Applied Ethics

Ethics in an Era of Emerging Technologies

Center for Applied Ethics and Philosophy
Hokkaido University

Sapporo, Japan

Published by Center for Applied Ethics and Philosophy
Hokkaido University
N10 W7, Kitaku
Sapporo 060-0810
Japan

Edited by Center for Applied Ethics and Philosophy

Printed in Japan

ISBN 978-4-9907888-0-3

Contents

Introduction

This collection of essays is the final summation of the Eighth International Conference on Applied Ethics held at Hokkaido University on November 1-3, 2013. The conference was organised by the Center for Applied Ethics and Philosophy, Graduate School of Letters, Hokkaido University (Sapporo, Japan).

The purpose of this collection is to bring together the wide-ranging papers on various fields of applied ethics presented at the conference.

It is our hope that this collection will contribute to further developments in research on applied ethics and promote our Center's mission, which is "to bridge the gap between theory and practice."

July 2014

Center for Applied Ethics and Philosophy
Hokkaido University
Sapporo, Japan

Contributors

Dr. Paul JEWELL and Dr. Evdokia KALAITZIDIS both teach and research ethics in the Faculty of Medicine, Nursing and Health Sciences, Flinders University, Australia. Jewell is the author of Disability Ethics (Common Ground 2010) and Teaching Ethics (Hawker Brownlow 2011). Kalaitzidis is the author of Client Centered Nursing Ethics (Lambert 2009).

Anthony GRAYBOSCH is a professor of philosophy at California State University, Chico since 1990. He is a 1971 graduate of Fordham; his PHD 1983 is from City University of New York. Graybosch taught at Mount Senario College in Ladysmith, Wisconsin 1982-1985 and the University of Central Oklahoma 1985-1990. He has held Fulbright lectureships at Tel Aviv University 1990, Eotvos Lorand University 1991 and the University of Gdansk 1997-1999.

Nicholas MUNN is a Lecturer in Philosophy at the University of Waikato, where he has worked since 2012. His work focuses on the status of and challenges posed by virtual worlds. His other research projects examine democracy, enfranchisement and criminal justice.

Andrew KOMASINSKI is currently a limited term lecturer at Hokkaido University of Education Asahikawa in the English faculty. He earned his PhD in philosophy from Fordham University in 2013 and specializes in Modern Philosophy and Ethics.

Makoto SUZUKI, PhD is Research Fellow at Nanzan University Institute for Social Ethics, Japan. He received his BA and MA in letters from Kyoto University, Japan, and his PhD in philosophy from The Ohio State University, USA. His research interests include moral philosophy, philosophy of psychology and history of modern western philosophy.

Yu INUTSUKA is a doctoral student in the Graduate School of Interdisciplinary Information Studies at the University of Tokyo. Her research interests include environmental philosophy and Japanese philosophy. Her publications include "Formation and Structure of Augustin Berque's Mesology" *Journal of Information Studies*, 86, pp.207-224, March 2014 (Japanese).

Yicheng CHUNG, is a PhD student in Ritsumeikan University, Kyoto, Japan. Her research themes are concerning the ethical, legal and social changes of end-of-life care in modern society, especially Asian countries. She is currently working on her PhD thesis by comparing the medical policy, bioethical application and cultural aspects of end-of-life care in Japan and Taiwan.

Yanick FARMER is assistant professor at the Department of Social and Public Communication (Université du Québec à Montréal, Quebec, Canada). He is specialist in applied ethics and ethics of communication. His research interests include individual and collective decision making, communication and organizational ethics, ethics of social media, and public health ethics.

Wu-tso LIN was born in Taiwan in 1970. He majored in philosophy. He is an associate professor teaching in Graduate Institute of Cultural and Educational Management, Central Taiwan University of Science and Technology, Taiwan. He devoted himself to take black and white pictures, make documentary films for the disadvantaged minority groups and social critical issues. His research interests include: documentary film, applied ethics, media and modern thinking, etc.

Dr. Kaori SASAKI is currently based at Tomakomai Komazawa University after working as a research associate at Imperial College London where she was participating in a research project concerning the public understanding of electronic patient records in the UK. Her previous research covered Japanese public debates over the definition of death and organ transplantation from brain-donors at the department of Sociology, Lancaster University, thereby earning her PhD.

Impacts of Emerging Technologies on Cosmopolitanism and Communitarianism

Paul JEWELL & Evdokia KALAITZIDIS

Introduction

When Diogenes asserted two millennia ago that he was a citizen of the world, rather than a product of geography and culture, he was perhaps somewhat premature. Today, however, it is possible for people to interact with each other on the Internet without regard for national origin, thus realizing the Diogenes Cosmopolitan ideal. Class, gender, race and disability can be added to the list of characteristics that can be irrelevant to on-line exchanges. Emerging associated technologies are moving beyond information exchange, radically transforming the production and exchange of material objects.

Technological developments are inherently disruptive, affecting and altering social, economic and political arrangements. Developments in transport technology result in cheap travel that in turn facilitates a growth in tourism and international trade. Immigration of people from different cultures challenges the conventions, norms and expectations of the recipient societies (Jewell 2007). Developments in information technology transform the ways that information is transmitted and controlled. It threatens the production and usage of books along with news media employing ink and paper. Censorship of information and ideas, once easy and unquestioned, is now a lost cause. Governments and individuals world wide grapple with questions such as how much assimilation, how much multiculturalism, how much religious tolerance, and how much surveillance is justified or acceptable. Developments in transport and information technology simultaneously stress communities and allow individuals to realize Diogenes' Cosmopolitan ambition. It is now commonplace for people to shuck class and citizenship and adopt another through migration. Simultaneously we can communicate with anyone on the world-wide-web without revealing our origins, cultural status or indeed anything personal. In practical ways, we are citizens of the world.

But these are not emerging technologies. Boat, train, car and plane travel have been developed and used to transport people and goods for some time. The printing press, undersea cables, satellites and phones are well-established means for people to communicate with one another across the world. Contemporary societies are just playing catch-up in attempts to cope with the free flow of information and people (Rao 2012). In order to *anticipate* the potential benefits and threats of emerging technology, it may be instructive to select three innovations and investigate how they might impact on social arrangements, political philosophy and applied ethics. The three innovations selected here are 3D printing, Mind Machine Interface and Bitcoin. There are, of course, others worthy of consideration but these three provide useful exemplars.

1. 3D Printing

As the name suggests, 3D printing is a technology that allows the manufacturing of three-dimensional objects from blueprints on a computer (Harouni 2013). Products are created by the progressive building of layers of plastic, resin or metal through a process known as 'additive manufacturing' (The Economist 2011a, p.11). A 3D printer moves the print head in all three dimensions, guided by a computer program, to reproduce objects (Kain et al. 2009). This process effectively eliminates the traditional leviathans of the manufacturing process, such as production lines in factories. It ameliorates excess waste, cuts the price of small run production dramatically and allows the almost instantaneous creation of objects by ordinary people.

3D printing has obvious applications within the manufacturing industry, such as the production of computer parts, desktop printers or bicycle frames. Importantly, though, it is not limited to this area, and its possibilities have become quite endless. Some examples include: 'medical implants, jewellery, football boots designed for individual feet, lampshades, racing-car parts, solid-state batteries and customised mobile phones' (The Economist 2011b, p.77).

Lately its increasingly feasible use in replicating organs and human tissue has created much debate. Theoretically, the process of 'organ printing' or using a cell printer that can follow a blue print to produce mature organs could wipe out the need for donated (and sold) organs (Mironov et al. 2003, 157). For example, creating scaffold free vascular tissue may soon assist those with cardiovascular diseases by improving autografts and blood vessel transplantations (Kucukgul et al. 2013). It may even assist people with alzheimers and dementia to hold onto their memories using 3D printed microchips (Lowry 2011). Similarly bio printing may also assist in the replication of food (Lobson 2011).

3D printing removes traditional barriers to manufacturing and opens the way for new approaches to technology, medicine, education, sustenance and manufacturing. While manufacturing was often limited to those with access to factories and workshops, 3D printing avoids this constraint, providing manufacturing abilities to anyone, even private users at home, provided they can afford the thousand or so dollars required for a basic model (Marks 2011).

This transformation of the manufacturing process promises some positive ethical impacts. Traditional Capitalist manufacturing treats both consumers and factory workers as means to an end, in violation of Kant's dictum (Kant [1797] 1981 p.51). When the consumer is also the designer and manufacturer, alienation is not an issue (Marx & Engels 1976). Individual creativity replaces cynical manipulation of consumers and planned obsolescence. The cultural background of 3D printing is open source, exhibiting altruism and co-operation (Makerbot 2013).

2. Mind Machine Interface

Even in imagined utopias individuals producing goods and trading with each other presumably rely upon their skills or physical strength. 3D printing relieves that constraint, but Mind Machine Interface goes even further. Utopia can now include people who would otherwise be excluded for reasons of physical frailty or disability.

A Mind Machine Interface allows the user to control computers and devices through thought. Mind Machine Interface is also known as Brain Imaging Interface, Brain Computer Interface and Neural Prosthesis (Woolpaw et al. 2002, Green & Kalaska 2011, UPMC 2012).

While such machines are very much at the prototype stages, the basic method is to identify the intent of the user by measuring electrophysiological signals through the scalp and implanted electrodes, translating them into commands that operate computer displays or devices. The brain signals are converted into movements through remote devices known as effectors that could be anything from human shaped robots, to a joystick or a cursor operating on the computer monitor. The aim is to provide "real time" interaction, cutting down the waiting time often required for such machines to operate.

Mind Machine Interface would be particularly useful for those suffering from paralysis or severely reduced movement, such as those suffering from paraplegia and quadriplegia, multiple sclerosis, muscular dystrophy, "locked in" syndrome, strokes and other severe neuromuscular illnesses. Such machines may enable the disabled to move objects and do anything from feed themselves to switch on lights. Once the ability to move a cursor on a computer is established, controlling any other device becomes possible, eventually including, presumably, 3D printers.

Although it is in a very early stage of development with many barriers to functioning yet to be overcome, this technology promises obvious positive impacts. Assisting people with motor deficits is the most obvious beneficial application. It would greatly assist people to perform everyday tasks with a level of independence previously unheard of. Furthermore its potential to treat illnesses such as epilepsy, Parkinson's and those suffering from strokes may significantly reduce the number of people affected by these diseases. The impacts of this technology will continue to revolutionise medical treatments of many illnesses and disabilities. This will, in time, potentially enable people to utilise remote human brain-robot communications through speech, direct object control and the decoding of internal neuronal processes (Perez-Marcos et al. 2011, Tankus et al. 2013).

3. Bitcoin

Although internet transfer of information is borderless and cosmopolitan, trade is not because currency is run by nation states. The emergence of Bitcoin, and other internet currencies, challenges that. Bitcoin is a form of virtual cash

created through computers and the internet, completely bypassing any form of Governmental or bank institutions. This virtual cash is created through each user downloading and running a peer to peer client program on a computer that connects with other similar programs operated by other uses. Each user runs a mathematical program aiming to generate a number lower than a certain, constantly changing, number. The reward for this action is a number of Bitcoins (a number which constantly alters), given every ten minutes approximately. This ensures that while a certain amount of technical know-how is required, the luck needed to obtain these coins has been compared to gold mining so people involved in this business have been dubbed 'miners' (Aron 2011, 2012, p.20). Overall Bitcoins have become a virtual currency that has grown to be worth more than $100 million since 2009. The major appeal of this currency is that does not require an intermediary between payer and payee, such as a bank, financial institution like Paypal or the use of credit cards, which take their cut of each transaction (Cohen 2011, Westwood 2013).

There are however risks associated with Bitcoins. One is that of identity theft so as a defence most users protect their anonymity using a series of public keys which store confidential information and can be generated as often as required (Reid & Harrigan 2013). Similarly theft of Bitcoins is a risk akin to bank robbing. Due to the anonymity of this currency Bitcoin has been used in what is known as the 'silk road Tor' an online marketplace used to trade illegal drugs (The Economist 2013, Van Hout & Bingham 2013). This virtual currency is therefore just as susceptible to hacking, theft and illegal use as any other currency. Another problem with Bitcoin is that its value constantly alters, which makes ordinary transactions complicated. In this way the Bitcoin system can be likened to the stock market even though the value of this currency is kept 'artificially scarce' to prevent inflation related issues (New Scientist 2011, p.5). Overall the Bitcoin system brings into question the concept of integrity of money, thus breaking away from the traditional concepts of intrinsic worth and moving into a focus on relationships and exchange.

There are positive features of internet currencies, at least within the Libertarian and Cosmopolitan paradigms. Like 3D printers and Mind Machine Interface, they mitigate accidents of birth. Their users do not need physical strength to work in a factory or field, or the luck of inheritance to own the factory or farm. Bitcoin can be produced by anyone with sufficient intellectual (and computing) resources. Its value is decided by free transactions with other individuals and not subject to manipulation by governments.

4. Communitarian Concerns

With these technologies, people can now talk to whom they wish, exchange information with whomever they want, exchange money with whom they want, make and repair what they want, without barriers set up by their nationality, ethnicity, gender, creed, disability, or by cynical manipulative corporations and governments.

However, there is more to applied ethics, to the construction of just social arrangements, to political philosophy, than championing either individual liberty or cosmopolitanism. Cosmopolitanism assumes a universal ethical foundation. What should that foundation be? How is it to be discovered or constructed? Perhaps individual freedom is a candidate, but that cannot be simply assumed without question. There are other candidates, such as justice, care, and equality, for example.

Ethics does not arise from the realization that people are self-determining beings with interests. These may be necessary conditions, but they are not sufficient. Critically, human nature is gregarious. People are self-determining beings who live in communities. They satisfy their interests through co-operation with each other. Some of a person's interests are in common with another's; some are in conflict. People's lives collide and connect, entwine closely or distantly, provide opportunities for loving or loathing, for sympathy or furious competition. Hobbes maintained that people in a state of nature would be in constant war with each other (Hobbes [1651] 1996). Hume thought people were naturally sympathetic towards each other (Hume [1888] 1978). Both were right. Because people live in communities in which they experience both conflict and co-operation, they need to figure out how to treat each other. They need to set up social arrangements that are effective and acceptable. Ideally, this is achieved through conversation, exchanges of views, negotiation and rational argument, which is the very stuff of ethics, applied ethics and political philosophy. When Rousseau asked how could people construct effective social arrangement whilst protecting individual liberty, his question had two parts. He did not ask how can we protect individual liberty? Rather, he asked how we could construct effective social relations whilst protecting individual liberty. Rousseau argues that the very act of setting up a civil society ennobles people, substitutes 'justice for instinct' and initiates morality (Rousseau [1762] 1983).

The possession of a 3D printer may increase the self-determination, property and welfare of an individual. Access to the expanding array of emerging technologies and the internet may increase the opportunities for social and commercial interaction, as well as the exchange of goods and ideas. Such access does not, however, facilitate the construction of social arrangements, or even the enforcement of conflict resolution. People need to decide how goods should be distributed, how should self-determination be supported, or protected or maximized. They need to decide how to handle scarcity, how, or whether, to determine who gets access to new or scarce technologies. They need to agree on what obligations, if any, they should accept with regard to people who are not self-determining and happy, but who rather are struggling with poverty, illness, disability or just bad luck (Kalaitzidis 2008, Jewell et al. 2013). Having reached agreement (but probably not consensus), they need to figure out how to establish and enforce the agreed social arrangements.

Hobbes' argument for a social contract had but a single aim—to deal with conflict. This could only be managed, he argued, through deference to authority, an authority that would make judgments and enforce them. In his context, that would

be within the borders of a nation state. Even to begin discussions about what social arrangements are preferable, about what constitutes justice and what obligations people have to each other, would be futile without a presupposition that the results of those negotiations and discussions can be authorized, enacted and enforced, presumably within the borders of the community.

The internet, and the technologies we are discussing, are not constrained by the borders of a nation state. For some, this is a cause of celebration. As discussed above, perhaps the cosmopolitan ideal can now be realized. Diogenes the Cynic coined the term Cosmopolitan and Kant lauded the idea of universal humanity, so the wait for its practical realization has been many centuries (Kant [1787] 1981). When Diogenes said 'I am a citizen of the world,' he was refusing to be identified by his origin and defined himself as someone who valued universal standards of reason and morals. As Nussbaum (1997, p.5) puts it, 'Class, rank, status, national origin and location, and even gender are treated by the Cynics as secondary and morally irrelevant attributes'. Or, as a modern commentator has irreverently put it, 'On the internet, no-one knows you're a dog' (Steiner 1993).

