur et copyright: faux amis et vrais mots valises*, available at http://www.bibsciences.org/bibsup/cnrs_droit_auteur/pub_demo/debut/pdf/strowel.pdf (available on 3.1.2009).

73. As it is well known internet has been described as the “world’s biggest copy machine”. Because of the ease of which products are copied it is difficult to control copying.

74. See for example Peer to peer file sharing systems, You tube etc.

Intermediaries are all service providers who intervene between the sender and the receiver of the internet data, like the web host provider or the internet access provider⁷⁵. Their role is crucial. Trying to outline the context of their implication and liability we will first examine the European legislative framework for their liability (a). Then we will present peer to peer file sharing systems and the way copyright infringement is taking place (b). Afterwards, we will describe the potentialities of suspected infringers' identification via their IP address (c). In this context a short presentation of current legislative evolutions in Europe will follow (d). Finally, we will discuss about technological measures of protection and in which extend they can help right holders defend their rights (e).

The European legislative framework for the liability of ISPs

The "neutrality" initially invoked by the intermediaries because of their purely technical role did not convince the legislator, who has tried early enough to define the context, the conditions and the cases of their liability exemption⁷⁶. After some European case law fluctuation, the community legislator has regulated the Internet service providers' responsibility issue in 2001 by including special stipulations in the directive for the e-commerce. In this directive the horizontal approach⁷⁷ to the issue of the ISPs responsibility has been used, which means that there is the same approach to all potential causes of liability, whether it is due to personality offence for example or due to copyright infringement or due to paedophilia promotion.

75. By this term we mean here not only the navigation tools or otherwise information location tool services but also the ones intervening in the information research like for example the peer to peer software

76. For a deeper analysis on the issues of intermediaries' responsibility on the information society see Evangelia Vagena, *«La responsabilité des intermédiaires dans la société de l'information» ou «Quand un clic pourrait ouvrir une nouvelle boîte de P@ndor»*, mémoire DEA Informatique et Droit sous la direction du Doyen Michel Vivant, Juin 2001 available on the site http://www.droit-ntic.com/pdf/memoire_eva.pdf (accessible on 17.10.2009)

77. This approach is the opposite of the vertical or special one which provides for different treatment for every source of liability, like for example the American legislator has done in the Digital Copyright Millenium Act (known as DMCA) .

The European⁷⁸ legislator has been indulgent enough towards web host providers. The directive 2000/31 defined the conditions of their liability exemption in two articles, article 14 and 15. According to them the service provider is liable for the information stored at the request of his clients only if it is proved that he had actual knowledge of the illegal activity or information and if upon obtaining such knowledge or awareness, he did not act expeditiously to remove or to disable access to the information. Article 15 which is addressed to all internet service providers, sets the principle of absence of obligation to monitor. The directive does not define from which point on and under which circumstances it will be considered that the ISP has sufficient knowledge of the illegal content stored on its servers. Nevertheless, articles 14-3 and 17-1⁷⁹ in combination with explanatory note 40⁸⁰ of the directive's preamble, urge member states to adopt special procedures on notification, withdrawal and possibly restoration of the controversial sites, following the example of the American federal law Digital Millennium Copyright Act which provides for such procedures of «notice and take down» and «notice and put back» in order for the web host⁸¹ not to be held responsible.

78. Before the legislative regulation, the French case law had dealt with the issue. Through a series of cases three obligations had been imposed to the web host providers:

- a) obligation of clients information on the need to respect third party rights
- b) obligation of vigilance which included even the obligation of using search engines in order to find the illegal sites
- c) obligation of immediate reaction by putting down the site on notification of a third party complaint. See characteristically cases «Estelle Hallyday c/ Altern.org», TGI Paris, réf., 9 juin 1998, JCP E, 1998, n°21, p.953 and 10 TGI Nanterre, 8 décembre 1999, aff. Lynda Lacoste c/ Multimanina.

79. «... Member States shall ensure that, in the event of disagreement between an information society service provider and the recipient of the service, their legislation does not hamper the use of out-of-court schemes, available under national law, for dispute settlement, including appropriate electronic means».

80. «(40)... this Directive should constitute the appropriate basis for the development of rapid and reliable procedures for removing and disabling access to illegal information; such mechanisms could be developed on the basis of voluntary agreements between all parties concerned and should be encouraged by Member States; it is in the interest of all parties involved in the provision of information society services to adopt and implement such procedures; ...».

81. DMCA was the first legal text which provided for «notification procedures». In this American law ISPs have the possibility of getting relieved from any responsibility for copyright infringement if they fulfil the conditions set in the so called «safe

It is worth mentioning the French case Tiscali Media / Dargaud Lombard, Lucky Comics⁸², in which the web host provider Tiscali was condemned for copyright infringement due to the illegal reproduction of a comic strip to a site hosted by it. The site owner's data made available by the web host to the authorities were: "name: comic, surname: strip, address: C. S" and of course did not permit the real user identification. The court therefore judged that these elements should have drawn the attention of the web host provider, who even by neglect was liable for the damage caused to the company who had exploitation rights over the comic strip.

The community Directives impose the principle of lack of responsibility concerning the transmitted content. ISPs have no liability in the case of the so called *simple transport-mere conduit*, meaning for the simple data transport and for providing access to them. They have also no liability for the caching activity, that is the automatic, intermediate and temporary storage of that information, performed for the sole purpose of making more efficient the information's onward transmission to other recipients of the service upon their request⁸³ which is an action inherent in the operation of access providers' services accelerating online communications. Therefore ISPs cannot easily be held liable for copyright infringement.

harbour» stipulations where the "notice and take down & notice and put back" procedures are described. According to section 512 of DMCA, when the right holder realizes that a site is violating his rights, he notifies the ISP and he either ceases totally providing access to the contested site, or he removes it from his server. Once he does that, he notifies the site owner. The site owner has the right, if he believes that his site was removed or that the access to it was prevented incorrectly, to send a counter notice. If after the notification of his counter notice to the right holder, the latter decides to proceed against the site owner, then the ISP is obliged to restore the material removed (put back procedure). An official summary of the DMCA text is available at the site <http://www.copyright.gov/legislation/dmca.pdf> (accessible at 23.10.2006).

82. Cour d' appel de Paris 4^{ème} chambre, section A Arrêt du 7 juin 2006, Tiscali Media/Dargaud Lombard, Lucky Comics, available at http://www.legalis.net/jurisprudence-imprimer.php3?id_article=1638 (accessible on 21.10.2006).
83. More specifically the providers have a "secret" (cache) copy in their proxy servers where they locate regularly reproductions of the sites most visited. This way the transmission to the user is facilitated and the internet traffic reduced.

It is worth mentioning that in other countries, for example in France⁸⁴, memoranda of co-operation have been signed between the right holders and the service providers aiming at their active participation in the prevention and repression of internet piracy. In this direction the ISPs are co operating with the right holders for the realization of a system which will process and send an individual message to every user making available or downloading protected works.

The e-commerce directive did not deal with the issue of linking or location tool services providers' liability⁸⁵, e.g regarding search engines, leaving Courts to decide depending on the facts of every different case and the legal system of every member state.

Characteristically, linking towards web pages where illegal reproductions of music are taking place has been considered as copyright infringement by courts⁸⁶.

Also, in our days the actions of Copiepresse, which is a Belgian collecting society for the rights of French -speaking Belgian press, against the search engines of Google and Microsoft MSN for illegal reproduction of the articles of newspapers they present, have attracted a lot of attention⁸⁷. A decision from the First Instance Court of Brussels on the 5th of September 2006 obliged Google company to remove the illegally reproduced articles from all her web pages within 10 days starting from the decision's publication otherwise it would be fined 1 mln

84. See also Benabou V.-L, *Droit d' auteur versus vie privée (et vice versa)*, *Propriétés Intellectuelles*, Juillet 2005, No 16, pages 269-276.

85. Nevertheless it may be examined in a future review of the directive see article 21. This term «location tool services» is used in the text of the directive instead of the initially proposed «information location tools» mentioned in the draft directive text of 1st September 1999 which was inspired by the term «information location tools» used in the American legislation.

86. Tribunal de Grande Instance de Saint-Etienne, jugement correctionnel, 6 décembre 1999, available at <http://www.foruminternet.org/documents/jurisprudence/lire.phtml?id=216> (accessible on 21.10.2006) and Tribunal de Grande Instance d'Epinal, jugement correctionnel, 24 octobre 2000, available at <http://www.foruminternet.org/documents/jurisprudence/lire.phtml?id=215> (accessible on 21.10.2009).

87. See references in the article «Presse Belge: après Google News, MSN Belgique» of Bruno Prier published on 12/10/2006 in the web site lalibre.be of the newspaper La libre Belgique and is available at <http://www.infos-du-net.com/actualite/8336-msn-be-microsoft-actualite.html> (accessible on 23.10.2009) and the publication «Google, Microsoft to remove Copiepresse material, Google to pay 34 mln euro» at <http://www.euro2day.gr/articlesfna/22647294/> (accessible on 23.10.2009).

euros per day if it failed to comply with the ruling⁸⁸. After its victory Copiepresse also turned against the search engine MSN of Microsoft for the same reason and is already in negotiations with it.

Peer to peer and copyright infringement

Currently a great percentage of copyright infringement is taking place through the exchange of files using the widely known peer to peer file sharing systems (P2P).

These systems are usually divided in three categories: the “central” or first generation ones, the “decentralized” or second generation ones and the third generation P2P systems⁸⁹. The first generation systems had as a basic characteristic the control of the exchanged content by a central server who played the role of the “traffic warden” (eg Napster). After the legal actions of the right holders against Napster, however, on the basis of copyright infringement, the second generation of P2P systems appeared, which did not involve a central server. In the decentralised systems the content is located only in the users’ personal computers (e.g edonkey2000). The so - called third generation peer to peer systems are combining technical advantages of the central and the decentralized systems. Computers, which are permanently connected to the internet, the «super peers», manage the shared data (e.g Grokster). Updated and improved versions of these systems are constantly developed⁹⁰.

From the copyright aspect there are three phases of the P2P file sharing procedure which present legal importance: the reproduction of a copy from the offering user to his computer so that it can be traced by other users (uploading), the making available of a protected work to the

88. The decision obliged also Google to publish its full text for 5 days, otherwise it would have to pay a pecuniary penalty of 100.000€. The company has conformed and the decision was published on the home page of Google.be and Google Actualités Belgique see. <http://www.generation-nt.com/actualites/commenter/19704/editeurs-journaux-belges-google-microsoft/?page=1> (accessible on 23.10.2009).

89. This distinction is also followed by Organisation for Economic Co-operation and Development (OECD) in its study «OECD INFORMATION TECHNOLOGY OUTLOOK 2004 , PEER TO PEER NETWORKS IN OECD COUNTRIES, (Pre-release of Section from Chapter 5 of the Information Technology Outlook), available at www.oecd.org/dataoecd/55/57/32927686.pdf (accessible on 17.10.2009).

90. See for example <http://www.download-by.net/network-and-internet/file-sharing-peer-to-peer/cp0,7.html>

rest of the users and the reproduction by any interested “receiver” - user who will locate the work and copy it in his turn to his computer (downloading). Both the reproduction and the making available of a work are actions covered by the author’s exclusive rights and therefore his licence or permission must be obtained before proceeding to them⁹¹.

Some scepticism exists regarding the legal characterisation of the reproduction of a work on the computer of the user who locates it via such a file sharing system (*downloading*). This is because many think that this reproduction is covered by the limitation to the author’s economic right according to which no permission and no payment to him is ought when it is done for the private use of the user performing it (the private copying exception)⁹². In case the user intends to distribute further in his turn this file to the rest of the users, the private copying exception may not apply because the condition of the “private use” will not be fulfilled and when he will do so he will be violating the author’s right to communicate his work or to make it available to the public, as it has already been analysed. Even if the user has “down-

91. The “reproduction” right is provided by the international copyright conventions and treaties (see article 9 of Berne Convention for the Protection of Literary and Artistic Works, first adopted in Berne, Switzerland in 1886), Agreed statements concerning Article 1(4) of WIPO Copyright Treaty adopted in Geneva on December 20, 1996), article 7 and 11 of WIPO Performances and Phonograms Treaty). This exclusive right of communication of a work to the public is also provided for in article 3 of the directive 2001/29. In the preamble of the same directive (27) it is defined that “The mere provision of physical facilities for enabling or making a communication does not in itself amount to communication within the meaning of this Directive”. The wording of this point may be used by the intermediary company to providing the software for the P2P exchange to claim that it cannot be held liable for any copyright infringement and that only the user himself should be. For the authors the right of communication of their works is provided also in article 8 of WCT (a.8), while a similar stipulation exists for the related rights holders in article 10 of the WPPT.

92. See for example article 18 of law 2121/1993. As remuneration for this free reproduction of their work, right holders receive a percentage of the price of every reproduction equipment, a levy which is paid by the importer or the producer. This levy is collected by the competent collecting societies. In certain EU Member States, copyright levies apply to both equipment and media, in other Member States, copyright levies apply to equipment or media. Five Member States (Ireland, UK, Malta, Cyprus and Luxembourg) have no copyright levies. In Ireland, UK and Malta, acts of private copying by consumers are not authorised –only acts of time-shifting of broadcasts i.e. acts of recording a broadcast programme for viewing or listening at a later time for domestic purposes. Luxembourg allows private copying and has not introduced copyright levies.

loaded” the specific file exclusively for his use, the question whether he can benefit from the private use exception remains because of its illegal origin. This is the core question of the P2P file sharing and its implications with copyright in our days.

It should be noted that the law⁹³ provides for a general clause of interpretation for all copyright limitations (or exceptions). This clause is widely known as the three step test clause and provides that: (a) the limitations to the economic rights of the right holders’ apply in certain special cases, (b) which do not conflict with a normal exploitation of the work or other protected subject-matter and (c) do not unreasonably prejudice the legitimate interests of the right holder. Examined under the angle of the three-step test, the private copying exception could not be applied when the copying is taking place from an illegal source, since the abovementioned conditions would not be fulfilled.

To sum up: the act of uploading a protected work and of making it available to the public conflicts as a rule to the copyright legislation, while it may be argued that the act of downloading may be covered by the private copying exception.

In all cases the detection of the infringement via P2P systems presupposes the possibility of identifying the user proceeding in the illegal acts.

IP addresses as an infringer’s identification elements

The file sharing system users are identified among them through the specific software they use (bittorrent, eDonkey, etc) and they make available to the rest of the users the files they have stored on their hard disks. They have previously obtained an IP address⁹⁴ from the internet access provider they are served by in order to be connected to the internet.

93. Article 28C of Greek law 2121/1993. This clause was initially included in the Berne convention (a.9), while the information society directive also repeats it (a. 5§5 of the directive 2001/29).

94. An IP address (Internet Protocol address) is a unique address that certain electronic devices use in order to identify and communicate with each other on a computer network utilizing the Internet Protocol standard (IP)-in simpler terms, a computer address. Any participating network device -including routers, switches, computers, time- servers, printers, Internet fax machines, and some telephones-can have their own unique address.

As the right holders explain, by using the same software as these users, one may get an idea of the number of users connected to a specific service and of the number of files available to them. If protected files are recognized, some testing downloads may take place to the interested party's hard disk so that evidence is collected. The IP address of the person illegally making available these documents is registered and included among the evidence. Since ISPs keep for security reasons users' registration files and their IP addresses, it is technically feasible - even after the user's disconnection from the service or even from internet - to locate the infringing user.

The connection of an IP address with a user does not constitute an irrefutable presumption of someone's guilt. First of all, it may lead to the computer which was connected at a given moment but not of the natural person who was using it⁹⁵. For example it does not prove if it was used by a member of the family or from a friend or from a visitor. Moreover, where there is a local network usually a common IP address is presented towards outside and consequently it is not possible to identify the user who performed the infringing actions. Also, in the case of wireless connections it is equally difficult to identify the infringer because more people can be connected to the net under the same IP address. In addition, if the wireless connections are not secure, a third person, a stranger, may gain internet access to them via the access method known as «Wardriving».

Still, the IP address constitutes the only clue that may lead to the disclosure of the infringer's identity as it limits significantly the field of searching him. It may not be the same as a user's identity but it may be considered in a way as his phone number. This is why collecting and protecting copyright and related rights societies as well as the rest of the involved bodies are asking to be given access to the users' iden-

95. In the cases *Capitol Records v. Foster* and *Virgin v. Marson*, RIAA (Recording Industry Association of America) has been forced to give up the charges against the mothers who were paying the internet access subscriptions and to whom the IP addresses were leading to, when it was found out that it was their children who committed the illegal actions see at <http://www.digitalmusicnews.com/results?title=RIAA>

tification elements, especially in the form of notification of the user identity to whom an IP address leads⁹⁶.

Under the existing legal framework in Greece (but also in many other European Countries), nevertheless, it is not always possible to identify a copyright infringer using P2P systems in contrast with the European community provisions for the copyright and related rights protection and enforcement⁹⁷. This is because the IP address is protected by the legislation on the secrecy of communications and the protection of personal data and ISPs refuse to provide the elements identifying the subscriber who was connected to the internet using this particular address.