Kant's injunction that we should treat every member of humanity as intrinsically worthy of respect is at the heart of both his *Grounding for the Metaphysics of Morals* and his *Perpetual Peace* (Bohman 1997).

For Cosmopolitans, communities are the cause of strife. Divisions such as class cause conflict within a community, and divisions along geographic or ethnic lines caused conflict between communities. In the days of the Greek Cynics, if you were born a peasant, that was your status and your life. Your livelihood depended on the strength of your body and your social horizons were at the borders of your village. Millennia later, in Kant's time, that situation was unchanged for many people. Indeed for the vast majority of humanity for almost all of its history, life experiences, aspirations and achievements have been determined by, and severely limited by, the arbitrary context of one's birth. But with emerging technologies, this picture is beginning to change. Without relying on bodily strength, or noble birth, or advantageous geography, an ordinary person could produce what he or she fancies, trade it with strangers and be paid for it in a global virtual currency.

In this utopia, though, the ethical questions of how we should treat each other, of what obligations we have to each other, of how we distribute benefits and burdens, of how we should resolve conflicts, remains to be answered. The picture of autonomous individuals deciding for themselves to be ethical, rather than conforming to imposed social norms, is attractive to radical constructivists (Jewell 1983). But freed from the stifling constraints of local communities, with their expectations, their loyalties and their prejudices, what guidelines would world citizens use in deciding how to treat each other (O'Shea 2013)? Cosmopolitans might say, "Well obviously with universal respect, with reason, and without passion and prejudice." Kant goes so far as to assert that it is in the very nature of people to treat each other properly, that 'Concord amongst men' is 'guaranteed by no less an authority than the great artist Nature' (Kant in Nussbaum 1997, p.15).

Traditionally, few political philosophers have shared Kant's optimistic view. Generally the approach has been to assume that people are fundamentally

self-interested and hence to attempt to find ways of forcing them beyond their egocentric views. Plato ([400BC] 1991) thought this could be managed by very few. Hobbes ([1660] 1996) argued that discord, not concord, was natural, so authority was needed. In contrast to Plato and Hobbes, Locke ([1821] 1993) did not even trust authority. Rawls (1971) recommended heroic feats of imagination to free people, at least hypothetically, from narrow self-interest in order to discuss justice.

The development of the internet and associated emerging technologies has revived an age old debate concerning the foundation of ethics. On one side of this debate is a communitarian approach, which envisages people as social beings who form agreements about how to treat each other, thereby establishing ethical norms and political philosophies (Jewell 2010). Opposed to this is the view that the source of ethics is the autonomous individual who, respecting universal humanity and rationality, freely self-legislates. The emerging technologies we have been considering here appear to favour autonomy rather than contribute to communitarianism.

For existing societies, the unconstrained denizen of the global internet presents practical problems. The matter of gun ownership serves as an example. One society may permit its citizens to own guns, while another may decide to prohibit that. A gun-averse society will need to prevent unauthorized manufacture and importation of personal weapons. The difficulty presented by emerging technology is that a 3D printer can be used to manufacture a gun. A computer file that instructs the 3D printer with the requisite computer code can be placed on the internet by a gun enthusiast in one society, and then downloaded by a citizen of a different gun-averse society with a locally manufactured gun as a result. This is now a practical reality, not a futuristic speculation (Sturmer 2013). While a few societies struggle to censor the internet, most have given up and resigned themselves to the realization that there is no way to control the flow of ideas, opinion and information, no matter how unpalatable. With the advent of 3D printers, communities will need to cope with undesirable objects, not just disturbing ideas.

Fears have been expressed that DNA could be emailed maliciously or accidentally to 3D printers in order to manufacture micro-organisms capable of starting a pandemic. Disease does not respect borders. In practice, the way that a particular community deals with matters of public health can quickly become a global problem (Garrett 2005).

If a new global cosmopolitanism is replacing the restraints of local communities, is setting up a world government with universal restrictions the proper and inevitable response?

It seems that every opinion and ideology can be found on the internet, but arguments in favour of world government are not dominant. The opposite is the case. Discussions that exhibit suspicion and fear of governmnet are common on the internet (Levy 2014). Allied to this are arguments in favour of anonymity. The paired attitudes of anonymity and anti-authority may be a feature of the internet itself, or perhaps a reflection of American culture (Gunn 2013). 3D printers originated in America. Mind-Machine Interface is being developed in a number of countries around the world, and the inventor of Bitcoin is unknown and

anonymous. Protection of privacy, including protection *against* government power rather than by government, is emerging as a significant concern (Doctorow 2008, Duff 2012).

Prima facie, anonymity does not facilitate community. A Cosmopolitan might view a community as a means of oppression, of locking people into a social class or ethnic stereotype, whilst a communitarian might in contrast envisage an opportunity to forge mutual relations, obligations and expectations. Holders of either view, though, would presumably acknowledge that people can evade social expectations more readily if no-one knows who they are.

Conclusion

We have argued that ethics arises from a combination of factors. One factor is that people have interests. Another is that people are self-determining. A third is that they are social. These characteristics are not absolute nor isolated from each other. It would be a distorted view of human nature which insisted that people were entirely self-interested, or that they were absolutely autonomous or that they were nothing more than their social role, though such views are proposed from time to time (Stevenson 1974). As people form relationships, as they construct and live in communities, they find that some of their interests are in common and some are in conflict. They need to somehow reconcile their individual interests and ambitions with the constraints, expectations and benefits of living in a community. Cosmopolitanism seeks to downplay narrowing stereotypes such as class, gender, and ethnicity that can be imposed by a person's social relationships. This ideal can be facilitated in a practical way by emerging technologies articulated with the global reach of the internet. This provides a contrast and a challenge to the customary and traditional assumptions of applied ethics and political philosophy. Traditionally, people have produced things through their physical labours or through the operations of technologies in factories, or if they were fortunate to be born in the right class, they would own the means of production. Traditionally, people have been paid for what they produce in money minted and regulated by a state authority, which also arbitrated conflicts and enforced their resolution. The emerging technologies discussed above provide alternatives to physical labour, to factories and to state regulated money. The constraints of geographical location, gender, class, ethnicity, personal identity and even disability become redundant.

These technologically facilitated freedoms present serious challenges to the ethical arrangements of communities, ideologically and in practice. Practically speaking, governments fund social welfare programs through taxation, but anonymous Bitcoin transactions are difficult to tax. Practically speaking, government officials can search in-coming freighters for prohibited imports, but home owned 3D printers are more difficult to police. Ideologically speaking, people in communities need to make decisions concerning the distribution of goods and obligations. What are a community's obligations to those of its members who are experiencing poverty, illness or disability? What proportion of public health,

or security, or education should be financed by taxation compared to personal responsibility? A local community can decide and act upon these issues. A loosely connected global association of autonomous and anonymous individuals cannot. Cosmopolitanism, in theory, and in its realisation through emerging technologies, fails to deal with real problems in Applied Ethics.

The challenge—that of maintaining personal freedoms whilst building fruitful social arrangements—requires continuous negotiations. Emerging technologies impact on these negotiations. On the one hand, they promise increased personal freedoms and spectacular benefits. On the other hand they threaten the very fabric of communities and the mechanisms that allow and enforce negotiated social arrangements. The challenge has taken on a new dimension, but the means to navigate it are not currently apparent.

References

Aron, J. (2011) Future of money: Virtual cash gets real. *New Scientist Magazine,* 6th June: 23-25.

Aron, J. (2012) Bitcoin rises again: the online currency's software could secure evoting and foil censorship. *New Scientist Magazine,* 14th January: 20.

Bohman, J. & Lutz-Bachmann, M. (1997) *Perpetual peace*: *essays on Kant's cosmopolitan idea.* USA Mass.: MIT Press.

Cohen, N. (2011) Speed bumps on the road to virtual cash. *New York Times, late edition,* 14th July: 3.

Doctorow, C. (2008) *Little Brother.* UK: Harper Collins.

Duff, A. (2012) *A Normative Theory of the Information Society,* USA: Routledge.

The Economist (USA) (2011a) Print me a Stradivarius: How a new manu-facturing technology will change the world. *The Economist,* 12th February:11.

The Economist (USA) (2011b) The printed world; 3D printing. *The Economist*, 12th February: 77.

The Economist (2013) Mining digital gold: virtual currencies. *The Economist,* 13th April: 69.

Garrett, L. (2005) *Concerns as new organisms are developed in labs and kitchens.* Australian Broadcasting Corporation. http://www.abc.net.au/radionational/programs/scienceshow/concerns-as-new-organisms-are-developed-in-labs-and-kitchens/4843086#transcript : Accessed 2 Sep 2013.

Green, A. & Kalaska, J. (2011) Learning to move machines with the mind.*Trends in Neurosciences*, Vol.34: 61-75.

Gunn, G. (2013) *Ideas to Die For: the Cosmopolitan Challenge* UK: Routledge.

Harouni, L. (2013) *A primer on 3D printing,* http://www.ted.com/talks/lisa_harouni_a_primer_on_3d_printing.html : Accessed 24 Nov 2013.

Hobbes, T. (1996) ed Gaskin, J. *Leviathan,* Oxford: Oxford University Press.

Hume, D. (1978) *A Treatise of Human Nature.* USA: Oxford University Press.

Jewell, P. (1983) *By What Authority,* Australia: AMADA.

Jewell, P. (2007) Competing Roles of Dogma and Humour in the Construction and

Critique of Social Arrangements. *New Zealand Sociology,* Vol. 22: 260-274.

Jewell, P & Kalaitzidis, E. (2013) Arguments in professional ethics concerning justice and autonomy. In *Applied Ethics Risk Justice and Liberty*. Japan: Centre for Applied Ethics and Philosophy Hokkaido University.

Jewell, P. (2010) *Disability Ethics,* USA: Common Ground.

Kain, A. Mueller, C. & Reinecke, H. (2009) High aspect ratio- and 3D-printing of freestanding sophisticated structures. *Procedia Chemistry,* Vol.1:750-753.

Kalaitzidis, E. (2008) *Client Centered Nursing Ethics,* Germany: Lambert Publishing.

Kant, I. (1981) *Grounding for the Metaphysics of Morals.* Translated by Ellington J. USA: Hackett Publishing Company.

Kucukgul, C. Burce, O. Ezgi, K. Devrim. G, & Bahattin, K. (2013) 3D hybrid bioprinting of macrovascular structures. *Procedia Engineering,* Vol.59:183-192.

Levy, S. (2014) How the NSA nearly destroyed the internet. *Wired* 08 January 2014.

Lobson, H. (2011) This will change everything: 3D printing will revolutionise the way we live our lives. *New Scientist Magazine*, 30th July: 20.

Locke, J. (1993) ed Yolton, J. & Goldie, M. *Two treatises of government.* London: Dent.

Lowry, C. (2011) Holy pancreas! modified inkjet printers can already make ceramics, running shoes and stem cells. what's next? (Interview). *Alternatives Journal,* 37.6 Nov-Dec: Vol:34.

MakerBot (2013) *Thingiverse* http://www.thingiverse.com/about : Accessed 26 Nov 2013.

Marks, P. (2011) The many flavours of printing in 3D. *New Scientist Magazine,* 30th July:18.

Marx, K & Engels, F. (1976) *The German Ideology* 3rd edn. Moscow: Progress Publishers.

Mironov, V. Boland, T. Trusk, T. Forgacs, G. & Markwald, R. (2003) Organ printing: computer-aided jet-based 3D tissue engineering. *Trends In Biotechnology,* Vol.21: 57-161.

New Scientist (2011) The future of money: Back to a networked future. *New Scientist Magazine,* 6th June: 5.

Nussbaum M. (1997) Kant and Stoic Cosmopolitanism. *The Journal of Political Philosophy,* Vol.5:1-25.

O'Shea, T. (2013) A Law of One's Own: Self-Legislation and Radical Constructivism. *European Journal of Philosophy,* August 2013: 1-21.

Pérez-Marcos, D. Buitrago, J. Velásquez, F. (2011) Writing through a robot: A proof of concept for a brain-machine interface. *Medical Engineering & Physics,* Vol.33: 1314-1317.

Plato (1991) *The Republic of Plato:* Translated with introduction and notes by Cornford, F. USA: Legal Classics Library.

Rao, K. (2012) An Indian village ban on mobile phones for women? It's like trying to ban eating. *The Guardian* 8th December. http://www.theguardian.com/commentisfree/2012/dec/07/indian-village-ban-mobile-phones-women : Accessed 26 November 2013.

Rawls, J. (1971) *A Theory of Justice*. USA: Harvard University Press.

Reid, F. & Harrigan, M. (2013) An analysis of anonymity in the Bitcoin system. *Security and Privacy in Social Networks*, New York: Springer.

Rousseau, J. (1983) *The Social Contract and Discourses.* UK: Dent.

Steiner, P. (1993) On the internet, no-one knows you're a dog. *The New Yorker,* July 5th.

Stevenson, L. (1974) *Seven Views of Human Nature,* UK: Oxford University Press.

Sturmer, J. (2013) Printed weapon triggers gun control concern. *ABC News* May 8th. http://www.abc.net.au/news/2013-05-07/printed-weapon-triggers-gun-control-concern/4675704 : Accessed 27 August 2013.

Tankus, A. Fried, I. & Shohan, S. (2013) Cognitive-motor brain-machine interfaces. *Journal of Physiology- Paris,* Article in press.

UPMC (2012) *Woman With Quadriplegia Feeds Herself Chocolate Using Mind-Controlled Robot Arm in Pitt/UPMC Study.* University of Pittsburgh Schools of the Health Sciences http://www.upmc.com/media/media-kit/bci/Pages/default.aspx : Accessed 26 Nov 2013.

Van Hout, M. & Bingham, T. (2013) 'Silk road,' the virtual drug marketplace: a single case study of user experiences. *International Journal of Drug Policies*, Article in press. http://dx.doi.org/10.1016/j.drugpo.2013.01.005 : Accessed 26.11.13

Westwood, R. (2013) The cold, hard cash of the internet: why Bitcoin is the banking industry's newest, biggest threat. *Maclean's,* 126.1 14th January: 48.

Wolpaw, J. Niels, B. McFarland, D. Pfurtscheller, G. &Vaughan, T. (2002) Brain-computer interfaces for communication and control. *Clinical Neurophysiology.* Vol.113: 767-791.

Ethical Issues in Multifetal Pregnancy Reduction

Anthony GRAYBOSCH

In this paper I consider the special case of multifetal pregnancy reduction applied for social reasons to twins. This discussion leads me to develop a modified view of prenatal rights and a position on selective reduction which focuses on the rights and responsibilities of the contracting couple.

1. Multifetal Pregnancy Reduction (MFPR)

Contemporary reproductive technologies, assisted reproduction technology and fertility drugs, have made it possible for many more women to conceive. Sometimes reproductive technology works too well and results in multifetal pregnancy. Clomid, a fertility drug, induces the release of more than one egg at a time and so is conducive to multiple conceptions. IVF commonly increases the chances of successful implantation and reduces medical costs through multiple implantations. In the United States, it is common practice to implant two to four embryos at a time to avoid repeating the procedure which comes with a $12,000 fee.

Multifetal pregnancy is increasingly addressed by a reduction (MFPR). MFPR is referred to as selective reduction when the fetus selected for termination is severely deformed or might die later in the pregnancy making it a threat to the life of the mother and the survivability of the other fetuses. The reductions performed for medical reasons are typically from multiples to twins; or at least that is what has been the case and is reflected in most information sources. But twins are multiples also; and reductions from twins to singletons are increasingly common. And the information sources I have consulted increasingly cite health differences occasioned by twins as well as those connected to true multiples.