Initiatives to deal with internet piracy in the European Union

Currently the hottest copyright issue is exactly the lack of effective copyright enforcement on peer to peer file sharing exchanges due to the problems described above.

The European Court of Justice (ECJ) in a recent decision⁹⁸ stated that the EU legislative framework does not require the Member States to lay down an obligation to communicate personal data, such as the personal elements of the user to whom the IP address may correspond, in order to ensure effective protection of copyright in the context of civil proceedings. Nevertheless, it highlighted the need to interpret the relevant legal texts so that a fair balance is struck between the various fundamental rights protected by the Community legal order.

In the meantime, the rightholders are promoting the solution of graduated response. According to this approach which relies on the collaboration of ISPs, once there are suspicions against a user, a message

96. In Germany, some attempted even to have the possibility to receive personal information of the suspected infringer users of P2P systems without a court order according to a publication at <http://www.edri.org/book/print/871> (accessible on 20/10/2006). See also a more recent article with the title «EMI wants millions and your IP address in revenge for Beachles» on the web page http://www.boingboing.net/2006/09/08/emi_wants_millions_a.html (accessible on 20/10/2006).

97. See analytically in Greek Vagena E., Intellectual Property Issues and Internet, NoV 5,55, May 2007, pp. 1058-1077.

98. Case C-275/06, Productores de Música de España (Promusicae) v Telefónica de España SAU, available online at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62006J0275:EN:HTML> (accessible on 31.10.2008).

is sent informing & warning him about the consequences of copyright infringement. If he pursues, a second warning is sent to him by letter. If he still continues then the ISP may even stop providing him access connection. In France there is currently a relevant bill under discussion which provides that in this third phase of the graduated response, there will be a registry where all relevant infringers will be registered and no ISP will be permitted to accept them as clients for a certain period⁹⁹. The French bill is also providing that the whole procedure will be taking place under the supervision of the *'High Authority for the dissemination of works and the protection of rights on the internet'*¹⁰⁰.

During the reviewing of the European Union telecommunications legislation the right holders' representatives proposed some amendments enabling them to enforce the above described procedure¹⁰¹. Although, the EU parliament did not vote those amendments, the right holders are still pressing for their adoption during the next steps of the EU legislative procedure.

Technical Measures of Protection – Digital Rights Management

As it has been said *"the answer to the machine, is the machine"*¹⁰² and in the same spirit the answer to the problems caused to copyright protection due to the progress of technology is expected to be found in another product of technology, that is technological measures of protection (TMP or TPMs)¹⁰³.

99. See analytical presentation of the French bill at (accessible on 31.10.2008). <http://www.culture.gouv.fr/culture/actualites/index-5.htm>

100. The French bill is the result of an agreement signed last year among rightholders, ISPs and state authorities known as the Elysée or Olivennes Agreement (by the name of Denis Olivennes, president-managing director of "FNAC").

101. See characteristically IFPI contribution at the relevant public consultation at http://ec.europa.eu/information_society/policy/ecomm/doc/library/public_consult/relevant_markets_2/comments/ifpi.pdf (accessible on 31.10.2008) as well as a critical position to these proposals at http://www.laquadrature.net/wiki/images/0/0e/Telecom_package.paper.monica.horten..28.june.2008.v5.pdf (accessible on 31.10.2008).

102. Clark Charles, *The answer to the machine is the machine*, in *The future of copyright in a digital environment*, P.B.Hugenholtz, Information Law Series, Kluwer Law International, The Hague-London-Boston, 1996.

103. On an international level technological measures of protection were first dealt with in the WIPO Internet treaties, that is the WIPO Copyright Treaty(WCT) and the

The Copyright directive defines protected technological measures as *any technology, device or component that, in the normal course of its operation, is designed to prevent or restrict acts, in respect of works or other subject-matter, which are not authorised by the rightholder of any copyright.*

Primarily, TPMs are intended to promote the authorized use of digital works. This is accomplished by controlling access to such works or various uses of such works, including: i) copying, ii) distribution, iii) performance, and iv) display. They can operate as safeguards or 'virtual fences' around digitized content. Two common examples of TPMs are i) passwords, and ii) cryptography technologies.

TPMs provide a means for copyright owners to control the subsequent uses of digitized works in a manner that was not possible in the case of works embodied in other forms. For example, once a person buys a paperback, the copyright owner has no means to control how many times the purchaser of the book reads it, or whether the person lends it to another person or copies portions of it. Nowadays, TPMs allow a copyright owner to do all of these things in the case of e-books and other digital versions of the published work.

According to the directive, member states must provide adequate legal protection a) against the circumvention of any effective¹⁰⁴ technological measures and b) against the manufacture, import, distribution, sale, rental, commercial exploitation in general of any product or the provision of services which aims at promoting, marketing or in general enabling and facilitating the circumvention of any effective technological measures¹⁰⁵.

WIPO Performances and Phonograms Treaty (WPPT) in their articles 11,12 and 18, 19 respectively. Both treaties can be found at the WIPO site, currently at http://www.wipo.int/copyright/en/activities/wct_wppt/wct_wppt.htm (last visited on 3.1.2007).

104. A technological measure is considered to be effective where the use of a protected work or other subject-matter is controlled by the right holders through application of an access control or protection process, such as encryption, scrambling or other transformation of the work or other subject-matter or a copy control mechanism, which achieves the protection objective (ar. 6 par. 3).
105. For example according to Greek law the practice of activities in violation of the above provisions is punished by imprisonment of at least one year and a fine of 2.900-15.000 Euros and entails the civil sanctions of article 65 Law 2121/1993 which include the payment of damages of not less than twice the legally required or normally payable remuneration for the form of exploitation which the infringing-

Apart from TPMs other more sophisticated information systems designed to protect intellectual property have also appeared which are known as digital rights management systems (DRMs). Most DRMs incorporate technological measures within their structure, while other DRMs¹⁰⁶ exhibit characteristics making them more like an advanced kind of TPM. Typically, a DRM consists of two components: i) a database containing information which identifies the content and rights holders of a work, and ii) a licensing arrangement which establishes the terms of use for the underlying work¹⁰⁷.

The copyright directive (ar.7) and consequently the national law provide also protection for the «rights management information» meaning any information provided by right holders which identifies the work and which identifies the author or any other right holder, or information about the terms and conditions of use of the work or other subject-matter, and any numbers or codes that represent such information. More specifically, it is prohibited for any person knowingly performing, without the permission of the right holder, any of the following acts: a) the removal or alteration of any electronic rights-management information, b) the distribution, importation for distribution, broadcasting, communication or making available to the public of works, from which electronic rights management information has been removed or altered without authority, if such person knows, or has reasonable grounds to know that by so doing he is inducing, enabling, facilitating or concealing an infringement of any copyright.

ing party has effected without license. At the same time right holders may apply for an injunction against intermediaries whose services are used by a third party to circumvent technological measures.

106. N. Garnett has defined DRMs as “technology systems facilitating the trusted and dynamic management of rights in any kind of digital information, throughout its life cycle, irrespective of how and where the digital information is distributed.” In his “Outline of Presentation of Nick Garnett, representing InterTrust Technologies,” ALAI Congress 2001.
107. D. Gervais, *Electronic Rights Management and Digital Identifier Systems*, (1999) available at <http://www.press.umich.edu/jep/04-03/gervais.html> (last visited 3.1.2009).

DRMs and TPMs are raising questions of privacy¹⁰⁸ and of consumer protection due to the lack of interoperability¹⁰⁹ with different types of equipment which is the focus of many studies and researches.

Summarizing

Under the light of the above, it becomes clear that the issue of effective copyright protection on the internet is a complex ethical issue. The survival of copyright depends directly on the balancing of the rights and obligations of this trilogy of interests composed by the authors/right holders, the technical intermediaries and the users. It is obvious that legal amendment is necessary and that a lot of negotiations will be taking place in that direction in the near future.

The existing legal framework in Europe leads right holders and users to inevitable conflicts, while leaving internet service providers fire-proof. The adoption, for example, of notification procedures in relation to copyright infringement, following the American example adjusted to European reality, would contribute to a more effective protection of the rights of authors as well as of the users' rights¹¹⁰. The protection of the sensitive domain of personal data and of the secrecy of communications, on the other hand, should not lead to the creation of digital paradises, where every infringer could act without being disturbed, under the shield of the asylum provided by the subsequent impossibility to identify him and to enforce sanctions.

What we should remember is that copyright is not only destined to protect the commercial interests of commercial intermediaries in

108. See for example the case of SunnComm's MediaMax and First4Internet's Extended Copy Protection (known also as XCP) software of Sony BMG which Sony BMG claimed to have placed on the music CDs to restrict consumer use of the music on the CDs but which proved to do much more, including reporting customer listening of the CDs and installing undisclosed and in some cases hidden files on users' computers that could expose users to malicious attacks by third parties, all without appropriate notice and consent from purchasers, analytically at <http://www.eff.org/IP/DRM/Sony-BMG/> (last visited 3.1.2007).

109. See analytically reports of all stakeholders at the specially devoted site of the European Union http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/index_en.htm (last visited 3.1.2007).

110. A similar stipulation is included in the article 21 of a proposed bill for the participation to information society, which constitutes the annex of the book *The right to participate in the information society*, (in Greek) editions Sakkoulas, 2006.

the cultural dissemination but mainly and above all it is destined to provide the individual artist with the necessary autonomy to be able to create free and enjoy the economic and moral recognition of his work. Therefore, all relevant legislative or lobbying activity should be focused on the achievement of these goals.

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Biography

Evangelia Vagena is an Attorney at Law specialized in IT and copyright law, a Counsellor at Law for the Hellenic Copyright Organization of the Ministry of Culture dealing mainly with issues related to new technologies and a member of the National Council for e-commerce in the Ministry of Development. She holds a masters degree (LLM) in information technology & communications law from the University of Montpellier and she is currently preparing her thesis on digital protection and management of copyright at the University of Athens.

Classifying Service Robots for Policy

Aimee van Wynsberghe

Introduction

A new generation of robots has entered the scene, one that is designed to interact and cooperate with humans. These robots are known by a number of different names, but are commonly referred to as service robots. Despite the ubiquity of the term, their exact definition or description remains unclear. The term ‘robot’ was coined by Karl Capek, and referred to mechanical slaves – robots are created to provide services, like slaves, for humans. Thus, all robots are essentially service robots making the term service redundant due to the implication within the word robot. When Joseph Engelberger’s book “Robots in Service” (1989) first appeared, he portrayed this class of robots as one that can provide a service to humans outside of industrial applications. Thus, robots which provide a service outside of the factory came to be known as service robots. The presupposition is that this new class of robots is interacting with humans, an attribute these robots do not share with their industrial fathers; however, the current development of industrial robots which can interact with humans prevents us from distinguishing service robots from industrial robots in this way (Bicchi A et al., 2008). Without a clear idea of what this new generation of robots is to be called or how they are to be distinguished from traditional robots in industry, how are we to design policy to ensure their safe and effective implementation; more significantly, how are we to account for the ethical implications of these robots?

Adding to the confusion surrounding service robots is the variety of ways in which such robots are interpreted in various fields and portrayed to the public; as a class of human-controlled robots to embark on tasks in dangerous environments, for example search and rescue robots (Iborra A et al., 2009); as a class of robots to replace humans in mundane tasks, for example the Roomba vacuum (Iborra et al. 2009); as a class of robots that interacts with humans in a human environment, for example robot assistants for the elderly (Kim et al. 2009); as a class of robots that communicate with humans in a social man-

ner, for example MIT's KISMET (Breazeal 2003; Kemp et al. 2008); or, as humanoid robots, for example Honda's ASIMO (Ng-Thow-Hing 2009). Thus, within the classification of service robots there exists a wide range of possibilities for further classifications, or sub-classes, which specify the functions and/or features the robot may have. Only when one is aware of the variety of possible architectures for service robots can one postulate effective policy to guide their implementation.

The development of policy for both the design and introduction of these robots depends on the technical variables of the technology used in their creation. Taking into consideration the meaning of the word 'robot' according to Capek - a slave to humans - we must question how useful the classification of service robots is. This may in part lead to the variety of interpretations of service robots which is also problematic for the creation of policy. Each interpretation assumes a distinct function of the robot which presupposes a certain set of technical details or a structural archetype. What is needed is an understanding of the variety of classes of robots applied in a variety of domains outside of industry. Articulating and understanding the functions, features and applications of service robots is pressing as roboticists and society at large call for international legislation and policy to guide their implementation (Sharkey 2008).

The aim of this paper is to show how the term 'service robots' can be unpacked to reveal important distinctions with respect to robots outside of industrial applications and further to show how these distinctions are relevant for policy development. Firstly, I will highlight the difficulty inherent in the term 'service robots'. Secondly, I will propose a way in which service robots can be broken down into a variety of classes (or sub-classes) of robots with the potential for additional features and a range of applications. Finally, I will defend this classification by illustrating its relevance for policy development.

The problem of service robots

Robots may be one of the most difficult technological innovations to define. This is in part due to the immense technical knowledge required to understand their functioning but also to the role media has played in shaping the image of a robot in the minds of society.

The image given by the media, represented by–Star Wars’ C-3PO, Star Trek’s Data, Pixar’s WALL-E–all represent a class of robots not yet realized by today’s technology. These futuristic human-like robots may be part of the future or may never be realized. In today’s terms, part of the problem when defining robots is the vast number of qualities/features each one may have. There are, however, common attributes, share by all robots. The first is that they are all man-made and artificial. Second, a robot has physical agency or embodiment which distinguishes them from embedded and/or smart technologies and permits real action in the real world (Haselager 2005). Third, a robot has the ability to sense and perceive information, and to execute a programmed task or action (Bicchi 2008). Robots may perceive a variety of types of information; for search and rescue robots information is in the form of environmental cues, or in the case of social robots, the information may be in the form of verbal or non-verbal cues. The information is then used to execute an action or task.

The category of service robots was introduced by Joseph Engelberger to call attention to the idea that robots could, and should, be applied outside of the factory (Engelberger 1989). In order to create policy guiding the design and/or the implementation of this new generation of robots emerging from the industry we must understand, or unpack, the term service robots. The word robot was conceived by Karel Capek (1890-1938) in his play R.U.R. (Rossum’s Universal Robots) where he used it to refer to a race of manufactured humanoid slaves; robots are machines that can do the work of humans. The term robot essentially replaced the terms android and automaton, which had been traditionally used until that time. Looking at the definition of a robot – a machine to do the work of humans – all robots are created to service humans. This makes the prefix ‘service’ redundant and calls into question the use of the label service robots as a distinct class of robots. When addressing other classes of robots like humanoid robots, we can assume by the title a characteristic or feature of these robots - they will have a human-like appearance in some manner. Additionally, from the class of robots called domestic robots we can assume these robots will fulfill a function in the household, most often cleaning. The title service robots says nothing new about the characteristics or function of the robots that fall into this class.

Perhaps the way to understand the uniqueness of service robots is to distinguish them from industrial robots; the differences between the two may allude to a more concrete description of service robots. According to the International Federation of Robotics (IFR), “a service robot is a robot which operates semi or fully autonomously to perform services useful to the well being of humans and equipment, excluding manufacturing operations”. From this, we may conclude that service robots are those employed outside of industrial applications with a (varying) degree of autonomy. Thus, any semi or fully autonomous robot outside industry is a service robot but human-operated robots are not. Industrial robots may be designed with varying degrees of autonomy therefore we may postulate the way in which service robots are distinct from industrial robots is their ability to interact with humans and do so with a degree of autonomy. In the EURON Robotics Roadmap, service robots are distinguished from industrial robots by their capability of executing a task in a human environment while interacting with humans. Distinguishing between service robots and industrial robots in this way is not possible as current industrial robot developments look at ways in which robots can safely interact or cooperate with humans in a direct or indirect way (what is referred to as hands-on or hands-off human-robot interaction). Moreover, robots outside of industry do not have to interact with humans (ex. pharmaceutical robot for sorting medications) and they may also be human-operated. Thus, using this definition our only distinction between service and industrial robots is their application domain.

For Engelberger, service robots were meant to describe a class of robots whose architecture was not predetermined by the class they were in but rather their specific function is determined by their application. This fits the EURON Roadmap’s description of service robotics; “service robotics (the study of the field of service robots) is not a basic research topic but rather the science of integrating methods and approaches from the various fields of robotics into real-time capable robot systems, which are customized to specific applications”. From this we may conclude that the intention underlying the allocation of the term service robots was not to represent a class per say but to indicate a broad category of robots for use outside of industry. Unfortunately, this point is missed when people speak in terms of service

robots. The assumption is made that these robots make up a class on their own. From Engelberger's description then, we may suggest that service robots are those applied outside of industry which may or may not, be capable of interacting with humans and whose autonomy is not specified. It cannot be denied that the application domain of a robot is of paramount importance for creating policy; however, of equal, and perhaps additional significance, are the functions and features of the robot which are used to determine the safety standards and provide additional insight for policy.

Without an understanding of what the term service robot means and without a clear distinction between service robots and others, namely industrial robots, it follows that service robots may be interpreted in a number of ways. Depending on the literature, service robots are used to describe a variety of robots with diverging functions and features from search and rescue robots, robot vacuums or robot assistants for the elderly. Each of these interpretations refer to robots with very different capabilities and functions and it is these details which are needed to shape policy.