Some European countries require that only one embryo be implanted in each IVF; but many of these countries also cover the medical costs of the procedure. (Marchione 2013) And even if the United States were to adopt a one embryo per IVF rule, there would still be many cases of multiples brought about by other forms of reproductive technology. But Marchione notes that medical practioners in the United States are increasingly concerned about IVF and the twin problem:

> The American Society for Reproductive Medicine is trying to make it [single embryo transfer] the norm in the U.S., too. Its guidelines, updated earlier this year, say that for women with reasonable medical odds of success, those under 35 should be offered single embryo transfer and no more than two at a time. The number rises with age, to two or three embryos for women up to 40, since older women have more trouble conceiving. (Marchione 2013)

The medical benefits of MFPR to the mother include reducing her chances of developing gestational diabetes and anemia. The health benefits to the surviving fetuses are a lower frequency of both miscarriage and premature birth with its associated health complications. MFPR slightly increases the risk of uterine infection. Miscarriage occurs in 5% of post MFPRs from multiples to twins; yet the miscarriage rate for triplets is higher than that for post MFPR twins.

Intuitively, the case of twins seems different from that of true multiples. Twins occur often enough naturally to make it seem to many that twins are a normal or natural event rather than a condition to be avoided medically. I mention this intuition about twins because it is not just my intuition but a prevalent enough one among the population in general and medical professionals and technicians. However, medical literature dealing with multiples increasingly highlights the medical risks of twins versus singletons. In other words, what used to be seen as a MFPR for social reasons is now increasingly seen as an MFPR for medical reasons. One example of increased medical risk cited by Marchione is the difference in number of premature births.

MFPR is performed between the ninth and twelth weeks. Ultrasound guides the technician; potassium chloride is injected into the heart or umbilical cord of the fetus. The medical procedure includes an evaluation of the fetuses for birth and congenital defects. In the absence of medical indicators fetuses are selected based on accessibility.

In the case of true multiples, MFPR is, on balance, in the health interests of the mother and surviving fetuses. It is a demanding visual experience for the technician; the mother can be spared watching but does experience the insertion of the syringe. It must be an especially disturbing experience given that it is a reduction and that this is a mother who wants a child. Certainly the health considerations involved in medical MFPR provide some consolation and justification for both the technician and the mother. In the case of twins, MFPR may be desired for social reasons—the parents desire one child, or one child now, or a female or male fetus to complete a two child family in the desired manner. And even when medical factors such as the increased chance of premature birth with twins are considered in making a medical decision, the mother is left with the issue of which to select. And neither fetus may be one who would qualify medically for a selective reduction.

2. The Beasley Case

The case I am about to describe involves a surrogate; it is only one context in which social MFPR was actively considered. But the different views of the ”mothers” on social MFPR and the conflicting intuitions provoked by the case help highlight important value issues raised by MFPR and reproductive technology. I hesitate to call it a case study. “Case study” suggests that the relevant facts are more or less uncontroversial. In this case the participants have an intimate and emotional involvement which cannot help but spin how each person sees the motivations of

the participants. Real people have mixed motivations and varying degrees of self-understanding; they often do not hear each other. For instance, the surrogate at one point claimed that the intended couple rejected both twins while the couple insists they wanted one child and found an alternative family for the other. So it might be better to consider this a thought experiment.

In 2001 I stumbled upon the intriguing "story" of Helen Beasley and her American clients Charles Wheeler and Martha Berman. (BBC 2001), (Daily Mail 2001), and (Robinson 2001) Beasley and the Wheeler-Bermans became entangled in a surrogacy arrangement. Beasley was a 26 year old surrogate, employed as a legal secretary, and single mother to a nine year old boy. Wheeler and Berman are both California attorneys residing in the San Francisco Bay area. Beasley felt sorry for childless couples and desired to help; Wheeler-Berman agreed to pay her $20, 000 (2, 215, 000 yen or 14, 000 pounds). The sperm was Wheeler's; the egg was provided by Wheeler-Berman from an unnamed third woman. So Beasley was not a gestational surrogate. That term is reserved for instances in which the fetus is biologically related to both the male and female in the intended couple. In this case, only Wheeler and not Berman was biologically related to the offspring.

The arrangement went bad when Beasley discovered she was having twins. All parties agreed that she had signed a contract agreeing to have a pregnancy reduction before 12 weeks. The disagreement centered initially on whether Beasley had notified her clients in time and whether the clients had responded and made arrangements promptly. This, of course, is legally and morally of little relevance. No one could have held Beasley to a MFPR under United States law; nor could the contract hold up in a court of law. It is not just because Beasley was not an American citizen. It is also that *Roe vs. Wade* effectively makes the woman carrying a child the final authority on deciding on a first term abortion. And unless one is an absolutist social contract theorist there are other values that must be consulted before determining which promises and contracts are morally obligatory. The most that could be said about Beasley's refusal of MFPR, before or after 12 weeks gestation, is that she was morally at fault for giving the impression that she would have had the reduction when she signed the contract.

The dispute escalated when Beasley refused MFPR for health reasons at 13 weeks and Wheeler-Berman threatened to withhold payment. Beasley then decided that Wheeler-Berman were entitled to neither child because of their request for MFPR. Beasley's stance may have shifted ground from medical to social reasons; or she may have shifted back and forth. She is within her moral and legal rights to consider the health effects of abortion after 12 weeks although she was misinformed when expressing her concern about MFPR and miscarriage:

> Basically they don't want two babies and although we did have it in the contract that if there was multiples we would reduce, they left it too late in arranging the appointment to reduce them…. I thought I just couldn't do it….. There is a risk to the other baby as well. If you are reducing one and the risk of miscarriage is higher, you could lose both of them. (Daily Mail 2001)

But in approaching the subject of the eventual placement of the twins she discounts Wheeler-Berman on social grounds—their reluctance to accept twins. Here she appeals to the best interests of the twins in being placed together and sees herself as the one who should initiate the adoption since Wheeler-Berman will not act in their best interest and keep both fetuses.

So the conflict is muddied; we are not sure what is more important here medical or social reasons. Of course, since Beasley intends to bring the two fetuses to term she never considers either type of reasons for termination. And the medical and social reasons can both be used to support an MFPR. If we imagine Wheeler-Berman clarifying the argument for MFPR then medically they could argue that MFPR increases the chances of having one successful birth and socially that MFPR is needed for both family planning and autonomous construction of a plan of life. But the medical reasons for MFPR with twins are not as drastic and convincing as those with true multiples and the social reasons are not convincing for many people when applied to twins.

I think it is important also to consider what Beasley might have meant when she implied that she wanted to avoid the risk of loosing the unaborted twin. It may be, as I remarked above, that she just did not understand that the risk of miscarriage with a singleton is less than that with a twin. But she might also have meant that if the miscarriage occurred spontaneously she would not have felt responsible. But if it happened after an MFPR then she would have felt that her decision was part of the chain of events leading to the loss of the singleton. And this consideration is also relevant to her health if we imagine it leading to depression. Intuitions about letting nature take its course probably also lead people who would accept twins the natural way to consider it permissible to use MFPR when multiples result from fertility treatments.

Interestingly enough, although Wheeler-Berman wanted one additional child long term and Beasley wanted none, Beasley decided that she should be the one to decide who adopted the twins. It is not the case that Beasley was arguing that she should keep the twins herself. She had her own social reasons that precluded taking on two (or even one) more children. She saw her own willingness to birth both twins as an indication of her superior interest in the children's happiness. Beasley also traveled to California to give birth to insure that the Wheeler-Berman's were held financially responsible for the twins. Under California law it is the intended parents and not the gestational surrogate who can place children for adoption. In the United Kingdom Beasley would have been considered the primary parent under law but lacked an enforceable financial arrangement. So Beasley also went to court in order to establish her status as the primary parent in the United States and to gain financial support. Perhaps her desire to place the twins together is in line with the best interests of the not-yet-born children. Still, no parents lose custody or forfeit parental responsibility by not acting in children's best interests. During the dispute Wheeler-Berman found another needy couple willing to adopt one of the twins and so the need for MFPR disappeared. Beasley did not accept this suggestion. It probably would be in the best interest of the twins to be raised together. Yet it hardly amounts to abuse to raise them separately.

The matter was settled privately; the twins adopted together by a couple. One thing to note in passing is the lack of uniformity in how different locations determine the primary parents. In the United Kingdom it would have been Beasley while in California it was Wheeler-Berman. And within the United States there is also disagreement between states as to whom has initial parental responsibility—the surrogate or the contracting parents.

3. How Many Parents?

Surrogacy, gestational or mixed, is an application of reproductive technology; fertility drugs also produce multiple pregnancies. It is not the technology alone that makes the ethical problem significant. Technology developed for one use expands and often enhances life for many more persons than the initial audience. Subtitles give the hearing impaired access to television and film. But many more people with no knowledge of a language but with adequate hearing can access video productions thanks to subtitles. I do not know Italian. Yet, thanks to subtitles, I enjoy television productions of *Inspector Montalbano*. MFPR developed for true multiples can be applied to twins produced by fertility treatments and also to "natural" twins in the interest of family design.

The Beasley case does demonstrate the need for open discussion between the participating parties in a surrogacy situation over acceptable social reasons for MFPR. The same sort of discussion would be useful between parents in determining acceptable moral reasons for using MFPR with ordinary twins. As the Beasley case unfolded, the social reasons offered by Wheeler-Berman did not convince Beasley. At one point it is suggested that Wheeler-Berman wanted to rid themselves of both twins because they had discovered that the egg donor, not Beasley, had a weight problem. It is not explicitly mentioned by anyone that as a professional couple Wheeler-Berman had the resources to care for two children. Yet it is one of the first considerations my students verbalize. And even though Beasley was compensated generously compared to fees charged by foreign clinics such as those in India, my students see Beasley as financially exploited.

I think that reproductive technology will force an expansion of the concept of primary parent beyond two due to the increased frequency of blended families and cases of open sperm or egg donation. In other words, three or more adults could be recognized as primary parents on birth certificates. This indicates the importance of discussion of social reasons for MFPR; it is more important in guiding use of innovations such as MFPR or placing surplus embryos for adoption than determining primary parenthood. The first step is not to determine whether the two married lesbians who used donated sperm from a homosexual male friend are the primary parents. All three should be presumed to be primary parents who must develop an agreement on questions such as MFPR or follow explicit social policies.

4. My Incorrect Intuition

For years I thought that social MFPR would never be a seriously problematic social issue because instances of reductions of twins would be extremely rare. Most people facing multiples would reduce to triplets or twins; people facing twins would just adjust. But the increased popularity of IVF technology with older women desiring a manageable family size has resulted in increased demand for social MFPR. One report states that reductions to singletons at Mount Sinai Medical Center in New York were 15% of MFPRs in 1997. In 2010, 61 of the 101 reductions at Mount Sinai were to singletons and 38 of the 61 operations were performed on twins. Technicians and physicians have also been quoted as feeling reluctant to perform reductions in the absence of the health reasons apparent in truly multiple pregnancies. (Padawer 2011, 2)

How should Wheeler-Berman be regarded? They are not refusing to have children; they desire to limit the number of children they will have. If Wheeler-Berman decided to not reproduce at all, few people would consider them morally wanting. And if Wheeler-Berman became pregnant the natural way and decided to abort, few people would find them morally wanting or feel that they should have a socially acceptable reason to do so. They seem to want children more than many other people. They turned to a surrogate only after trying other alternatives and were willing to pay a substantial sum of money. There is no reason to regard Wheeler-Berman as reluctant or unfit parents. I am inclined to see them as deserving moral praise for having and raising even one child. But maybe the reason for the lack of sympathy for Wheeler-Berman is that sextuplets are made more frequent by technology while twins have been fairly frequent throughout human history. Many people who wanted one and got two just adjusted and the fact that an instance of twins was caused by technology just does not seem unusual enough to merit special consideration. Yes these twins were caused by reproductive technology; but shouldn't women, especially of a certain age, reasonably expect twins when impregnated the natural way?

Austin urged us to consider what range of verbs "doing an action" could stand-in for and also what characteristics made actions the same actions. "Further, we need to realize that even the simplest named actions are not so 'simple'—certainly are not the mere makings of physical movements, …." (Austin 1956, 5) The medical reduction of sextuplets to twins, the abortion of a single fetus for medical or social reasons, the reduction of twins to a singleton have common physical movements. But the intentions of the participants and the place of the individual action within a larger plan of life are radically different. These are not all abortions in the same sense, in the sense of same action. It used to be a common saying that abortion should not be used for family planning. Now it looks like MFPR for social reasons could indeed be an example of that type of action.

So I am suggesting that social MFPR be regarded as more like deciding that the best interest of a family including a single child would be to have just one more child. Wheeler-Berman are more like a couple without fertility problems desiring to

limit family size than like a couple of singles deciding to have no child now or ever. In the Beasley incident, the best interest of the twins is to be placed together. But the twins are not yet born; let alone persons. It might be argued that the situation of the soon to be singleton twin is akin to a single child. It might be in the eventual child's interest to have a sibling, to not be alone. That line of argument would not necessarily pick out this unselected fetus for birth as opposed to a future one. And neither the singleton nor the selected fetus is a person when MFPR is performed. So it would be problematic to consider the issue from the point of view of the unborn's interests. Another line of argument would be that although the fetuses do not have a right to life they are not without moral status and that status requires that the reasons for social MFPR respect human dignity.

There are multiple reasons for developing social reasons for MFPR: concern for human dignity, respect for the moral values of medical professionals, recognition that those seeking reductions are people worthy of moral respect, avoidance of conflict in surrogacy situations, and concern for the eventual impacts on parents and children. Instead of looking at couples such as Wheeler-Berman as both wanting and not wanting a child it will be helpful to see them as engaged in a collective effort of family building. I also need to remark that "the best interests of a child" would be an extremely high standard of evaluation to apply in any family conflict of interests. It functions reasonably enough in law where it means prioritizing children's interests. But consistent literal application of that standard, whether it be to an instance of multiple pregnancies or deciding on private school tuition, would make being a parent unbearable.

5. Prenatal Rights

Prenatal rights are controversial due to spillover into the conflict laden discussion of fetal legal rights versus a woman's legal right to choice. Thomas Murray advocates both tying prenatal rights to eventual personhood and limiting those rights with the "child-as-maximum" principle—"…whatever moral obligations we have to not-yet-born children, they cannot be more weighty than our obligations to our born child." (Murray 1996, 108.) Prenatal rights are rights not to be harmed in a way before birth that will negatively affect a child after birth, or after achieving personhood. The child-as-maximum principle applies only to the not-yet-born ticketed for birth. The rights of the not-yet-born are not only tied to eventual personhood but also fixed so that duties to the not-yet-born never trump the already born. Murray's is an interesting strategy for thinking of the prenatal rights of at least some fetuses that sidesteps the abortion issue.

So smoking while pregnant, or smoking while in the vicinity of a pregnant person, is morally wrong because the not-yet-born might develop asthma later as a person. One might wonder if it would be permissible for the pregnant person to waive her and the fetus' rights to a smoke free environment. It is also interesting to ponder our response to the statement, "Go ahead and smoke. I do not mind and I am not keeping this fetus." And the approach may also seem puzzling since it disallows

smoking but allows what seems intuitively worse—killing. But Murray's limited account of prenatal rights attached directly to the not-yet-born is an improvement over accounts which limit rights until after birth, or personhood, or so restrict prenatal rights that they are always trumped by adult rights except in the most ridiculous circumstances.

The not-yet-born children in social MFPR are not both ticketed for birth. Or maybe it is better to think of them as like airplane passengers, ticketed but on a routinely overbooked flight. In our hypothetical case only one of the fetuses is going to have the ticket honored. And the procedure by which one is unselected is, on an account like Murray's, morally permissible since there is no eventual harm after birth to the fetus with the invalidated ticket. But the procedure is one that does contain the potential for harm to the validated fetus as a person. And so the MFPR does have moral relevance given its potential for eventual harm to a person in cases of multiple pregnancies. It is interesting that this notion of prenatal rights finds abortion of a singleton unproblematic but abortion of one of twin fetuses morally problematic. But it improves on the intuitive puzzle about twins by specifying a morally relevant distinction between aborting a singleton and reducing twins to a singleton. Let us call this the impact exception.

It is only fair to ask whether this prenatal activity does hold real potential of harm to grown children. Many people my age (64) do think of themselves as wanted children; but probably more younger people feel as if they were planned births. I was not; I was an accident on a vacation to Florida. But in an important sense no child, or almost no child so far, is wanted. No child turns out just like the parents planned and desired. Now the circumstances of our conception can seem important especially if we come to think as adults that our parents' love for us has been less than satisfactory. I do not mind being an accident because my parents eventually got over it and came to love me in a passable manner before I became aware of the circumstances surrounding my conception. But suppose one of my parents told me that I was born mainly because she opposed abortion. Certainly that revelation could result in damage to our relationship and impact my well being for a lifetime. Now children selected for birth in MFPR are obviously wanted in the broad sense. But such a child is vulnerable to wondering eventually why me, rather than her sister. In other words, it is important for the wellbeing of born children that parents have a response that will seem morally and socially acceptable to an adult child rather than "we flipped a coin" or "we let the doctor decide."