As we have seen, the classification of service robots is problematic for numerous reasons; the term is incoherent/redundant (all robots are designed to provide a service to humans), the term is problematic because there are various interpretations of what a service robot is, and the term says nothing about the functions or features the robot may have. Each of these considerations present significant dilemmas for the development of policy to regulate the implementation of service robots. Contrary to the attempts of other authors I will not use the degree to which a robot interacts with a human as the sole defining criteria for robots outside of industrial applications (EURON Roadmap), nor will I use the application domain alone as the sole means to typify classes of robots (Engelberger 1989; Veruggio 2008; Veruggio 2006). Rather, I propose a taxonomy of robots outside of industrial applications which takes into consideration the technical particulars of robots. The robots will be presented by class (which is determined according to functions, capabilities or appearance of the robot) and discussed according to this classification.

Classifying robots-the sub-classes of service robots

The class of a robot refers to a specific type of robot whereby the function, capability or appearance of the robot shapes the entire architecture of the robot. In other words, the class articulates a grouping of robots with a particular function, capability or appearance that dictate important requirements which determine the design of the robot architecture. Although all robots in a class share the same function, capability or appearance, the classes are not mutually exclusive. This means, a robot from one class is allowed to have features or capabilities of a robot in another class. It is important to note here that within a class of robots, which depicts its function or capability in general, there is a wide range of designs for accomplishing the said function or capability, for example, locomotive or mobile robots. There are numerous ways in which locomotion is achieved through the use of wheels (Campion 2008), legs (Kajita 2008), or snake-like movements (Hirose 2009). Alternatively, the class of social robots is unified in its function to communicate interpersonally with humans. The way in which this communication proceeds may be through visual, auditory or nonverbal communication mechanisms. For practical reasons I will not go into depth on the variety of ways in which a function may be realized I mean to indicate simply (at this point) what the function is.

The current literature discussing robots often presents various applications of robots in terms of classes. For example, robots in healthcare are seen as a class of robots. The number of different types or classes of robots that fall under the domain of healthcare are vast and thus it is paramount to recognize this as an application domain and not a class of robots that all share the same technical fundamentals. As such, the classes I present refer to robots that share a capability, function or appearance and may then be applied in a variety of applications. The classes that I will discuss in this paper are as follows; human-friendly robots, social robots, humanoid robots, human-operated robots, autonomous robots, and mobile robots. A robot from any class can then be applied in one or more of the following domains; domestic, entertainment, education, healthcare, military, dangerous environments, and the service industry (note: industrial applications are intentionally left off this list). The classes discussed in the proceeding section have direct consequences for the

creation of policy involving robots outside of industrial applications in terms of both safety and ethical considerations. These considerations will be discussed afterward.

Human-friendly robots

A human-friendly robot (HFR) is one that is designed with particular software and hardware to ensure it is safe to co-exist and co-operate with humans. Thus, the feature that links all robots within this class (the defining criteria) is safety for human-robot interaction. This class of robots is most likely what many researchers have in mind when using the term service robots. According to the Springer Handbook of Robotics, this class of robots is discussed in terms of best performance where safety is provided throughout task execution (Bicchi 2008). The difficulty with building such 'safe' robots is the tradeoff of safety for speed and accuracy. The dilemma now is to design robots that are safe to interact with humans without having to sacrifice performance criteria. The human-robot interaction may be 'hands-on' or 'hands-off'. The former refers to robots designed intentionally to interact with humans while the latter refers to those robots which will not present a threat to the human if they were to accidentally interact ie. come into contact with a human (Bicchi 2008).

One way to design HFRs is using the concept of intrinsic safety: "a robot will be safe to humans no matter what failure, malfunctioning, or even misuse might happen" (Bicchi 2008, p. 1337). One aspect of intrinsically safe robots is to quantitatively assess the risk of injuries in accidents for comparison with other solutions and for optimizing the robot's design. For this, the severity of a potential impact is linked with the statistical probability of causing a certain level of injury. Other methods for designing intrinsically safe robots take the hardware of the robot into consideration to increase their ability to sense objects in their environment or to add protective layers to manipulators (arms) which may potentially come into contact with humans. Other avenues explored look at introducing mechanical compliance into the design. This means, a motor in one area of the robot (ie. one manipulator) can be decoupled/turned off if an impact occurs (Bensalem 2009; Bicchi, 2008). This design, known as compliant transmission, is thought to diminish performance but this may not be a problem when the robot

is used for an entertainment application. In other applications, speed and accuracy of task execution are more important.

The term “human-friendly robots” is taken from the current European initiatives to test the safety standards of this new generation of robots¹¹¹. For some, human-friendly robots are seen as analogous with social robots because the two share the capability of interacting with humans. Configuring robots for the safety of humans is separate from configuring social robots where the aim is to design the robot for achieving the most intuitive contact possible. I argue that social robots are a class on their own which share a defining criteria of social, interpersonal communication.

Social robots

Closely linked with human-friendly robots are social robots. The function of these robots is to meet the social and/or emotional needs of users, rather than the physical needs, through communication (Breazeal 2003; Breazeal et al., 2008). These robots interact with humans in a social way, meaning they communicate (visually, auditorily or verbally) with humans beyond indicating the initiation or completion of a task. For the purposes of this paper, social interaction is defined in terms of high-level communication between the robot and the human user in a human-like way. Human-like communication refers to the variety of ways in which humans can communicate; robots are responsible for understanding cues from humans but also to communicate as a human would. If a robot does not meet this projected meaning of communication (in a human-like way) then I do not consider them to be communicating.

A social robot must be programmed not only to communicate to the user but also to understand the assortment of ways in which the user may communicate with them. For this reason, social robots are considered among the more sophisticated robots today. Means for, or modalities of, communication range “from whole-body motion, proxemics

111. Several European projects (within the 6th and 7th framework) have been initiated to study the mechanics required for safe human-robot interactions; URUS (Ubiquitous networking Robotics in Urban Settings); Robot@CWE Portal; VIATORS; DEXMART (DEXterous and autonomous dual-arm/hand robotic manipulation with sSMART sensory-motor skills).

(ie. interpersonal distance), gestures, facial expressions, gaze behavior, head orientation, linguistic or emotive vocalization, touch-based communication, and an assortment of display technologies” (Breazeal 2008, p. 1350). In addition to the reliance on verbal communication, it is important for a social robot to understand a range of non-verbal cues (or, paralinguistic cues). The robot must be able to perceive this information, interpret it accurately and respond appropriately. Robots like the “child-robot” created in Suita, Japan show how roboticists are trying to train robots to perceive facial cues and to group them into broad categories in the same way a child would (Science 2009).

Communication with a human presupposes that the robot is safe to interact with humans, regardless of any additional features or capabilities the robot may have (like mobility or autonomy). The interpersonal manner in which these robots are meant to engage people in is the crucial distinction between human-friendly robots and social robots; human-friendly robots do not have to communicate with a human at all let alone in the social manner used to define communication in this paper. To illustrate this distinction we may use the da Vinci surgical robot (Intuitive Surgical Inc.); da Vinci is designed to be safe in the presence of humans and under the manipulation of humans for assisting in the surgery but da Vinci does not communicate with the human in a social way. Although the robot must indicate when it is on and the system is ready, there is no social meaning to this communication; the function of this communication is not to meet the emotional or social needs of the user. In contrast, social robots are those designed to engage with humans to fulfill social-emotional goals in diverse applications like education, healthcare, entertainment, communication, and collaboration¹¹².

As social robots are meant to communicate in a social or human-like way, the embodiment of a social robot is often humanoid or animal-like. There are many examples of social robots which have animal-like features like the baby seal robot, Paro. Paro does not verbally communicate but relies on touch based communication to perceive information with the user but also to communicate to its user (that it wants to be held or petted etc) (Wada 2005). There are mobile social robots

112. Further exploration of the meaning of social interaction and communication is needed but goes well beyond the purpose of this paper, see later work.

fitted with a face to enhance social interaction, like the elder-care robot, Pearle, developed at Carnegie Mellon University. For mobile robots, issues of proxemics, as a modality of social communication, are particularly important and culturally dependent (proximity preferences in communication differ between cultures). Other social robots do not have an animal or humanoid appearance, like MIT's Kismet or the Keepon made by the National Institute of Information and Communications Technologies in Japan. Kismet has a mechanical face with anthropomorphic features (large blue eyes) to enhance social communication, while Keepon, the small dancing robot, has a simple face and expresses itself by squashing or stretching its body. There are also social robots with no face or eyes or any anthropomorphic features. These robots resort to language-based communication and proxemics. Therefore, although the robot is assumed to communicate in a human-like way this does not presume the appearance of the robot must also be human-like for social robots.

Humanoid robots (creature/animal-like robots, and android robots)

This class of robots is one in which the form or appearance of the robot, and not a capability, is the defining criteria. A humanoid robot resembles a human in form, meaning it may have arms and/or legs etc like Honda's ASIMO. The robot can then have additional anthropomorphic features like eyes and ears like MIT's KISMET. In contrast to the more mechanical looking humanoid robots are androids; "android robots are designed to have a very human-like appearance with skin, teeth, hair and clothes" (Breazeal 2008, p. 1351). In contrast to both of these, are robots that resemble animals or are creature-like (ex. Sony's AIBO).

For some, humanoid robots refer to those with a human-like appearance or with human-like behavior (Kemp 2008). We have already addressed those robots with human-like behavior (ie. social robots) and I will restrict the classification and discussion of humanoid robots to appearance only. Classification is based on appearance and not capability or function because robots with a shared appearance may have any number of functions or capabilities but the requirements for their appearance determine the majority of their structure (at this time).

Distinguishing humanoid robots – or robots based on appearance – in this way helps to clarify that although the robot may have a human-like form this does not presuppose anything about its function. For example, the PEARL robot for assisting with elderly care has arms but these are used for communication and not for maneuvering objects. A common misunderstanding with humanoid robots is that they also possess the capabilities referred to with HFRs and/or social robots (Kemp 2008; Veruggio 2008; Ng-Thow-Hing 2009). An assumption is being made here that in order for robots to interact with humans, in the social manner described above, they must have a human appearance. Many social robots are humanoid, creature- or animal-like but many are not overtly humanoid nor do they resemble an animal or creature. For this reason, it is important to distinguish between the capabilities of a social or HFR and the appearance of a humanoid robot; one does not presume the other. Therefore, when policy makers are asked to design guidelines for humanoid robots, they may understand that the function and capability of the robot must be explicitly stated.

As mentioned, this representation of humanoid robots, regarding appearance alone, is in contrast to many references made about humanoid robots, which infer capabilities from appearance. Restricting the temptation to attribute capabilities to these robots allows us to address the capabilities separately, to acknowledge the range of capabilities a humanoid robot may have and to maintain a realistic vision of what these robots are capable of (at this time). This classification also allows us to address some of the more deeply rooted philosophical questions regarding; emotional projections humans place on robots of a certain appearance, what happens to the expectations of users when the robot has a humanoid appearance regardless of their capabilities and how will a human respond to a humanoid appearance¹¹³.

113. Response to the appearance of a robot is often discussed in terms of Masahiro Mori's Uncanny Valley hypothesis, that there exists a threshold for human comfort with the robots appearance. Below this threshold, the robot does not closely resemble a human and humans are comfortable with the robot. Above this threshold, the robot is commonly thought of as an android and again the human is comfortable with the robot. But right at the threshold, the robot appears more like a zombie than a human which elicits feelings of disgust and unease towards the robot.

Human-operated Robots

Human-operated robots represent one of the earliest classes of robots, one which requires a human to guide the action/movements of the robot; the movements or commands of the human are translated into movements made by the robot. This configuration is often referred to as master-slave - the human operator as master and the robot as slave.

For hands-on human-robot interaction in industrial applications, such robots are often referred to as “cobots”. These are “collaborative robots” designed to relieve humans from fatigue or stress and to prevent injuries; “cobots presume a division of control between human and robot, with a robot perhaps supporting a payload and allowing a human to guide it” (Bicchi et al., 2008, pg 1345). In this scenario, the operator is in direct physical contact with the payload. This description may also be used to describe exoskeletons used for rehabilitation purposes; “exoskeletons are also controlled by a human operator, leaving all planning and high-level challenges to the user” (Niemeyer 2008, p. 741; Hayashi 2005). Again, the user is in direct contact with both the robot and the payload.

Within the class of human-operated robots is a subclass known as telerobots whose infrastructure is designed such that a human operator controls the motion/movement/task execution of the robot in the same way as a human-controlled robot with the added condition that the human operator is at a distance (Niemeyer 2008). Again, all planning and cognitive decisions are made by the human user and the robot is used strictly for mechanical completion of a task. The use of ‘tele’ (derived from the Greek word for distant) presumes a geographical separation between the user and the environment in which the task is being performed. The inaccessibility of the environment may be for any number of reasons; the user cannot or will not physically reach the environment, the environment is dangerous, the environment needs to be scaled. The physical distance between the user and the robot varies depending on the application (ie. for surgical robots the surgeon is often in the same room, for robots in space or underwater the distance is much greater). In most cases there are two sites to speak of; the local site with the human operator and the remote site with the robot. For the information to travel from one side to another, the two sites

must be connected. Traditionally this was done through the use of cables; however, recently computer networks have made it possible to transmit this information from one side to another using a telecommunication system. The use of telecommunication networks implies that more than one user may be able to manipulate the robot, but also the distance between the local and distant site may be increased.

Control of the robot may occur through one of three architectures; direct control, shared control, or supervisory control (Niemeyer 2008). Direct control assumes no autonomy or intelligence on the part of the robot, thus, all the motions of the robot are directly controlled by the user. Shared control refers to a sharing between local and remote sites whereby the human operator decides what to do and how to act while the robot can autonomously refine the command for the environment. For example, in the case of the da Vinci surgical platform, the surgeon performs its movements which the robot autonomously scales down to the appropriate size for the surgical field. Supervisory control is described as analogous with supervising a subordinate staff member whereby the supervisor is responsible for giving orders to the subordinate but in turn receives summary information. This approach is compared with direct control or autonomous robot control by Sheridan, who introduced the concept of supervisory control; "human operators are intermittently programming and continually receiving information from a computer that itself closes an autonomous loop through artificial effectors and sensors" (Niemeyer 2008, p. 746). In other words, "the operator plans activities at a level which can be performed by the robotic system independent of human intervention" (Niemeyer 2008, p. 747). At all times, the human operator may take over control of the task.

Telerobotic systems or human-operated robots are unique in that they provide information to, but also require commands from, the user. These robots are distinguished from autonomous robots in which "a robot executes a motion or other program without further consultation of a user or operator" (Niemeyer p. 746). It may be suggested that autonomous robots evolved from the design of supervisory control robots (Haselager 2005).

Autonomous Robots

This issue of autonomy in robotics is problematic due to the diverse conceptions one may have of the concept of autonomy; "the capacity

for independent (unsupervised) action versus the freedom to choose goals” (Haselager p. 528). While philosophers approach autonomy from the question of why one acts in a certain way, roboticists approach autonomy from the question of how the robot fulfills its task (with or without assistance or supervision); “within robotics, the increase in autonomy of a system is related to the reduction of on-line supervision and intervention of the operator, programmer or designer in relation to the robot’s operations in a changing environment” (Haselager 2005, p. 518). Autonomous robots are therefore a class of robots with the capability to fulfill a task without real-time manipulation from a human operator. For Engelberger, “autonomous planning is performed by the machine when sensed data are operated on by application programs with the result that the machine makes navigating (or equivalent) decisions. These decisions do not require human interaction but are, on the robotic side, subject to human supervision and veto” (Engelberger 1989, p. 211-12). This description corresponds with later visions of autonomous robots as a class of robots that “operate under all reasonable conditions without recourse to an outside designer, operator or controller while handling unpredictable events in an environment or niche” (Franklin and Graesser 1996). These two definitions of robot autonomy maintain that the robot is acting according to a pre-programmed set of rules, and the robot is capable of planning their action without referring to a human-operator (or designer or controller) during execution of the task. What the second definition adds is the capability of the autonomous robot to fulfill its task in an environment in which it has not been trained, and/or one that is unpredictable.

More recent definitions of autonomous robots maintain the criteria of the first two definitions presented but add the capability of the robot to fulfill its task within time constraints and with the added component of potential interference by others. For Bensalem et al, autonomous robots must: “operate in highly variable, uncertain, and time-changing environments; meet real-time constraints to work properly; interact with other agents, both humans and other machines” (Bensalem 2009, p. 67). From the description of an autonomous robot today, we see that some of the challenges for their design relate to challenges posed for other classes of robots; meeting real time constraints while at the same time safely interacting with humans is a similar challenge for HFRs. The difference lies

in the robot's capability for autonomous function; predictability of the robot's actions decrease without a human-operator, risk that the robot misinterprets environmental cues and acts improperly increases, or if the robot is unsure how to respond, without the guidance of an operator it may malfunction or shut down. Thus, safety is significant for this class of robots both in terms of interacting with humans but also in terms of reliability - that the robot is capable of accomplishing its task. The third definition also introduces the aspect of human-robot interaction. This, however, is not a defining criterion of an autonomous robot. That is, they may interact with humans but they may not. Autonomous robots, like tele-robots, are intended for situations in which human control is not feasible, not desirable, or perhaps is not the most cost-effective alternative.