Now I am not sure what an acceptable social reason would be. And I know many readers would be puzzled also because they are surprised like I was at a reduction from two to one. But the parents will have had many years to transfer a sense of values to this adult child and regardless of whether I would be convinced by "our career only left us with room for one child" this could plausibly satisfy an adult child raised by such parents. In other words, there are two questions here. One is what are morally good reasons for a social MFPR. The other question is whether it is important in fulfilling moral responsibilities to born children to have a plausible account for where their twin went. I claim the answer to the second question is yes.

Some might want to dismiss the impact exception by saying that the occurrence of MFPR could be kept private. Maybe, but privacy is increasingly difficult to maintain and many parents find themselves desiring not to keep such information private from children, family, and friends. Also as a practice becomes more common then others, including our children, are going to ask us whether we engaged in sperm donation or use Viagra. Finally, it could be argued that there are no grounds for thinking that such circumstances surrounding birth are potentially harmful to the persons whose tickets were validated. But at the very least these situations should be studied empirically to determine whether harm arises. Circumstances do seem relevant in similar situations such as death of a parent, adoption, and abandonment. The impact exception indicates at least two things: (1) the reason for selection should be one the parents own in order to ameliorate the effects of social MFPR and (2) the reason for a social MFPR should be one that fits the parental value system so that parents have a decent chance of communicating similar values to a child before MFPR arises as an issue.

I have not distinguished medical and social MFPR in this section because it seems to me that most adult children would find medical MFPR unproblematic.

6. Why Have Children?

In the *Symposium,* Plato introduced his ladder of love through his spokespersons Socrates and Diotima. All of us, but especially the young, desire to create something beautiful with the intimate involvement of another person we consider beautiful. Plato placed heterosexual procreation at the lowest rung of the love ladder. But it is still on the ladder, the beginning step valued partially for awakening us to other creative outlets. As we climb the ladder the meaning of "child" in Plato expands to include books, laws, culture, and social institutions. These more eternal children, these more intellectual ways of parenting, help us see that heterosexual reproduction is dangerous to a fully human life. (Plato 380 BCE, 205a-206e) Children then, as now, impact an adult's ability to pursue a career, public office, or advanced study.

Plato cites immortality through offspring and satisfaction of an innate desire to create beauty as reasons for intentional parenting. (Aristotle 350 BCE) offered a wider variety of reasons in his *Politics* and *Nicomachean Ethics*, some more practical than others, for biological reproduction including: creating a bond between spouses, satisfying the duty to the state to repopulate without immigration, producing a physical image of oneself which is the closest alternative to immortality, producing persons who will honor parents, providing labor for the household, and creating persons upon whom we would enjoy bestowing benefits.

Confucius also presented children as utilitarian helpers, individuals who will honor parents, occasions who evoke the natural heart-mind for all humanity, conduits of a culture's values, and a means to experience immortality as we observe grandchildren reliving our lives. Our natural degree of caring for grandchildren recalls the love bestowed on us by our own elders. (Wang,1999)

So there is an abundance of reasons to have children. And it is also not surprising to find overlap in these philosophical accounts. Some reasons might appear archaic, for instance, Aristotle's political duty to reproduce. At first look it seems obviously overruled by autonomy. But contemporary sex selection processes will eventually lead us to take this aspect of selective reproduction seriously.

There are two reasons for procreating I will add. Children transform an adult's relationship with other adults by introducing uncertainty. There is uncertainty in the emergence of day to day events and in the eventual worth of the product. Not all children eventually seem to have been worth the years of effort. But still, there is significant satisfaction in discovering the ability to deal with such eventualities. And, of course, another reason to have children is to demonstrate commitment to a spouse and family. As Chuang Tzu claimed, "Friendship is made perfect by calamity." (Merton 1965, 116)

Margaret Little (2005, 9-10) points out several reasons why women might not procreate: medical risks, psychological reactions, increased probability of being a victim of domestic violence. Children are also unlike many other worthwhile projects. It is much easier to put aside a writing project or put off satisfying the needs of another adult than it is to put aside a child. Few other projects have the potential to fully take over whatever area of autonomy remains to an individual once physical and economic needs are satisfied.

Little (2005, 16) regards abortion as justified as a refusal to create in unacceptable conditions. MFPR is similar but it is a matter of limiting creation quantitatively and enforcing an overall family design. The desire to procreate is there along with the regrettable but technologically unavoidable complication brought about by too much creativity. The first draft needs to be edited. Little also observes that bringing about a life should not do violence to a parent's ideals early in the parenting process. Her observation is connected to abortion in general. Still the observation highlights another reason for insisting that social MFPR be tied to parental decision-making. Social MFPR should be performed for reasons the parents own lest it lead to alienation from parenting during a crucial period of early life.

> Consider her argument:
> Early in pregnancy, abortion should be unrestricted, not because the embryo and early fetus have no value, but because pregnancy asks an enormous amount of a woman, and she is in the best position to judge whether it is a price that can be paid. As pregnancy continues, it takes more justification decently to abort, but the woman is still the proper authority for making decisions about whether that justification is reached. Late in pregnancy, the fetus' status and viability solidify; abortion—an act that aims at the death of the fetus rather than just bringing about an early end to gestation—is a grave affair that should be reserved for unusual cases involving the health of life of the mother (Little 2008, 333).

But MFPR is different from simple abortion in one important way. Social

MFPR has implications for someone who will have his or her ticket validated for the whole trip. It does no good to argue that X need not be considered in abortion because X is an early c*onceptus* who would not have even been conceived except for dependence upon us. Y is there and will persist. Will the procedure surrounding X's dismissal effect Y when Y reaches the state of having moral standing? I do not mean this objection to apply to medical MFPR or even to simple abortion. In cases of social MFPR serious medical reasons may not be present to warrant or guide selection and there remains no clear cut reason to privilege the interests of one family member in a collective creative enterprise. It is not obvious that the woman is, as in simple abortion, in the best position to decide.

7. The City Planner Analogy

Beasley was willing to raise no children; Wheeler-Berman were willing to raise one. Beasley is unlike the homosexual male sperm donor attached to the lesbian couple introduced above. Beasley desires limited involvement; he desires to be around to see the collective effort realized. Wheeler-Berman also were not just willing to be around and be responsible early in the process. Their willingness was to accept a longterm involvement that would have included financial, emotional, career, and everyday impacts and disruptions. Beasley and Wheeler-Berman lack commitment to pool wills and constitute a plural subject, to participate in the joint act of creativity Plato alluded to in the *Symposium*. (Gilbert 1990, 7)

My city of residence has a growth plan in place since 2005 titled Chico in 2030. There are a significant number of measures in the plan that many, including myself, find problematic and the economy has already disrupted and aborted several components of the plan. The main city planner moved on to another job several years ago.

If I were a city planner I would feel obligated and inclined to stay local and see how my plan was implemented. And if I had power over a city planner, perhaps over the details of her employment contract, I would build in accountability for the results. Beasley, like our runaway city planner, has neither permanent creative involvement nor any serious accountability for the outcomes of the two embryos. These planners reject intimate involvement as creative individuals, and as artists. It would be hubris for either to object to alterations of their plans given their termination of involvement.

Accountability for authorship suggests legal responsibility and perhaps legal sanctions. I do not wish to appeal to either in my argument. To rely on appeal to legal, or even moral, rights rather than inclination and creative ownership within the family is to admit failure. Rights are a safety net to protect children in failing families. Rights talk signals that it is appropriate for the state or community to become involved in protecting some family members from others. Here justice is seen as needed where justice should not be needed because of familial love and loyalty to a collective creation. Rights talk also emphasizes the independent existence of family members over a shared self. (Schoeman 1999, 220) Family

decisions about MFPR for social reasons are appropriate because they recognize and reinforce parental involvement in a long term process based on inclination. Non-interference and autonomy in selection foster the desirable outcome of attachment to both the eventual person and the person's characteristics. I do think that parents are justified in limiting autonomy of children in order to avoid long term investment in producing a person with whom the parents would not wish to associate. But that is not what I am arguing here. I am arguing that the parents are the authors and should be the ones to guide the script's development especially at the early stages.

A singleton is entitled to have her selection based on the social reasons of her authors. To some extent my argument proceeded by eliminating competitors such as medical technicians and short term surrogates. I sympathize with both, but especially with technicians asked to extend a medical procedure for social reasons without a significant medical basis. But the burdens faced by both are brief compared to those faced in raising children and maintaining a family. In the absence of medical reasons such individuals are outside their area of expertise and lack author-like characteristics. Also, whatever moral status the unborn possess they are entitled to be treated with the minimal dignity of being disqualified for good reasons from the relevant parties—medical or social. There are many social reasons for having, or not having, children. Some of these reasons would reflect the needs of a given society more than the creative visions of parents—for example gender distribution or repopulation. And, like parents, society is around for the duration and accountable for outcomes.

So why privilege parents' social reasons and not society's? One reason is that it fosters intimacy in a manner humans find important in a good life. I also argued that those practicing MFPR should be seen as doing something good, having a child. If the process of regulation is turned over to the state or a community then the experienced worth of the process is taken away from the parents. I have said nothing about the specific social reasons that I consider morally permissible. And I cannot. What is obligatory is that parents go through the selection process rather than leave it to health professionals or a coin flip and be prepared to offer reasons later to the singleton.

But why say parents and not just the mother? The person to whom an explanation is eventually owed is a joint work for those around for the long term creation. It would make no more sense to privilege the mother involved in social MFPR in generating and assessing reasons, as the true or lead author, than to privilege Beasley as the twins' mother after birth.

References

Aristotle. (350 BCE1): *Nicomachean Ethics*. Especially Book VII and IX.

Aristotle. (350 BCE2): *Politics*. Especially Book I.

Austin, J.L.: "A Plea for Excuses," *Proceedings of the Aristotelian Society*. 57 (1956). Pp, 1-30.

BBC News. (2001): “Surrogate Mother Pushes for Adoption.” August 12, 2001. http://news.bbc.co.uk/2/hi/health/1485494.stm : Accessed January 15, 2014.

Daily Mail Online. (2001): “Surrogate Sues Couple Who Turned Down Twins,” August, 2001. http://www.dailymail.co.uk/news/article-65930/Surrogate-sues-couple-turned-twins.html : Accessed January 15, 2014.

Gilbert, M. (1990): Walking Together: A Paradigmatic Social Phenomenon,” *Midwest Studies in Philosophy* 15 (1990), pp. 1-14.

Little, M. (2005): “The Moral Permissibility of Abortion,” *Contemporary Debates in Applied Ethics*, eds. A. Cohen and C. Wellman. Malden, Ma.: Blackwell Publishing, Little, M. (2008): “Abortion and the Margins of Personhood,” *Rutgers Law Journal*. 33 (2008).

Marchione, M. (2013): “Fertility Doctors Aim to Lower Rate of Twin Births,” *Associated Press*. December 2, 2013. http://news.yahoo.com/fertility-doctors-aim-lower-rate-twin-births-171814210.html : Accessed January 15, 2014.

Merton, T. (1965): *The Way of Chuang Tzu*. New York: New Directions Press.

Murray, T. (1996): *The Worth of a Child*. Berkeley: University of California Press.

Padawer, R. (2011): “The Two-Minus-One Pregnancy,” *New York Times*. August 10, 2011. http://www.nytimes.com/2011/08/14/magazine/the-two-minus-one-pregnancy.html?pagewanted=1&_r=3& : Accessed January 15, 2014.

Plato. (380 BCE): *Symposium*.

Robinson, B. (2001): “Fetuses and Surrogacy Lose in Legal Battle,” *ABC News*. August 14, 2001. http://abcnews.go.com/US/story?id=92627&page=1&singlePage=true : Accessed January 15, 2014.

Schoeman, F. (1999): “Rights of Children, Rights of Parents, and the Moral Basis of the Family,” *Morals, Marriage, and Parenthood,* ed. Laurence Houlgate.. Belmont, Ca.: Wadsworth Pub. Originally published in *Ethics*. (1991).

Wang, Q. “The Confucian Filial Obligation and Care for Aged Parents,” Confucian Bioethics. Hingham, Mass: Kluwer Academic Publishers, pp. 235-256.

The Ethical Status of Our Actions in Virtual Worlds

Nicholas MUNN

Introduction

Emerging technologies have long shaped the ways humans interact in the physical world, and modern computer technologies are now opening up further, virtual worlds to us. It is no longer true that, as John Searle claimed, “We live in exactly one world.” (1995, xi) Rather, many people now spend much of their time immersed in virtual worlds. As access to these virtual worlds has become more widespread, and as the scope of possible interactions within them has expanded, virtual worlds have for many ceased to be ‘just games’ (Croft, 2011; Eastwick & Gardner, 2009), and become active communities, environments in which we as agents can live and flourish. The physical world is the ‘exactly one’ world Searle was referring to, while virtual worlds are persistent self-contained environments in which agents can interact without being physically present. Mark Bell describes a virtual world as “[A] synchronous, persistent network of people, represented as avatars, facilitated by networked computers.” (2008, 2) While the rapid advancement of technology is stretching the concept of ‘computer,’ this definition still captures the core concepts of virtual worlds, namely that people engage with each other in non-physical space, and those interactions are mediated by technology, both as a means of access to the spaces and in generating the appearance of the individuals within the virtual realm. We are also beginning to see the emergence of hybrid worlds, or augmented reality environments, which overlay the virtual on the physical, to varying degrees. In these augmented reality environments, such as *Ingress* and *Real Strike*, the connection between the virtual actions and their physical consequences is clarified.

In this article I begin by examining three alternative ways of classifying the morality of actions in virtual worlds. One historically popular account treats virtual worlds as game spaces in which morality does not apply. This is known as the asymmetry thesis, and it claims that actions in virtual worlds do not have moral content. They can never be (morally) wrong. The appeal of this approach has diminished with the development of more and more complex virtual environments, and the approach was convincingly rejected by Dunn in 2012. I briefly set out his objections, utilising a virtual world example drawn from *EVE Online*, before providing further support for his conclusion by analysing the impact of the development of augmented reality environments such as *Ingress* and *Real Strike* on the question of the asymmetry of moral status between the virtual and physical worlds. I suggest that these augmented reality environments demonstrate the moral impact of purely virtual actions, not simply within the immersive worlds in which the actions occur, but in the physical world as impacted by the virtual actions.

Despite the problems inherent in the asymmetry approach, the antithesis of it, a ‘Symmetry’ approach, has problems of its own. A strong symmetry approach

claims that virtual acts have the same moral status as physical acts, such that, for example, what makes an action murder in the physical world, would suffice to make that same action murder within a virtual world. Such strong symmetry accounts elide the very real differences in the moral contents of certain acts, dependent on whether those acts are performed in the physical world or in virtual worlds. Accordingly, I seek a 'third way,' an account which avoids the difficulties of each of these. I call this third option a 'Partial Symmetry' account. It is characterised by two claims. Firstly, that virtual acts have moral status, and secondly, that this moral status is sometimes importantly distinct from the moral status of physical acts. (Luck, 2009; Bartel, 2012) Having established a framework for the evaluation of the moral status of actions in virtual worlds, I examine the features of virtual environments which enable us to distinguish certain moral claims within them from moral claims made in the physical world. While the claims in each instance have moral status (symmetry), the nature and extent of this status differs (the symmetry is partial).

1. The Asymmetry Account

The asymmetry thesis claims that virtual actions are never wrong. That is, actions undertaken within virtual worlds are incapable of being morally wrong. This thesis is exemplified in Powers' early analysis of the possibility of moral wrongdoing in virtual worlds, specifically online role-playing games, in which he concluded that "Role-playing games seem only to share features with a bizarre Hobbesian world, and hence must lack moral relations." (2003, 198) Conclusions such as this are themselves dependent on a presumption of the possibility of 'closed virtual worlds' (Castronova, 2004), that is, worlds within which actions have no bearing or impact on the physical world. If actions in virtual worlds are incapable of being rigidly segmented off from the physical world, then it is exceedingly difficult to claim that they have no moral status. Their effects, in the physical world, can be moral in just the ways the effects of physical world actions can be moral. Jeff Dunn (2012) has provided a convincing theoretical rejection of such asymmetry accounts, so my discussion of it here will be brief. I will provide a case-study of the type of virtual action considered and the reasons it is taken to be incapable of being morally relevant, showing that Dunn's account provides a superior explanation of the moral status of the situation.