Without prescribing what an autonomous robot should refer to, we may suggest that it has the following properties; it can perform its pre-determined task in an unpredictable environment without consulting an outside source for assistance. Both hands-on and hands-off safety criteria apply to these robots depending on the robots function and/or application.

The class of autonomous robots can be further broken down into: autonomous mobile robots, cluster robots and learning robots. Autonomous mobile robots refer to a class of robots with the capability of autonomous mobility. This means, the robot does not depend on the human operator to control its mobility. Autonomous mobile robots are considered "tools that human specialists use to perform hazardous tasks in remote environments" (Bensalem 2009; Breazeal 2008). This definition, however, does not address the use of mobile autonomous robots used in applications where the robot is used to relieve humans of the burden of mundane, time consuming, boring tasks like the Roomba vacuum cleaner. Autonomous robots which are also designed to be HFRs must pay particular attention to issues of proxemic like how to approach, follow or maintain an appropriate distance with a human.

Cluster robots are also a sub-class of autonomous robots. These robots are also known as multirobot systems or networked robots. They are categorized by their ability to work together with other robots in order to accomplish a task. Thus, each robot acts autonomously but

must also autonomously coordinate their actions with the actions of their fellow bots in the system.

Robot learning or learning robots¹¹⁴ may be used to refer to a property of the robot (Franklin and Graesser, 1996) - it can adapt by changing its behaviour based on its previous experience - or to the way in which the robot is programmed - learning by demonstration, mimicking, or reinforcement (Argall 2009; Billard 2008; Marino 2006; Riebiero 2002). The concept of robot learning invariably increases the degree of autonomy the robot has and increases the success with which the robot will maneuver in a new, unknown environment. With respect to programming robots by learning it is thought that robots learn general rules from their experience in order to meet task assignments in highly variable environments (meaning human environments) (Marino 2006). There are many ways in which roboticists are exploring how to program learning into the robot. The "Child-robot" developed in Suita, Japan, is said to develop social skills by interacting with humans and watching their facial expressions, mimicking a mother-child relationship. The aim of the creators at Osaka University in Japan is to develop this robot to think like a baby, meaning the robot will be able to evaluate facial expressions and cluster them into basic categories like 'happy' or 'sad'. Once referred to as learning-by-demonstration (this approach was targeted towards the use of industrial robots), this term was replaced with imitation learning to reflect the way in which the robot would 'learn' in order to interact with humans in a more natural way (by demonstrating similar skills and processes). These robots are the predecessors of more advanced social robot. On the other hand, learning robots do not always have to be safe for human interaction because they may be applied in military, surveillance, or search and rescue applications.

114. Learning robots are problematic for many reasons; how do we transfer the human notion of learning to robots, how can we reliably say when a robot has learned, will the robot be able to act in a way not intended by their designers? Various authors have addressed the issue that these robots may be capable of acting in ways not anticipated in their design and as such there exists a problem of responsibility; who is responsible for these robots if the designers cannot with complete confidence predict the robot's behavior (Marino 2006)? This question is of paramount importance for the creation of policy concerning such a class of robots. Further research on this subclass is required as the technology is still in its beginning stages.

Mobile Robots

The class of robots called mobile robots is distinguished from traditional stationary industrial robots with a fixed platform, or rehabilitation robots that perform a function in the kitchen, on the desktop or by the bed. Mobility of the robot refers to its ability to travel along the x-y planar axis, in other words locomotion. Locomotion is different from a robot which is capable of moving an effector or manipulator (arm or hand). For example, the surgical robot da Vinci does not travel as it operates but its robotic arms must be moveable during the course of the surgery. In contrast, the iRobot Warrior 700 military robot is designed to drag humans to safety. For such a robot, mobility is a defining feature for fulfilling its task.

Locomotion may be accomplished in a variety of ways, the architecture of the robot is then determined by the chosen means for locomotion. Mechanics for mobility vary depending on the institution or company designing the robot and the terrain which the robot is expected to move on. Researchers at the Tokyo Institute of Technology that in a snake-like manner (Hirose 2009). In contrast, researchers at Honda are designing ASIMO to walk like a human using a zero-moment technique (Ng-Thow-Hing 2009). This technique means the robot equally balances all forces so there is no point at which the robot would lose balance and fall. Additionally, this type of motion requires that the robot be on a smooth surface - not an optimal restraint if the robot is to exist in an unstructured environment where these things cannot be accounted for. Other researchers are exploring the use of gravity to propel the 'legs' for moving, a technique referred to as 'passive dynamics' (Kajita 2008). This approach/technique uses little motor power to accomplish walking and is considered a promising, efficient substitute to the zero moment technique used for ASIMO.

Wheels are the most typical means for motion for reasons of simplicity (Campion 2008). A Segway is commonly thought of as a mobile robotic platform which uses wheels for motion. Researchers at Carnegie Mellon are also investigating the use of a ball for locomotion (Lauwers 2006). The "ballbot" is a battery operated, omnidirectional robot that balances on a single urethane-coated metal sphere. Because of the

use of the ball it is able to maneuver in tight spaces and has the potential to interact in human environments better than wheeled robots.

Control of the robot's mobility may be human-controlled or autonomous. An example of a human-operated mobile robot is In Touch's RP-7. This robot is aimed at facilitating patient-physician communication when the physician cannot be physically present at the bedside of the patient. The physician, seated at a console in another area of the hospital or in another place entirely, guides the robot through the hallways of the hospital to the patient's bedside. Using a video monitor attached to the mobile autonomous robotic platform, the patient and the physician may communicate directly. In contrast, iRobot's Roomba vacuum cleaner or iRobot's Scooba (pool cleaner) are both mobile robots which operate autonomously; no human manipulation is required to guide the robots locomotion.

In terms of policy, the capability of mobility alone presents distinct safety challenges but when added with the capability of autonomous functions, additional safety considerations must be accounted for; whereas a human-operated mobile robot is less likely to collide with other objects because of the control of the human, an autonomous mobile robot requires redundant (additional) sensors for perceiving their environment. This issue of speed for autonomous mobile robots when traveling and stopping is also significant.

Additional Features, or Properties, of a Robot

In addition to the classes discussed above there are a variety of additional features a robot may possess that are not class defining. Meaning, they are features that do not determine the entire infrastructure of the robot but rather can be added to an existing frame. As technology develops and software programs are created to harmonize the programming of robots, some of the capabilities determining class may evolve into additional properties the robot may possess. Currently, when speaking of features of the robot we may refer to grasping, manipulation, face detection and/or recognition or, voice detection and/or recognition, among others. Grasping is typically associated with hands and refers to the property of a robot to detect and select objects to be positioned and/or oriented (Engelberger 1989). It should be noted that some robots may possess the feature of graspers or

hands but do not use them to grasp objects but rather to communicate. This highlights the importance of understanding the features and functions of the robot separate from any application domain. Manipulation is a feature of a robot which allows it to pick up objects and move them from one place to another (Engelberger 1989). This list is not extensive due to constraints; however, the intention was to indicate an additional array of robot properties to be taken into consideration to further highlight the point that the term service robots leaves too many details unaccounted for.

How this taxonomy aids policy development

In light of the number of classes of robots and the differences between these classes (in terms of functions, capabilities and appearances) it becomes obvious that simply addressing robots that will interact with humans or that will work in a human environment (as opposed to industry) leaves many questions unanswered; will the robot be communicating with the human, what form will this communication take; will the robot be autonomous and thus not require the control of the human; will the robot have a distinct appearance which may change the expectations of the user, what safety considerations must be met? The Roboethics taxonomy classifies robots according to their application domain in order to address ethical considerations associated with their application (Veruggio et al., 2008). While this provides useful insight, it fails to account for the variety of robots (capabilities, functions, properties and appearances) within one application domain. Take robots in healthcare as an example. If one is called upon to create policy for 'robots in healthcare' they will invariably be responsible for creating policy that pertains to robots with a wide range of capabilities and functions each requiring distinct consideration. Robots applied in healthcare range from; stationary human-operated robots (ex. The da Vinci surgical platform); mobile human-operated robots (In Touch's RP-7); stationary autonomous robots (ex. ROBOT-Rx for sorting medications; Jerrard, 2006); and mobile autonomous robots (ex. i-Merc robot that delivers meals; Carreira F, 2006) to name a few. Policy must be tailored to account for the range of robots in healthcare, *ipso facto*, one must be aware of these differences.