EVE Online is a popular Massively Multiplayer Online Role Playing Game (MMORPG). In this virtual game world, players take the role of inhabitants/participants in a spacefaring civilisation. They form into organisations known as corporations, for mutual benefit and protection, and within these corporations, divide responsibility for particular aspects of in-game activity, such as resource extraction, development, trade and defence. There are documented cases of individuals within the structure of this game environment enacting scams to steal large amounts of in-game currency. One such scheme netted the perpetrator assets valued at $45,000US. (See Drain, 2010) As the actions, the value, and the parties

all interacted within a defined virtual world, this could not, under an asymmetry account, be morally wrong.

Dunn notes that an asymmetry argument could rely on one or more of three different considerations to reject the moral status of these actions. Firstly, the rejection of moral status of the action might be related to the *virtual* status of the actions; that they are occurring in a simulation or virtual world, rather than in the physical world. Secondly, it might be the fact that the actions take place in a *game*, in which different standards are taken to apply, that renders them immune from moral criticism. Finally, and related to the concept of games, the actions might be non-moral because they are undertaken in the course of *play*. Dunn argues compellingly that none of these accounts of asymmetry is successful. (2012) In each of these three cases, the feature appealed to as eliminating the possibility of status is in fact insufficient to do so. Some virtual items can be stolen, such as the content of one's internet banking account. Some games, and some types of play, are immoral, when enacted in the physical world, and absent a sharp distinction between the physical and the virtual, the mere fact of play, or presence of a game space, is insufficient to eliminate moral judgment.

Dunn claims that "some actions that can be performed in virtual worlds that would be wrong if performed in the real world are themselves morally wrong" (2012, 256), and as such, that the asymmetry thesis is false. In drawing this conclusion, Dunn relies on an argument that closed virtual worlds are impossible. A closed virtual world is one in which the actions undertaken exist solely for the purposes of play. If such a world exists, there is no leaking of value from the actions within the world, to the actions outside it. These closed virtual worlds could arise if Huizinga's 'magic circle' hypothesis for game spaces could be extended to virtual environments, a possibility explored and ultimately rejected by Castronova (2005). Castronova argued that, while there may be some distinction between virtual worlds and the physical world, any barriers between them are porous; moral value can leak through them. (2005, 159-160)

It is important to note that the rejection of asymmetry accounts of virtual spaces is no longer limited to theory. There is a developing legal consensus that virtual objects can have value (take, for example, the value ascribed to the particular configurations of bits that tell a bank how much money you have in your account). There is also a growing body of jurisprudence which extends this concept of virtual value to objects in virtual worlds (Lodder, 2013). Some prominent examples of this include successful attempts to prosecute individuals for theft of virtual items from games such as *Runescape*. It is important to note that these legal cases are distinct from the situations I am considering here, as the actions took place in the physical world (intimidation and threats being used to compel a victim to provide access to their account information for the virtual world, which the attackers could then use to take the virtual objects). The relevant aspects of the case are simply that the virtual objects in question were taken by the courts to have value in themselves.

1.1 Augmented Reality Approaches

The terms of the debate have predominantly envisaged a clear delineation between virtual and physical environments. This has commonly taken the form of the claim that there is a 'magic circle' separating actions in virtual worlds from having physical world consequences. (Huizinga, 1955, 10) Previously this suggestion has made at least *prima facie* sense, as virtual environments have to some degree been rigidly separated from physical environments. As noted above, this separation has weakened significantly in recent years, even when dealing with solely virtual environments. (See also Fairfield, 2009; Hickman & Hickman, 2012) The worlds have been at least physically separated, whether or not the supposition of a magic circle in terms of their impacts has been sustainable.

However, the easy distinction between virtual and physical environments is being undermined by technology. What I shall call first-generation augmented reality systems have blurred the lines between virtual and physical environments, and it is no longer the case that even a physicalist description of virtual environments is fully separable from the physical world. *Ingress* is an example of a largely non-controversial application of augmented reality technology, while *Real Strike*, an augmented reality gun app, has generated significant controversy, including the arrest of an American teenager who was using the application in mid-September 2013. (Cushing, 2013) These systems provide a means of illustrating the collapsing distinction between virtual and physical systems.

Hybrid environments like *Ingress* & *Real Strike* eliminate the de facto separation of virtual and physical environments. Where previously the actions in physical and virtual worlds were separated (whether the effects of those actions were or not), now neither the actions nor their effects can easily be divided by domain. These environments further undermine claims for the existence of a 'magic circle' separating game environments from the physical/actual world.

1.1.1 Ingress & Real Strike

Ingress is a product of Niantic Labs, itself a subsidiary of Google. (www.ingress.com) It explicitly bills itself as an augmented reality gaming system, in which players choose either to assist in the defence of humanity against alien mind control attempts, or to assist said aliens in extending their area of control over the world. All interaction required by the game is completed within the virtual world. So, players 'capture' and 'destroy' portals, which are generated at points of interest in the physical world, such as public artworks, churches, libraries, and universities. Having captured portals, they create control fields by linking groups of three portals in triangular formations. The distance between portals determines the size of the field and thereby the number of 'mind units' controlled through it. However, in order to engage in these virtual actions, participants must move within the physical world. To attack an enemy portal, or to capture an unclaimed, neutral portal, a player needs to be, physically, within 30 yards of the physical world location. Similarly, to link from one portal to another, a player must be within 30 yards of the origin portal, and have a 'key' for the portal they are linking to. Without trading with other players, the only way to obtain a key is to (physically) go to a portal and 'hack' it. 'Hacking' is the primary means of gaining in game resources, with the returns dependent on factors including the strength of the portal, who currently controls it, and the type of modifications currently emplaced on it. Trading with other players also requires physical proximity. There are no visible physical indications of Ingress. This is key to the augmented reality nature of the software, as the game-space is overlaid on the physical world in a way which is invisible to those who do not play the game, but available to all who do play. It is also an important part of the appeal of ingress, as the augmented reality nature of the software enables Ingress to be participated in globally in a way that physical world fore-runners of the concept, such as geocaching, could not.

However, Ingress' status as an augmented reality environment provides an important distinction between it and purely virtual immersive worlds. In particular, the moral status of the class of actions collectively known as griefing is relevant. Griefing is, broadly, the attempt by some members of a virtual community to harass, obstruct, bully or otherwise reduce the enjoyment other members of the community gain from their participation within it. (Chesney et al., 2009) Within purely virtual immersive worlds, griefing is ubiquitous and contested. Some still deny that griefing can ever be wrong, citing versions of the asymmetry approach outlined above. That is, they contend that because the immersive virtual worlds in question are merely game spaces, and the characters, goods and actions in question exist only virtually, thefts, killings, and harassment of various forms are amoral. (Croft, 2011) They are allowable simply in virtue of not having been prevented by the creators of the immersive virtual world. The most famous of such groups is perhaps the organisation in *EVE Online* known as the Goon Squad, a loose collective originally drawn predominantly from the SomethingAwful webforums.

Ingress provides a new development in the discussion of the asymmetry debate. While the actions undertaken are entirely virtual, the consequences are not. Participants in *Ingress* move within the physical world in order to participate in the game, the game-play of which occurs solely in the virtual world. This means that griefing type behaviours, enacted solely virtually, have physical consequences in the context of *Ingress*. To the extent that this is so, it undermines a crucial aspect of the asymmetry platform: the claim that virtual acts are not relevantly real. The magic circle has been broken, and broken in such a way that the actions we now recognise as having negative, harmful, morally questionable real world effects, are themselves entirely virtual.

While *Ingress* provides a case study in the weakness of the Asymmetry approach, the kinds of actions considered are relatively trivial. This is not in itself problematic for the general claim that actions in virtual environments are capable of having moral content, or of being subject to moral evaluation, it does bear on the question of the extent to which such virtual actions have moral status. *Ingress* shows that in virtual environments, some actions can be the equivalent of relatively minor moral breaches in the physical world. *Real Strike*, by contrast, provides a case study in more serious moral behaviours.

In *Real Strike*, users have a heads-up-display (HUD) overlaid on the camera image of their mobile device. This HUD features the user's choice of weaponry,

and the user aims at objects & people in the real world by manipulating the mobile device. They are then able to fire the virtual weapon, effectively turning the video captured on the mobile camera into the screen of a first person shooter. The video images are themselves able to be recorded whilst using the application, and uploaded. *Real Strike* generates virtual instances of significantly more substantial physical harms than does *Ingress*. However, in the case of *Real Strike*, the harms themselves are entirely virtual. No-one is physically shot, stabbed, or otherwise killed in the course of playing this game. The problem appears to be generated by the technological mediation of a fairly common practice: children role-playing as soldiers (or vigilantes, guerrillas, terrorists, as the case may be). The crucial aspect of this application for the current debate is to note that the 'wrongness' of these virtual acts is presumed in the coverage of the application. That it could be impossible for such acts to be wrong is not considered.

The asymmetry account ought then to be rejected. It relied for its force on a description of the nature, status and roles of virtual worlds that, as Dunn illustrates, is no longer accurate even for purely virtual worlds, and the development of hybrid worlds such as *Ingress* and *Real Strike* has further weakened the approach. We turn now to alternative accounts.

2. Symmetry Thesis

The symmetry thesis invokes the claim that our acts within virtual worlds are morally equivalent to our acts in the physical world. Under such an account for example, the theft of virtual property is simply theft, a crime the punishment for which we already have legal and moral institutions in place to achieve. However, we ought to make a distinction between strong and weak versions of the symmetry thesis. A strong version of the thesis will prove to be unsustainable, while a weak version, which I address in the following section, 'Partial Symmetry,' offers potential to resolve the difficulties.

A strong version of the symmetry thesis simply denies a distinction in any moral domain. So, as virtual theft is equivalent to physical theft, virtual murder is equivalent to physical murder, and virtual paedophilia is equivalent to physical paedophilia. However, it is quite clear that this claim doesn't work. Luck sets out the parameters of virtual murder by claiming that "[a] player commits an act of virtual murder in those cases where he directs his character to kill another in circumstances such that, were the game environment actual, the actions of his character would constitute actual murder." (2009, 31) But even when this is satisfied, and even when, as Luck specifies, the character death is permanent, the character-controller, the agent, is not killed. It would be equivalent to charging someone with murder for shooting down an unarmed aerial vehicle. As such, it seems clear that while such actions could have moral status, they do not have the same moral status as they would have had, were they undertaken in the physical world.

Part of the difficulty with a strong symmetry account is technological. That

is, the limitations of our current technology reduce the extent to which virtual actions are morally symmetrical to physical actions. For instance, one cannot (yet) commit murder in a virtual world. We have no means to target the relevant agents, only their virtual presences. At most, actions in virtual worlds will result in vessel or avatar death: The particular manifestation of the agent's body/mind in the virtual environment will be extinguished. With this ending, it is possible to eliminate all the advantages generated since vessel-creation, but both mind and body are isolated from vessel and not able to be harmed by attacks on the vessel. Given this distinction (a distinction grounded in current technological capacity rather than in necessity), certain crimes (physical assault, murder) are presently impossible to enact in virtual environments. This present impossibility does not suffice to undermine the symmetry thesis. It simply shows that whether or not a virtual environment murder is symmetrical to a physical environment murder is (presently) a moot point, as murder is in fact technologically impossible in virtual environments.

However, there is a class of actions which appear both to be symmetrical in the ways Luck describes, and to avoid the issues with harms against the person that undermine the symmetry account as applied to actions like virtual murder. Crimes against property appear in many ways not just to be capable of having moral value, but to have it symmetrically between the physical and virtual worlds. Instances of theft within virtual worlds are perhaps the clearest examples of this, as virtual worlds are capable of having widely agreed upon physical world exchange values. So, for example, Linden Dollars (L$), the currency used within *Second Life*, trade against physical world currencies in a manner equivalent to foreign exchange between physical world currencies. In August 2013, one US dollar bought around 250L$. This rate compares favourably to a more recent attempt at linking the virtual and physical worlds, Blizzard entertainment's Diablo III, where in August 2013, $1.40US buys a participant 50 million in game gold. Blizzard has recognised their failure to capture the virtual/physical transition and is withdrawing the auction house system from the game. So, if someone were to steal from you 1 million L$, this simply is the theft of a currency, worth around $4000US. Such an amount is non-trivial, and is likely to be taken seriously rather than dismissed out of hand by the authorities. It is, morally, no different from the theft of, for example, 2.2 million Chilean Pesos, which are also worth around $4000US. The particulars of how the theft was achieved may be relevant to whether you as an individual bear any responsibility for the loss, but this does not impact the moral culpability of the thief in any way.

A strong version of the symmetry thesis, while recognising the moral status of virtual actions, does not sufficiently delineate between particular kinds of virtual action. As such, symmetry arguments cannot work as domain-neutral descriptors of the moral status of actions in virtual worlds. It remains the case that there is some translation of moral value between equivalent acts, performed physically or performed virtually. To capture this distinction, we must turn to the third option.

3. The Third Option: Partial Symmetry

The third option can take a range of forms, similar only because they each reject both the asymmetry and the (strong) symmetry accounts of action in virtual worlds. The shared features of these 'third option' accounts are that they accept that virtual actions can produce 'real' wrongs, and that these 'real' wrongs are sometimes importantly distinct from the 'real' wrongs produced by actions in the physical world. Dunn (2012) utilises the concept of 'limited asymmetry' in discussing this approach. Both Morgan Luck (2009) and Christopher Bartel (2012), while not utilising the tripartite division (asymmetry/symmetry/partial symmetry) I have used here, set up cases that implicitly rely on partial symmetry, in that they both accept the possibility of moral status arising in virtual actions, but deny that it tracks identically in all cases with the moral status of the equivalent physical acts. I prefer the terminology of 'partial symmetry' to 'limited asymmetry,' as I take it that considerations such as that the rules of the virtual world permit one to act in ways one would not be entitled to act in the physical world excuse otherwise morally questionable behaviour, rather than excluding such behaviour from the realm of the moral.

The partial symmetry account accepts, first, that virtual acts have moral status. This claim is becoming increasingly trivial: If an item, 'X' has a worth in the virtual world equivalent to $1000US in the physical world, and an agent, 'A,' takes this item from you in a manner ruled illegitimate by the rules governing the virtual world & those governing the physical world, then they have stolen from you something of this specified value. The world in which the theft occurred is largely irrelevant. Physical theft & Virtual Theft are symmetrical, and within the theft sub-domain of virtual world behaviours, we can act as such. Further, there are at least some situations in which the moral and legal practices that we have for physical acts can in fact be directly translated into a framework for the assessment and (where necessary) punishment of virtual acts. That is, we do not require any new laws in order to govern virtual crimes of this nature.

An important component of the translation value of thefts in virtual worlds is the intention of the game designers. I qualified my claim in the paragraph above by noting that the symmetry works when the rules of the virtual and physical world align; I will expand on that here. In the section on the asymmetry account I mentioned an instance of in-game theft in EVE online. This case illustrates a problem with utilising laws and moral concepts developed for the physical world in evaluating actions within particular virtual worlds. Part of the appeal of EVE is that long term deception/theft/fraud is explicitly approved of within the game structure. So, while the asymmetry account fails to accurately describe the moral status of the action—the theft of around $45000US of assets clearly is the kind of behaviour that could have been wrong, the virtual theft wasn't, (or at least arguably may not have been) wrong in practice, due to the rules under which actors in EVE operate. So, our determination of whether a particular virtual act is in fact morally wrong, must rely both on the prevailing physical world moral standards, and on an

understanding of the standards applicable to the particular virtual world in which the action takes place. Litska Strikwerda describes this in terms of the magic circle, arguing that "An act of stealing in the virtual world of an online multiplayer computer game is to be governed by the rules of the game, unless the ''magic circle'' (a metaphorical line between the fantasy realms of computer games and the non-virtual world) is crossed." (2012, 95) Because the rules of EVE Online allow, even encourage players to deceive, plot and conspire against one another, and because these rules are both widely acknowledged and not themselves in breach of any applicable legal or moral considerations, the outcome—a loss of a substantial real world equivalent value of money, is not immoral. However, had the player in EVE online achieved this outcome, making off with $45000US of other player's wealth, through password theft or similar tactics, the theft would have been wrong, both in the virtual and the physical contexts. The rules of the virtual world allow for theft, but the means by which it may be achieved are proscribed. One must abide by the rules of the game. This is not, it should be noted, much distinct from the physical world. Here too, one can generate substantial profits at the expense of others, without thereby breaking any laws, and whether it is moral to do so, and the degree to which the law can morally be skirted, is a subject of much analysis.

Further, there is reason to hasten the development of something like a partial symmetry approach. Just as augmented reality environments such as *Ingress* and *Real Strike* have reinforced the rejection of strict asymmetry approaches to the moral status of virtual actions, the increasing acceptance of the morality (or immorality) of virtual actions in more traditional contexts incentivises the development of theoretical frameworks which both accept the moral status of virtual actions, and provide guidance to governments, legal systems and criminal justice systems attempting to negotiate the boundaries of the virtual domains. Strikwerda points out that there is now legal support for the status of virtual objects as 'requisite objects of theft,' that is, as objects that can be stolen. She argues that "virtual items in the virtual world of an online multiplayer computer game can count as a particular player's property in the non-virtual world. They can also represent (pecuniary or hedonistic) value in the non-virtual world. If they do it makes sense, from a moral point of view, to bring the act of stealing them under the prohibition on theft and to count these virtual items, thereby, as requisite objects of theft (objects that can be stolen)." (2012, 95) This argument is borne out by the recent development of legal doctrine in both the Netherlands, where the *Runescape* case mentioned earlier was decided (ECLI:NL:HR:2012:BQ9251) and South Korea, where in game items are recognised as 'information goods,' to which individual players have a right of use. (Yoon, 2004) In each of these jurisdictions, the status at law of virtual goods is as objects able to be stolen, and the theft of them may be punished at law.

Conclusion

I have argued that a promising method of cashing out 'third way' accounts of the

moral status of our actions in virtual worlds is by embracing the concept of Partial Symmetry. Partial symmetry rejects completely the asymmetry account: the claim that there is something about actions undertaken in virtual worlds which makes them incapable of having moral content. But it does not follow from this either that all actions undertaken in virtual worlds have moral content (after all, not all actions undertaken in the physical world have moral content). Nor does it follow that, for those actions in virtual worlds which do have moral content, the moral content is directly translatable from the content an equivalent action undertaken in the physical world would have. The determinants of how this translation of moral status from physical to virtual works are varied, but a broad outline is as follows: Crimes against property, such as theft, translate without difficulty from the physical to the virtual. So for instance, the characteristics of an action in the physical world that result in it being an actionable instance of theft, would make an equivalent virtual action an instance of theft in the same manner and for the same reasons. Direct crimes against persons raise significant problems. (Brenner, 2012) The technology does not yet exist to enable virtual murder of physical selves, and 'murder' carried out in the virtual domain is more properly considered an instance of a property crime than a crime against a person. Derivative crimes against persons lie somewhere between these extremes. Actions such as slander or defamation retain their form whether occurring in the virtual or physical worlds, but the severity of them can be lost in translation, as the degree of association between physical persons and their virtual avatars varies substantially dependent on the virtual environment in question.

Regardless of the difficulty in ascertaining exactly how to calculate and apply moral standards to behaviours in virtual environments, it is now clear that we must do so. Asymmetry accounts are simply false, and strong symmetry accounts face insurmountable difficulties in describing the nature and extent of (particularly) virtual instances of crimes against persons. By embracing the above partial symmetry account, we provide a firm foundation for the moral evaluation of virtual worlds.

References

Bartel, C. (2012) "Resolving the Gamer's Dilemma," *Ethics and Information Technology*, Vol. 14, No. 1, 11-16.

Bell, M.W. (2008) "Toward a Definition of 'Virtual Worlds,' *Journal of Virtual Worlds Research*, Vol. 1 No. 1, 1-5.

Brenner, S. (2008) "Fantasy Crime," *Vanderbilt Journal of Entertainment and Technology Law*, Vol 11, No, 1, 1-97.

Castronova, E. (2005) *Synthetic Worlds*, Chicago: University of Chicago Press.

Chesney, T., Iain Coyne, Brian Logan & Neil Madden. (2009) "Griefing in Virtual Worlds: Causes, Casualties and Coping Strategies," *Information Systems Journal* Vol. 19, No. 6, 525-548.

Croft, J. (2011) " 'It's Just a Game': Ethical Reasoning within Virtual Worlds," *GoodWork Project Report Series*, No. 73 http://www.thegoodproject.org/pdf/73-Its-Just-a-Game.pdf (Accessed January 30, 2014)

Cushing, T. (2013) "Student Arrested and Charged with 'Terrorizing' for Shooting Classmates… With an iPhone App," http://www.techdirt.com/articles/20130914/18121524517/student-arrested-charged-with-terrorizing-shooting-classmates-with-iphone-app.shtml

Drain, B. (2010) "EVE Online player steals $45,000 worth of ISK in massive investment scam," http://massively.joystiq.com/2010/09/11/eve-online-player-steals-45-000-worth-of-isk-in-massive-investm/)

Dunn, J. (2012) "Virtual Worlds and Moral Evaluation, *Ethics and information Technology*, Vol. 14, No. 4, 255-265.

Eastwick, P.W. & Wendi L. Gardner (2009) "Is it a Game? Evidence for Social Influence in the Virtual World," *Social Influence*, Vol. 4, No. 1, 18-32.

Fairfield, J.A.T. (2009) "The Magic Circle," *Vanderbilt Journal of Entertainment and Technology Law*, Vol 11, No. 4, 823-840.

Hickman, T. & Kristin E. Hickman (2012) "The Myth of the Magic Circle: Rejecting a Single Governance Model," *UC Irvine Law Review*, Vol. 2, 537-574.

Huizinga, J. (1955) *Homo Ludens: A Study of the Play-Element in Culture,* Boston: The Beacon Press.

Lodder, A.R. (2013) "Dutch Supreme Court 2012: Virtual Theft Ruling a One-Off or First in a Series?" *Journal of Virtual Worlds Research*, Vol. 6, No. 3, 1-12.

Luck, M. (2009) "The Gamer's Dilemma: An Analysis of the Arguments for the Moral Distinction Between Virtual Murder and Virtual Paedophilia," *Ethics and Information Technology*, Vol. 11, No. 1, 31-36.

Powers, T.M. (2003) "Real Wrongs in Virtual Communities," *Ethics and Information Technology,* Vol. 5, No. 4, 191-198.

Runescape Judgment, Attorney General, Supreme Court of the Netherlands, ECLI: NL: HR: 2012: BQ9251; http://deeplink.rechtspraak.nl/uitspraak?id=ECLI:NL:PHR:2012:BQ9251

Salen, K. & Eric Zimmerman (2003) *Rules of Play: Fundamentals of Game Design*. Cambridge, Mass.: MIT Press.

Searle, J.R. (1995), *The Construction of Social Reality*, London: Penguin Books.

Strikwerda, L. (2012) "Theft of Virtual Items in Online Multiplayer Computer Games: an Ontological and Moral Analysis," *Ethics & Information Technology*, Vol. 14, No. 2, 89-97.

Yoon, U. (2008) "Real Money Trading in MMORPG Items From a Legal and Policy Perspective," *Journal of Korean Judicature*, Vol. 1, 418-477. Available at SSRN: http://ssrn.com/abstract=1113327 or http://dx.doi.org/10.2139/ssrn.1113327

A Hegelian Approach to Applied Ethics and Technology

Andrew KOMASINSKI

Introduction

In this paper, I argue that Hegel's *Encyclopedia Logic* provides a framework for moral thought that can handle scientific discoveries in a robust and versatile way. As I will argue, this framework gives us the tools to make moral thought resilient towards new scientific discoveries rather than dependent on science for its framework (see Rózsa 2012 and Quante 2002). I believe it thus proves useful for applied ethics. To substantiate this claim, I begin by presenting some of the apparent difficulties that technological discoveries pose to our moral thought, which I identify as two objections: one which maintains that moral thinking built on faulty science must be faulty, and another which asserts that moral explanations are of no value. I then turn to Hegel's account of objects in *The Encyclopedia Logic* to look at how this account enables us to distinguish physical, "chemist," and moral objects. Third, I then explain how this can serve as the basis for responding to the objections and how it can handle difficult cases which more common-sense approaches fail to address, precisely because it gives moral thinking its own autonomy. Finally, I briefly address two remaining objections: (1) to what extent can the Hegelian approach handle the claim that all moral talk is gibberish and (2) whether the Hegelian account of ethics is arbitrary (which is Richard Rorty's interpretation).

1. The Contemporary Challenge to Moral Philosophy

Many contemporary lay discussions of technology and some more scholarly literature suggest the coming obsolescence of moral philosophy or some important aspect of it. We can see this, for instance, in Kurzweil suggesting that the human mind is no more than a type of machine. Recent journalistic forays also claim that longevity will put an end to the notion of sexual fidelity (see Mundy 2013). Moreover, resuscitation, artificial respiration, and the distinction of being "brain-dead" have all made "death" a little harder to define. We also periodically find neuroscientists claim that foundational notions, such as the idea of a human will understood to be free either in a libertarian or compatibalist sense, are faulty misconceptions.

These considerations, in turn, can become challenges to moral thinking. One driving element in this seems to be a principle of utility that notes how science and technology have greatly benefited the world over the last century and asks, "What has moral philosophy done for us lately?" Scientific claims have changed how we

do moral philosophy. What we have learned about the rationality of certain non-human animals makes it so that we must hem and haw at certain anthropocentric claims forwarded by Aristotle, Kant, and others, and this leads to a larger question about what has worth in the Kantian sense (Hurley and Nudds 2006). Another area where we blush is the bizarre claims many moral philosophers have made about women (Witt 2007).

While the impetus is real, it allows for several responses. One baldly wrong route is to hold that we can ignore the moral thinking of anyone who happens to possess mistaken views in science. On this principle, we could ignore Aristotle's ethics because he mistakenly thought women have fewer teeth than men (Aristotle *Historia animalium* 2.3.501b19-21).[1] But this type of dismissal merely commits the genetic fallacy insofar as it does so without establishing a sense in which the moral thought depends on the error in science in the philosopher's thought. We should no more abandon previous moral philosophy as a source for our own moral thinking than we should discount historical records of earthquakes for our determination of whether a location is earthquake-prone even if these records blame the earthquakes on Loki or a giant turtle in the sea.

There are, however, still two more interesting ways in which one can argue that some discovery of science invalidates some feature in moral philosophy. First, one can argue for a variant of the philosopher with bad scientific views. To avoid the fallacy, we qualify this objection such that a view in moral philosophy should be ignored when it depends closely or directly on a faulty scientific belief. For example, as science has advanced, we no longer think of the moral issues attendant on pregnancy in terms of "quickening" with this happening at different stages for males and females. Thus, moral claims that depend centrally on "quickening" should be ignored or charitably re-understood in light of the scientific reality.

Hobbes, for instance, demonstrates this approach when he rejects Aristotle's moral system on the basis of his rejection of scientific teleology (Rutherford 2012). The key distinction here is that Aristotle makes teleology both central to his science and to his ethics. In what follows, we will see how both a common sense approach, represented by Singer, and a Hegelian approach can compensate for ethical thinking that seems fundamentally built on errant science. While I argue later in this article that Hegel's approach proves advantageous for other reasons, I think this type of problem can generally be met by many different systems of moral thought.

There is a second objection that must also be addressed, viz., the claim that moral language is, by its very nature, gibberish or at best an excessively wordy and inefficient way of doing science. This objection maintains that moral language is ultimately an expression of scientific facts. Thus, "it is bad" is ultimately either void or an extremely indirect identification of a biological value. On this view, moral thinking has no independence from science and it would be better to express things scientifically. This type of critique is at work in the Evolutionary Challenge, which maintains that moral claims and the importance we give them are just psychophysical signals that could have been completely otherwise, had evolution gone differently. In what follows, I show that Hegel's framework allows us to have a

1 I am thankful to Shane Wilkins for suggesting this example.

more parsimonious metaphysic and identifies a large and questionable assumption at work in this objection.

2. Hegel and the Object

In this section, I explain how Hegel's analysis of "The Object" in *The Encyclopedia Logic* provides a philosophically robust framework for establishing moral thought as autonomous and resilient to advances in science and technology. Hegel's writing can be dense and obtuse, and our first task is to understand what he means by "object." Hegel follows Kant in defining an object as something that stands offset from its environment in the perception of subjects (§194). This definition is merely the decomposition of the pieces of the words for "object" in German (the Latinate *Objekt* with the English corollary object and the Teutonic *Gegenstand*). Hegel is part-Kantian in believing we do not have unfettered access to things themselves and part-Aristotelian in believing "object" just means how we as thinking animals really relate to things.

Hegel differs from Kant in believing we experience the same thing as different types of objects, and he describes three such modes of objectivity: "*mechanism*, *chemism*, and *teleology*" (§194 *zu*. 2). While the last one is the most relevant for morality, it can only be understood with reference to the former two kinds. Thus, I begin by spelling out what he means by the mechanical mode of objectivity. Hegel explains that "[t]he *mechanically* determined object is the immediate, undifferentiated object … its diverse parts behave indifferently to each other, and their linkage is only external to them" (§194 *zu*. 2). By "mechanic," Hegel means Newtonian physics and its understanding of the world. In this account, objects act like billiard balls that accept and transmit force in terms of "pressure and impact" (§195). In Newton's vocabulary, force is equal to mass times acceleration, and that the force of two bodies on each other is always equal (Newton 1686). Hegel calls this account of the object "immediate" and "undifferentiated"—two terms that hint a criticism is coming.

The heart of Hegel's criticism is that a billiard ball model of objects may be handy for doing physics, but an account that is indifferent as to whether 16 pounds is a bowling ball, dog, or infant, is, as an all-things-considered view, "superficial [and] intellectually impoverished" (§195 *zu*). Hegel makes the point more verbosely: "we must … regard it as a very crucial defect of the modern inquiry into nature—indeed as the main defect—that it holds so stubbornly to the categories of mere mechanism even when quite different and higher categories are really involved" (§195 *zu*). I say as an aside that it should be noted that this use of "mechanism" is different than that used in modern biology (See Nicholson 2012).

Hegel next considers the oddly named domain of "*chemism,*" explaining that chemism's objects are "essentially differentiated, so that the objects are what they are only through their relation to one another, and their difference constitutes their quality" (§194 *zu*. 2). The objects have distinctive behaviors that allow them to relate in more complicated manners (covalent bonding, metallic bonding, ionic pairing, solutions, van Der Waals, etc.). Thus, these objects have *kinds* that give "personalities" (hydrophilic, acid, base, semiconductor, etc.). These are no longer billiard balls but chemical elements that behave according to their kinds—e.g., sodium's reactivity with air and water versus nitrogen's relative inertness. Nevertheless, these objects still lack a teleology (§200 *zu*).

Hegel's odd word choice is felicitous in that it enables us to also describe biology as a "chemist" domain where we encounter biological *objects* such as dogs, squirrels, and trees—rather than approximated billiard balls and simply giant chemicals. We expect typical behaviors from these objects—tail-wagging, nut-hoarding, and leaf-growing. This does not entail a denial that the thing in question is also a complex chemical system or a mess of billiard-ball quarks, but we consider these as biological *objects*. We could probably even more precisely speak of animal objects, but we need not do so for our purposes. For Hegel, it would be odd to claim biological objects are *merely* complex chemical *objects*, because the very idea of an object refers to the way we think about things in a frame.[2] Thus, the same thing can be a tree or a sixteen-pound point mass with respect to its botany or its physics.

This gives us the groundwork to understand what Hegel calls "teleological" objects. These sorts of objects take the best of both other kinds and are at work in ethics, society, and sociology. Like "chemist" objects, they have *kinds* that are distinct from one and relate in qualitatively different ways, e.g. father and child, lawyer and client. Like mechanical objects, they have characteristics that do not depend on a relationship—one can be a child and lawyer even in the absence of parent or client. Thus, teleological objects are what they are regardless of their current interactions, but they interact distinctly.