By presenting robots according to this classification, we may; address the considerations pertaining to distinct capabilities or functions the robot may have, we may ask ourselves whether certain classes are appropriate for certain application domains, we may also observe how a combination of capabilities requires different standards than a capability on its own. Additionally, we can tailor the design and introduction of these robots by ethically reflecting on the current state of the art rather than appealing to a futuristic vision of what robots will one day be, or look like.

Safety Considerations

At this point in time, the most substantial concerns for robots outside of industrial applications pertain to the safety and reliability of the robot. Due to the length of time in which robots have been employed in industrial applications, safety standards are already in place¹¹⁵. Things become more complicated when speaking of hands-on robots which will be applied in a variety of domains. For hands-on robots, the T-15 committee of the American National Standards Institute (ANSI) is setting safety standards regarding intelligent assist devices (Bicchi 2008). Although these standards cover a wide range of technologies from assistive devices to mobile autonomous robots, these standards are promising in that they may be translated into policy governing domestic applications of robots. For example, one aspect of the standards involves risk assessment replacing fixed rules: “instead of declarations regarding how to accomplish safe operation, risk assessment procedures are advised for assistive devices and physical human-robot interaction robotic technologies, to identify and mitigate risks in proportion to their seriousness and probability”. In other words, assessing the chance for injuries take priority over safe operation. This is to ensure that robots are in fact a promising alternative.

Another aspect refers to safety-critical software: under any condition that the robot malfunctions, the entire system will shut down in a safe manner. While on first glance this may seem appropriate,

115. Well established nation standards in the US (ANSI-RIA), Canada (CSA), Germany (DIN) etc. These standards are collected and harmonized by the International Organization for Standardization (ISO).

once we address the different classes of robots we may conclude that this standard when applied to autonomous robots working without the supervision or control of a human may do more harm than good. How is one to know if the robot has shut down? If the robot shuts down in the middle of its task (for example, a household chore), who is responsible for addressing the technical, or otherwise, problem which resulted in the robots malfunction?

The standards of the T-15 committee also indicate dynamic limits which restrict the capabilities of robot design such that a human operator must be able to outrun, overpower or turn off the robot. This standard requires detailed knowledge of the intended users of the technology. Robots for elderly or rehabilitative patients will have different dynamic limits from robots in the average household.

Safety issues are of paramount importance when the robot is in direct physical contact with the human user. One application in which this is illustrated is the use of robots for rehabilitation (Kazerooni 2008; Hayashi 2005). These robots come in direct physical contact with patients in a variety of ways. For therapy robots, the robot is in direct contact with the disabled patient and the therapist simultaneously. Roboticians in this area must be sure that the robot is designed in such a way that it cannot cause injury by moving a user's limbs outside their range of motion, with too much strength or with too much speed. In addition to this limits imposed on the robotic apparatus, redundant sensors (additional sensors) are used as back-up such that if one sensor malfunctions another can identify the problem and shut down if necessary. Outside all this, rehabilitation robots must also be designed to be intrinsically safe; "from the systems perspective, when all else fails actively to protect the user, it must be the design itself that makes the robot inherently unable to injure the user" (Bicchi 2008, p. 1244).

Programming safety into the architecture of the robot may also depend on a combination of capabilities and not one exclusively, for example mobility and control. If the robot is mobile but is human-operated, the standards for safety will be somewhat different from a robot which is mobile and autonomous. The autonomous robot must be programmed to stop at a certain speed and distance from the object it approaches. It must also be programmed to shut down immediately, in

a safe manner, in case of malfunction. Mobile human-operated robots rely on the commands on the human-operator for these details.

Ethical Considerations

Above and beyond the safety considerations, policy must also account for the ethical considerations when introducing robots. It is beyond the scope of this paper to address the range of ethical implications pertaining to robots; however, we may focus on one area receiving much attention today where robots are seen as a promising solution; robots for the care of elderly persons. Various European initiatives are currently in place for safeguarding the quality of life of this demographic while exploring the potential use of information and communication technologies¹¹⁶. With a lack of healthcare workers and an increase in need of care, robots are seen as a way of compensating for the shortcomings of a given healthcare system, or as a means of proving care for those who would not otherwise have access. Action plans for policy point to the need to maintain independence, autonomy and dignity for this vulnerable demographic when introducing these new technologies. Robots for the elderly draw on all the classes of robots discussed; all must be HFRs; some will be social; some will be autonomous and others human-controlled; some will be mobile and others stationary; and, some will have a humanoid appearance while others resemble a machine. Again we are reminded that a discussion of robots in one application domain invariably begins a discussion of numerous types (or classes) of robots. So, how does one begin?

First, we may look at the differences between autonomous and human-operated robots. Autonomous robots are responsible for completing the task without the guidance or assistance of a human, therefore, the task is entirely delegated to the robot. When speaking of a technological delegation of care, we open a discussion of responsibility. Who is responsible for the robot malfunctioning? Who is responsible to ensure the robot is being used properly? Who is responsible for the actions of the robot? If every-

116. "Ageing well in an Information Society" is an action plan made in reaction to the European Union's Riga Ministerial Declaration on e-Inclusion. E-Inclusion was a project to support Information Society policy development. i2010 is the EU policy framework for addressing the positive contribution of information and communication technologies through research and development.

thing goes right (meaning, there are no technical complications with the robot), we must then ask whether we want to delegate the responsibility of care to robots? Is this an appropriate use of the technology? Would we opt for robots if we had enough human care workers? Policy must take these questions into consideration.

Many times it is the intended users of a technology that motivate additional ethical considerations. For this vulnerable demographic, a substantial concern is the risk of stigmatization or discrimination (often referred to as ageism). Another promising robot for the care of elderly persons is one that will bath a person¹¹⁷. From an ageist perspective, if we're using robots to wash elderly patients than we should also use the robots for washing young, competent post operative patients in the hospital. This means the type of care should be the same for both groups. If not, then there's an ageist problem. When assessing robots according to the status of the user, the vulnerability of an elderly person (capability and competence) is a specific feature. The danger is that the elderly person is reduced to a physical/bodily being thereby threatening the patient's dignity. Vulnerability increases with dementia and Alzheimer's and therefore robots should not be used because the person cannot say no to it. Thus, we may suggest competence of the user is a necessary condition for implementing robots in a given domain. Safeguarding the patient's dignity can also be incorporated into the design of the robot. For instance, a bathing robot should not have the person on display creating physical and social discomfort. Instead, such robots ought to be designed in such a way that the person's physical integrity and dignity remain intact.

Conclusion

The speed with which robots are developing and the range of robot architectures, properties, functions, capabilities and appearances makes the creation of a taxonomy or classification of robots an arduous one. Regardless, one is needed in order to facilitate the creation of policy for the new generation of robots leaving the industry and entering into human environments. Although these robots have traditionally been, and continue to be, referred to as service robots, the aim of this

117. The Avant Santelubain 999, made in Japan, is a robotic bath or human washing machine. The robot will sterilize and clean itself, as well as shampoo one's body.

paper was to illustrate the many details and variety of robots lost when using this term. Further, this does nothing to assist policy makers in their task. Moreover, this restricts the possibility for interdisciplinary discourse, or societal participation in their design and implementation, as each discipline may have their own interpretation of what a service robot is. Classifying robots according to their application domain is of great value but again misses important details without acknowledging the range of robots applied in any given domain.

The classification presented here is by no means complete; however, this does not undermine the goal to draw attention to the many capabilities a robot may possess. By referencing robots according to class we have seen how each class presents distinct challenges for policy and how when one robot combines capabilities from more than one class the challenges for policy increase. By understanding the capabilities and what they infer for policy (and what a combination of capabilities infers for policy), we may assist policy developers in developing appropriate safety standards. Moreover, we may also encourage ethical reflection pertaining to specific robots, or uses of robots, at this stage in their development, to be incorporated in their design. As an emerging technology, we are afforded the luxury of shaping their design and implementation in a way that safeguards traditions and practices dear to one society or another¹¹⁸.

118. It must be noted that culture influences the acceptance of classes of robots as well as their intended application. For instance, Japan views robots, and technology in general, as the solution to many problems faced within their culture. Alternatively, European cultures are not as inclined to introduce robots in general but also in certain application domains, without exhaustive ethical analysis.

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Biography

Aimee van Wynsberghe has just begun her PhD in Philosophy at the University of Twente, the Netherlands. During her undergraduate degree in Cell Biology at the University of Western Ontario, Canada, she was a research assistant at CSTAR (Canadian Surgical Technologies and Advanced robotics) working on the Telesurgery project which inspired her to continue working with robots. Following her studies in Science, she pursued Applied Ethics and Bioethics in her graduate studies. This gave her the opportunity to reflect on the philosophical issues pertaining to technology in healthcare, with a particular focus on robotics. Her current work focuses on the social implications of human-robot interactions but will specifically address the use of robots in the care of elderly persons.