Hegel may lose some contemporary philosophers, however, when he speaks of purpose: "purpose … is posited as containing *within itself* the determinacy" (§204). For Hegel, "chemist" objects also have purpose in that they interact according to kinds, i.e. oxygen goes with hydrogen to create water or hydrogen peroxide. For Hegel, these objects have purpose even in the absence of other objects (§205 *zu*). In Kantian language, teleological objects have worth rather than price. In giving objects internal purpose, Hegel is an interesting kind of realist who echoes Aristotle in having a notion of internal purpose (final cause), but who also echoes Kant in believing that through "the *cunning* of reason" we encounter what we encounter as objects—not things (in themselves) (§204-206, §209). This last feature means that the valuation is not in the things—even if it is in the objects.

For Hegel, the teleology of these things is the purpose they serve in our world, so we need not commit ourselves to teleology "out there" in the world to use Hegel's framework. Hegel thus sets up a framework where we think of things as objects in different modes (physics, chemistry, sociology, ethics), and the objects relate according to the rules of each kind. Hegel, like Aristotle, is a realist about value, but his realism hinges on the reality that we do ascribe purpose to things in teleological ways as a feature of consciousness *and* that this is an essential part of

2 An interesting metaphysical question is what is meant by saying objects "are" in Hegel's vocabulary, but this proves unimportant to my argument here, so we will leave this question aside.

the right way of perceiving our world. At its simplest, Hegel is saying we see the same real world phenomenon in multiple ways. Wine can be and is both a grape-based fermented beverage and a cultural symbol.

3. How Hegel's "The Object" Matters for Applied Ethics

Hegel's account of the object supplies the foundation for an approach to applied ethics and to the issues raised by new technologies. The center of this is the moral object. On Hegel's account, moral thinking does not encounter an object and ask if it is morally meaningful. Instead, it encounters moral objects which are purposive and already imbued with moral meaning (§81; see also Werhane 2006). Here, moral meaning means the ascription of value to moral objects. For Aristotelian accounts, this moral meaning is explicit and central in the supposition that things have a function and an end, and excellence is understood in terms of best reaching this purpose. But this is no less true for the Kantian or consequentialist. In the Kantian case, this is the distinction between the price of goods and the worth of humans—the claim that their value transcends quantitative comparison. The consequentialist differs from the physicist precisely in thinking there are ends we should want in the world (e.g. maximizing happiness or justice).

On the Hegelian picture, applied ethics does not involve *sui sponte* judgments on an otherwise morally empty arrangement. Instead, it is the claim that morality is already out there in the way we as creatures who engage in moral thought look at objects in the world. To further explain, I allude to a feature in Hilary Putnam's "Twin Earth" thought experiment (Putnam 1973). Putnam initially distinguishes "water" and "H2O," referring the former to our human experience of water and the latter to its known chemical composition in our world. The thought experiment hinges on our ability to distinguish between water as "what I drink when I am thirsty" or "what I need to live" and water's chemical composition. Agreeing with this feature of his thought experiment does not require us to follow Putnam in asserting water can be otherwise than H2O, but it does mean that we have agreed that water can be chemical, social, and moral at the same time. It is precisely the autonomy of the moral object vis-à-vis the chemical and physical that enables us to identify the wrong of dumping toxic chemicals into the river in terms of a river that is objectively (conceptually) distinct from a fluid of particles moving in the same direction. Again, we can achieve this regardless of whether we are realists about the nature of water or not, since a distinction between moral and chemical meanings is the fundamental pivot upon which the debate depends.

The value for our discussion is that this enables us to see how, on Hegel's account, these moral objects matter regardless of how they are physical and chemical objects and regardless of whether they exist as physical objects at all. Moral meaning enables things to be right and wrong; it is not merely physics; it is precisely a form of valuation distinct from energy, mass, and charge. A promise, for instance, can be a moral object even if there is no physical object, no contract or blood oath, to back it up. If this Hegelian account is right, it means that

morality has an independent standing vis-à-vis physics and biology. If we use a Hegelian framework for applied ethics, then applied ethics, especially in the case of technology, is not merely reducible to the theories and data of the hard sciences which drive the advances.

4. Conservative and Hegelian Responses to Discoveries in Science

Hegel's framework separates physical, chemical, and moral objects, making it so that each provides a different explanation of the interaction of objects in its relevant world. In the case of moral objects, the world where they occur is already laden with moral meaning. In other words, asking a question about the moral rights of persons against invasive nanotechnology is not identical to any question about biological organisms or complex arrangements of molecules; it is to ask the question in terms of human persons: the value of persons, integrity, justice, and other such morally-laden concepts. Moreover, the world in which moral objects exist is a world that already has these concepts in it.

I turn here briefly to one of Singer's beautifully simple arguments in animal ethics, as an example of the conservative approach of handling new scientific discoveries. Singer begins by articulating the principle that we consider it wrong to cause "suffering." To this, he joins advances in science which show that animal pain and suffering (for mammals, at a minimum) do not differ materially from human pain and suffering (Singer 1976).[3] He concludes that animal pain is morally meaningful and should enter our moral consideration. The hinge is that "pain" is already a moral concept in his account.

Hegel's framework can also r each the common sense result Singer achieves, but it can explain why this response is valid in terms of moral thinking instead of depending on common sense. Here, I will repeat the steps we saw in Singer's argument within the Hegelian conception of moral thinking. First, Singer's account includes a moral value around "pain." Things experience pain when they are certain types of biological objects in a certain state. "Pain" is a moral concept, so things that experience it are also moral objects. What is crucial to recognize is that the moral world and the criteria for being an object in it remain unchanged; in fact, they depend conservatively on our maintenance of the same values. In other words, Singer solves this problem by asking us to engage in moral thought.

In this instance, the Hegelian approach is no different. While it states it more explicitly, the idea is that we are already moral thinkers and merely need to have access to certain facts to recognize where our moral concepts should apply. We can now generalize this as response to one type of morality built on faulty science: errors in perceiving values we already view as morally relevant. This type of problem has both a scientific origin—an error in observation at the level of chemical or biological objects—and a scientific solution when that observation is corrected. Converse cases where we mistakenly perceive the possession of a feature in its absence work in the same way. In both cases, we do not change the way we

3 Though also see Harrison 1991.

think morally. Analogously, this is no more a defeat for moral philosophy than the discovery of a new element is a refutation of chemistry, or a realization that our scale was not tared properly is a disproof of physics (MacIntyre and Popper 1983).

5. The Advantage of Hegel's Framework versus the Common-Sense Approach

At the same time, Hegel's account is more robust and enables us to both respond in less conservative ways and handle less amicable interactions between science and applied ethics. While Singer's account depends on the fixity of our moral concepts, viewing moral thought in Hegel's way allows us to amend our moral concepts and valuation. Thus, the Hegelian approach can handle the contrary solution where we could decide that if animals feel pain, we should abandon this as a moral parameter. Whether we let the knowledge of animals feeling pain make them moral objects in that sense, or we alter the features required to enter our moral framework, we take either course as a *form* of moral reasoning about our moral thinking. One corollary is that scientific discoveries cannot positively disprove ideas like Aristotelian essences. This use of thought to change thought is the autonomy of moral thinking.

I first want to mention two topics of contemporary debate where the Hegelian feature matters greatly. Some advocates for gay rights often seek the discovery of a "gay gene" imagining that its discovery would compel opponents to recognize equivalence in sexual preference. The problem, however, is that the mere discovery of a biological factor would not compel a change in a moral framework. In fact, the logic of some dissenting views already accepts genetic factors are involved but merely sees these as non-causitive. A second example helps illustrate why. Some contemporary literature points to the possibility of fetal pain, and while there are questions about the details of whether this is pain in every sense required, the discovery that it is pain would not compel proponents of abortion to abandon their positions either. Instead, they can merely modify the conditions under which they think pain matters. I will leave these two examples here.

I will instead focus on a third example and use it to demonstrate how the Hegelian framework functions better. In the 20th century, we witnessed two related events: the use of race as a concept during the Apartheid in South Africa and anti-miscegenation laws in the United States. Race, in the South African framework, became a moral term such that a "white person" in virtue of this deserved rights and privileges not afforded to those considered "native" or "coloured" on direct account of their whiteness (see the Population Registration Act of 1950). A similar and related phenomenon happened in the rise and fall of anti-miscegenation laws which made race morally relevant (see Racial Integrity Act of 1924).

In both societies, this thought is now recognized as errant. Importantly, the recognition and resolution of the problems posed by considering race as a moral category happened not through any new scientific discovery but through moral thinking itself.[4] While subsequent science has concurred and shown that much

4 I qualify this as "generally" the case, because there are certainly circumstances where race remains an appropriate moral consideration. I give three examples: (1) to compensate for the prior misuse of the category, (2) as a way of being conscious of the histories and circumstances of those around us, and (3) in recognizing the differing efficacies of certain medications on people of different backgrounds.

of the supposed difference is only skin deep and that what we have in common as human beings far outweighs the manners in which we differ, it is important to realize that the decision to strike down anti-miscegenation laws preceded these scientific discoveries. While there are admittedly some real differences in responses to certain medications and in the frequency of heritable diseases (e.g. sickle-cell anemia, lactose intolerance), these cases have very limited moral meaning limited to special cases of medical care. Unlike the cases that common-sense approaches can handle, these cases show that moral categories were modified on the basis of moral categories—rather than science. While we can argue that this too is obvious from common sense, part of the point is that we want to explain this in terms of moral thinking, not by appealing to common sense.

Every case of change in our moral thinking happens in precisely this way, viz., that we change our moral thinking through moral thinking. I want to show here how this follows from the Hegelian account and enables us to relate science and moral thought more robustly. From the above examples, we can see that whether we begin to recognize new moral objects, new features in previously existing moral objects, or change our moral thinking, we do so within the domain of moral thinking. Should the science matter to us? Clearly, yes, but the change happens in what Hegel calls "spirit" and what we might call "mind," and involves us thinking about our thinking.

At its best, this means that we are altering our moral thinking and conceptualizing the world in increasingly better ways by recognizing the inadequacy of its prior concepts. This does not require the abandonment of all of our prior moral thought. In practice, we all recognize this when we skip over awkward passages about women, children, and minority races in the writings of authors as diverse as Aristotle, Kant, Hegel, Kierkegaard, Nishida, and Confucius, yet which we still think have contributed valuably both to the study of moral thinking and moral thinking itself. But we also recognize that we do so precisely because our values about what is morally relevant in the world tell us to ignore these features.

By keeping these problems in the domain of moral thinking, Hegel's framework approach can handle both errors in observation and changes to our moral framework by understanding the former as corrections in what we perceive as objects and the latter as changes in what we reason we should consider objects. What this shows us is that anethicists (those who are agnostic or deny the reality of ethics) are wrong to imagine that scientific discoveries about evolutionary biology or human psychology can directly unhinge our moral beliefs (Burgess 2007). Hegel's framework approach makes clear that this is the *thought* that there is no value. Stated at its simplest, Hegel is pointing out that changes in moral thinking happen in reason and not in physical terms, whether one is a mind-brain reductionist, a Cartesian dualist, or a hylomorphist.

This aspect makes the moral/social world seem very different from the mechanistic and chemical worlds. In those worlds, the ways we think about objects rarely change what we consider objects but such changes can happen and be revolutionary, e.g., general relativity or population genetics. The moral case differs interestingly in that our ability to observe moral features depends on more basic powers of observation that can change with science. But changing in our ability to perceive moral features is different than changes in what we identify as moral features. In the case of moral thinking, a fundamental change in our moral thought can conceivably change the objects in our moral thinking, e.g., current studies in group responsibility and autonomy. On the Hegelian picture, however, both of the ways that a change in science enters our moral thinking reflect changes to which we continue to apply moral thinking. For our purposes, I will leave these considerations here.

6. Whither the Reductionist Challenge to Applied Ethics

The challenges to moral philosophy, that it either is verbose science in need of an editor or invalidated by the scientific errors of its authors, if true, suggest that the preceding account must be wrong. B.F. Skinner's 20th century version of this attack, for instance, held that morality was only conditioned response writ large. The more recent Evolutionary Attack sees morality as nothing more than the non-truth tracking evolutionary forces (a term I borrow from Clark-Doane 2012). Both cases involve a denial that morality has any reality independent of, say, some "chemist" level of object, e.g., biochemical patterns that tell us not to kill relatives. While this claim sometimes occurs as bald assertion, it is often linked to some scientific discovery. Thus, we sometimes find scientists who claim that pre-determination in the brain undermines the idea of conscious choice (Soon et al. 2008).

In this section, I want to explain why the Hegelian approach has little to fear from this form of objection. Behind this attack is an assumption about the nature of explanations, viz., that explanations explain away the underlying phenomenon and reduce it to a different type of thing. This has several problems. First, what is good for the goose is good for the gander: "If offering an explanation for something were necessarily to 'explain it away,' then it is not only ethical reasoning that would be dissolved but also every kind of reasoning" (Cribb 2012, 179). Second, to motivate the belief that explaining explains away, there must also be a deep and un-provable metaphysical assumption that reality is only physical. This second problem is interesting, as part of the point of a reductionist approach is to reduce the complexity of our explanations by eliminating metaphysics.

In a statement thick with *Schadenfreude*, the reductionist is engaged in a bolder metaphysical project than Hegel. Hegel, following the principle of paucity, takes our experience to be true (if inadequately "differentiated," i.e., explained) and recognizes that "cunning of reason" means that all of our sciences, whether morality or physics, are ways that we think about the world, accepting that we are

encountering reality in our *moral* world (where we relate to things as having moral value) just as much as we do in our *physical* world (where were relate to things as physical objects). This response does not absolutely defeat the objection, but it does render the thinking of the objection a dubious thing itself insofar as the validity of the objection would invalidate all thinking—including the thinking of the objection itself. Maybe this is in fact the case, but if so this renders all of the thought we engage in moot. Thus, I will leave it aside here and up to metaphysicians and logicians to explain why we should sustain an objection that believes in the necessity of something that is not conceivable.

At the same time, it is important to realize what agreeing with Hegel implies. It does not imply nor does Hegel mean that these things we think about morality are *merely* in the heads of thinkers. Hegel remarks that "[e]ven in the domain of the spiritual world, mechanism has its place, though again it is only a subordinate one" (§195 *zu*). I will unpack this in several stages. First, "spiritual world" for Hegel refers not to some New Age religion but to the domain of thinking, i.e., beings that have spirit. Second, Hegel is articulating a realist point when he speaks of the "domain of the spiritual world" and "mechanism" having a place in it. He means that our knowledge of physics does not disappear just because we are doing morality, but it does become secondary to the framework of moral thought. Further, Hegel is not making the dubious claim that morality is merely a construction—but rather the milder and more evident claim that morality, whatever else it is, involves thinking subjects (minds). Thus, the Hegelian account I have presented is realist without being picky about the mechanics of what makes these moral values real.

6.1 Pitfalls for the Hegelian Approach

Hegel's account gives moral thought resilience towards novel technological discoveries that change the rules for the physical, chemical, and biological modes of our thought. This resilience opens it to an objection of relativism. Rorty believes that he follows Hegel in granting the moral world and physical world *complete* independence from one another as follows:

> So when the naturalists profess puzzlement about how justice and freedom fit into a world made up entirely of electrons and protons, we quietists protest that ethical deliberation serves one purpose and talk about physical particles a quite different purpose. There is no reason why vocabularies developed for these two different purposes should mesh, and no need for them to be linked up (Rorty 2006, 374).

For Rorty, this autonomy is merely an application of his belief that all of our thinking, regardless of domain, is an exercise in imagination and mere construction. In his view, both physics and morality are imaginative discourses that are not hooked into reality. One very negative consequence of this is that slavery would only be wrong because contemporary discourse says it is.

While Rorty's view seems to imply this, I argue that Hegel's view does not. We can distinguish Hegel and Rorty as departing interpreters of Kant. For Rorty, we have no access to the things themselves—and our object-talk is just a random discourse. For Hegel, our objects are how we encounter the things themselves

and (exempting errors in perception and cognition) pick out real features in their physical, "chemist," and moral domains. For Hegel, these domains represent different but real, non-reducible ways of relating to things in our world.

Hegel does not claim that our moral reasoning is always right nor does he claim that it is wholly without relation to scientific reality. In this respect, Hegel provides us a type of error theory for doing moral philosophy. Getting a moral claim wrong never leads to the end of moral reasoning. Instead, it is what Hegel calls "unhappy consciousness" where the flaw in our use of reason will later be discovered when the error comes into view. Looking historically, those who failed to perceive the wrong of slavery did so in part by failing to perceive morally relevant biology in others, e.g., humanity, which should have made them moral objects worthy of the same respect as all other human persons. Thus, for Hegel, we are realists in that we see through a glass only darkly—and often miss moral dimensions that later become clear—and our ethical thought is autonomous but not isolated from our other thoughts and knowledge.

Conclusion

For the vast majority of scientific advances, we can keep our moral reasoning merely by using common sense in its application. The further value of Hegel's approach is that it gives us the freedom to modify our moral reasoning without jettisoning it, by recognizing that moral reasoning is about a moral world populated with moral objects that already have value. Hegel supplies an account of how to handle scientific changes in our moral thought. Returning to the two objections to normative conceptions of ethics, the Hegelian approach answers both. To the "general reductionist attack," the Hegelian answer is that this objection is confused in a way that misunderstands what we are doing when think ethically. For Hegel, to think ethically is to think about ethical objects. These can also be physical, biological, chemical, and social objects. They have mass, they may be alive, and they may have social non-moral meanings as well. Hegel is not denying any of this. Instead, he is emphasizing that moral thinking refers to objects that have moral implications.

I have shown that our moral reasoning already has a robustness to handle both new scientific discoveries and internal changes in the logic of our moral reasoning. Thus, in the face of new technologies and scientific discoveries, we have no reason to believe that they can or should force us to change the way we think about morality, as certain provocateurs like Kurzweil suggest—even if they change our moral thinking on a particular issue by revealing that it has a moral feature, or revealing that the moral feature we imagined it to have was merely illusory.

In the Hegelian framework, a major task for applied ethics is to remind us as thinkers who can think in multiple ways to understand problems that belong to the social world in moral terms (Werhane 2006). For those working with animals in their research, it is the reminder that animals are capable of suffering and worthy of consideration even if they sometimes do appear on the "supplies line" in the

ledger in an economic way of thinking (Gluck and DiPasquale 2002). Or to put it another way, applied ethics implores decision makers and others to keep thinking ethically and not abandon this model of relating to the world. As Patricia Werhane puts it, "The ways we frame our experiences, and thus our thinking about ethics in business [and all applied domains], will affect decision-making and outcomes" (Werhane 2006, 404). It is precisely to say that we as human beings are not mere calculators or reductionists but thinkers engaged in encounters with real moral objects when we think morally.

References

Burgess, John P. 2007. "Against Ethics" in *Ethical Theory and Moral Practice*, 427-439.

Clark-Doane, Justin. 2012. "Morality and Mathematics: The Evolutionary Challenge" in *Ethics*, 313-340.

Cribb, A. 2012. "Multidisciplinary Approaches to Ethics" in *Encyclopedia of Applied Ethics*. Elsevier, second edition, 173-181.

Gluck, John P. and DiPasquale, Tony. 2002. "Preface" in *Applied Ethics in Animal Research: Philosophy, Regulation, and Laboratory Applications*. West Lafayette, IN, USA: Purdue University Press.

Harrison, Peter. 1991. "Do Animals Feel Pain?" in *Philosophy*, 25-40.

Hegel, G.W.F. 1991. *Encyclopedia Logic,* trans. T. F. Geraets, W.A. Suchting, and H.S. Harris. Indianapolis, IN: Hackett.

MacIntyre, Neil and Popper K. 1983. "The critical attitude in medicine: the need for a new ethics" in *British Medical Journal*, 1919-1923.

Mundy, Liza. 2013. "The Jetson Fallacy: Much longer life spans could explode the nuclear family" in *Slate* (http://www.slate.com/articles/technology/future_tense/2013/10/jetson_fallacy_if_we_live_to_150_the_nuclear_family_will_explode.html) viewed October 22, 2013.

Newton, Isaac. 1686. *Philosophiae Naturalis Principia Mathematica*. London: S. Pepys Reg. Soc. Press.

Nicholson, Daniel J. 2012. "The concept of mechanism in biology" in *Studies in History and Philosophy of Biological and Biomedical Sciences*. Elsevier. Population Registration Act of 1950 which divided South Africans into "white person," "coloured person," and "native." Link: http://en.wikisource.org/wiki/Population_Registration_Act,_1950 viewed on October 14, 2013.

Putnam, H. 1973. "Meaning and Reference" in *Journal of Philosophy*, 699-711.

Quante, Michael. 2002. "Hegel und die biomedizinische Ethik" in *Hegel und die Lebenswissenschaften*, ed. O. Breidbach and D. von Engelhardt, 261-275. Berlin: VMB.

Racial Integrity Act of 1924. Link: http://en.wikisource.org/wiki/Racial_Integrity_Act_of_1924 viewed on January 28, 2014.

Rorty, Richard. 2006. "Is Philosophy Relevant to Applied Ethics? Invited Address to the Society of Business Ethics" in *Business Ethics Quarterly*, 369-380.

Rózsa , Erzébet. 2012. *Modern Individuality in Hegel's Practical Philosophy.* Leiden, Netherlands: Martinus Nijhoff.

Rutherford, Donald. 2012. "The end of ends? Aristotelian themes in early modern ethics" in *Reception of Aristotle's Ethics*, 194-221. New York: Cambridge University Press.

Singer, Peter. 1976. *Animal Liberation.* London: Cape, 1976.

Soon, Chun Siong & Brass, Marcel & Heinze, Hans-Jochen, & Haynes, John-Dylan. 2008. "Unconscious Determinants of Free Decisions in the Human Brain" in *Nature Neuroscience*, 543-545.

Various. 2006. *Rational Animals?* ed. by S. Hurley and M. Nudds. New York: Oxford University Press.

Werhane, Patricia. 2006. "A Place for Philosophers in Applied Ethics and the Role of Moral Reasoning in Moral Imagination: A Response to Richard Rorty" in *Business Ethics Quarterly,* 401-408.

Witt, Charlotte. 2007. "Feminist History of Philosophy" in *Stanford Encyclopedia of Philosophy.* Link: http://plato.stanford.edu/entries/feminism-femhist/ : viewed on September 3, 2013.

How Have Japanese Philosophers Responded to the Problems of Risk Arising from the Fukushima Nuclear Accident: Can We Learn from Them?

Makoto SUZUKI

Introduction: The Problems of Risk Arising from the Fukushima Nuclear Accident

On March 11, 2011, an earthquake with a magnitude of 9 on the Richter scale convulsed the Tohoku district in Japan. Due to the earthquake and the resultant tsunami, the lives of over 18,000 people (and many animals) were either lost or feared dead.[1] Another singular consequence was that a serious nuclear accident occurred in the Fukushima-1 plant, and the effects of radiation spread to the environment outside the nuclear facility.[2] About 258,000 people still live as evacuees,[3] and many people think that broad areas near the nuclear plant are still too contaminated with radiation for the former residents to return.

This disaster, especially the Fukushima nuclear accident, has prompted various scholars to express their thoughts about the evaluation, control, and communication of risks. Some people argue about the problems of risk evaluation and control, claiming that if the risk of the nuclear plants and its location was properly evaluated, they would not have been built there in the first place. Many people suspect that the owner of the nuclear facilities, Tokyo Electric Power Co. (TEPCO), and its sponsor, the Japanese government, either (wrongly) regard the probability of severe earthquakes and tsunamis and the consequent failure of nuclear technology as negligible or underestimate the extent of the hazards they create. This lack of foresight had them build *multiple* nuclear plants in the current location without proper safeguards against huge earthquakes and tsunamis, and they were not prepared to contain a nuclear accident once it happened, nor did they have an evacuation plan for the neighboring inhabitants.[4]

Many people also argue about the problems of risk communication, claiming that TEPCO, the Japanese government, and nuclear researchers failed to

1 National Police Agency of Japan, July 10, 2014. This number does not include about 3,000 people who died from the injuries or illnesses aggravated by the earthquake (Reconstruction Agency of Japan, May 27, 2014).

2 According to the Tokyo Electric Power Co., the total release of radioactive materials was estimated to be about 900 PBq of iodine 131 (Tokyo Electric Power Co., 2012). With the exception of the Chernobyl nuclear disaster, the Fukushima nuclear disaster is the only level-7 accident on the International Nuclear Event Scale.

3 Reconstruction Agency of Japan, May 15, 2014.

4 For a more detailed analysis, see Yoshioka, 2011, especially pp. 382-385. See, also, The National Diet of Japan 2012 and Investigation Committee on the Accident at the Fukushima Nuclear Power Stations 2011-2012.

communicate properly with the public about the risks of nuclear accidents before and after March 11, 2011. Hence, the citizens could not determine how to deal with the effects of a nuclear accident such as the one in Fukushima. The Japanese government, and nuclear researchers provided information about stochastic phenomena, e.g., the increased risk of cancer from radiation exposure, without any of the following resources for the citizens to use properly in personal and public decision making: source information, an explanation of the number and the unit of such radiation-related measures as *becquerel* and *sievert*, the existence of alternative probability estimations, and the reason why the current estimate was chosen.[5]

This paper examines how Japanese philosophers[6], among others, have responded to the problems of the assessment, control, and communication of risks arising from the Fukushima nuclear accident.[7] In particular, I compare the views of three distinguished scholars—Hisatake Kato, Masaki Ichinose, and Kazuhisa Todayama—and consider the points of their agreement and disagreement, evaluating their respective suggestions. Introducing these philosophers' arguments written in Japanese to the English-speaking world,[8] this paper attempts to promote the cross-cultural examination of the problems of risk. What can we learn from their reflections on the Fukushima nuclear accident and generalize to other problems of risk?[9]

We start out with the problem of evaluating and (directly) controlling the risks arising from the Fukushima nuclear accident and then move on to the issues of communicating and controlling the risks indirectly through democratic processes. This order suggests that Kato's objections to the Probabilistic Safety Assessment (PSA) be treated first; Ichinose's evaluation of the risks of radiation

5 For instance, on March 25, 2011, the Japanese government recommended those living between 20 and 30 km from the Fukushima-1 plant to evacuate voluntarily, but the government provided no evidential information for this advice (Yoshioka, 2011, pp. 371-372).

6 For other philosophers' responses to the Fukushima Nuclear accident, see, for example, *Ethics, Policy and Environment,* 2011, pp. 263-300.

7 There are two reasons for this focus on the philosophers' views. The first reason is just that my strength, as a philosopher, lies in analyzing and evaluating philosophical arguments. The second reason is that you can read Japanese non-philosophers' takes on the risks arising from the Great East Japan Earthquake and the Fukushima nuclear accident elsewhere. The Committee of the Great East Japan Disaster established by and within the Society for Risk Analysis, Japan has published an English booklet that contains many Japanese scholars' papers on this issue (Ikeda & Maeda, 2013).

8 Ichinose wrote a one-page English paper (2012). Only a few Japanese philosophers have written English papers on the Great East Japan Earthquake and Tsunami, let alone the resultant Fukushima nuclear accident. As an exception, see *Ethics for the Future of Life*, where Kodama wrote about proper responses to the huge tsunami, and Shimazono examined the risk assessment of severe nuclear accidents.

9 Revising this paper, I benefit from reading Hirota's (2011) criticism of Kato. Kurata's (2012) review of Kato's book is helpful, too. I am also lucky to have had the opportunity to attend Takamura's (2013) talk on the ways Ichinose and Todayama argue about the Fukushima nuclear accident.

and the precautionary principle will be second, and Todayama's discussion of risk communication will be third. We then discuss the problems of "civilian control" of risks, and the related issues of scientific literacy.

1. Kato's Criticism of the Application of the Probabilistic Safety Assessment

Hisatake Kato, Professor Emeritus of Kyoto University, has been one of the leading academics in applied ethics in Japan. His *Essays on the Disaster: Doubts about Safety Engineering* was published just eight months after the Fukushima nuclear disaster. The primary focus of the essays is the problems of risk evaluation and control in building and maintaining nuclear facilities in Japan, including the Fukushima nuclear plants. Kato takes Harold Warren Lewis' PSA as the basis on which nuclear power engineers and their bosses evaluate and control the risks of nuclear plants.[10] Therefore, one of his aims is to point out the mistakes Lewis makes. His essays contain many interesting claims, but in this section, we focus on his criticism of the PSA used in planning (operating, and discommisioning) nuclear facilities.

The standard PSA is a cost-benefit analysis, which calculates the size of the risk as the expected value of the relevant consequences, i.e., the sum of the bad/good consequences multiplied by their respective probabilities. Kato criticizes the application of the PSA, or at least its application by Lewis, to the risk evaluation of nuclear facilities for several reasons.[11] Here, I put them into five arguments.

First, by applying the PSA, Lewis takes the probability of a nuclear disaster (the worst thing we can imagine) to be so small that it should be disregarded in designing and managing nuclear facilities, because providing for such a worst-case

10 Strictly speaking, many of them may have read and consulted the Japanese edition of Lewis' book translated by Ichiro Miyanaga, who was a nuclear scientist and member of Nuclear Regulation Authority in Japan (!), and published by Showa-do in 1997.

11 Kato also criticizes Lewis for missing the reason why electronic companies are supposed to bear a strict liability for the leak of radioactive materials, with unforeseeability not allowed as an excuse. Lewis (1990, Ch. 9) criticizes the application of strict liability in general, arguing that it is a way of bullying innocent haves to redistribute money to harmed have-nots. However, Kato (2011, p. 92) argues that strict liability is an institution to prevent an "abnormal danger" from occurring multiple times, which would be irreparable.

In this connection, he also takes a swipe at Act on Compensation for Nuclear Damage in Japan, which has nuclear operators to bear strict liability for nuclear damages, but simultaneously sets the maximum amount of compensation to 120 billion yen. Kato (2011, pp. 99-103) argues that this limit eliminates the incentives for the operators to use more than 120 billion yen to lessen the probability of nuclear damages, which is contrary to the purpose of having them bear strict liability, i.e., to reduce the probability to practically 0.

I am not sure whether the purpose of strict liability laws is, or should be limited to, reducing the risk of abnormal danger as much as possible. Nonetheless, Kato's comment on incentives is on the mark, and we should keep it in mind in crafting or changing laws on compensation.

scenario is too costly. However, Kato points out that given that the consequences of a nuclear disaster are so serious even if its probability is small, it would be inappropriate to disregard this risk. Even if a core meltdown accident occurs only once in 100 years, it might take another 100 years for the resultant polluted lands to be decontaminated. In addition, the cost of, say, adopting an earthquake-resistant design and checking the standby power system would not be that costly (Kato, 2011, pp. 44-48).

Second, Kato argues that a cost-benefit analysis cannot properly apply to the cases where the potential harm is an "abnormal danger," i.e., irredeemably huge (Kato, 2011, pp. 48-49). Apparently, Kato supposes that such harm is qualitatively different in the sense that it cannot be compensated for by any benefit.

Third, Kato argues that the probability of a singular accident does not make sense because its catastrophic consequences would make it impossible for the circumstances that can bring about the accident to happen indefinitely often (Kato, 2011, pp. 48-49). As Hirota (2011, pp. 162-163) points out, Kato seems to assume the frequency interpretation of probability; that is, the probability of some event is how frequently it happens in an indefinitely long series of the same events.

Fourth, citing a single-case problem, Kato argues that even if the probability of a singular event makes sense, the probability of a particular disaster is either 1 or 0. A particular event either occurs, in which case the probability is 1, or it does not occur, in which case the probability is 0. We should prepare for the case where the probability is 1 (Kato, 2011, pp. 50, 63-65).

The fifth point is not stated as a criticism of Lewis but as that of how the nuclear community in Japan evaluated and controlled the risk of the nuclear disaster. The community executed the PSA as if the two events were independent when actually they were not. One of the causes of the Fukushima nuclear accident was that they did not make the two types of events—the functioning of the regular electronic source (R) and that of the emergency electronic source (E)—independent of each other[12] but that they calculated the risk as if they were independent (Kato, 2011, p. ii & Section 3-2). The Fukushima nuclear accident occurred because both of the electronic sources, *which were located within the same site*, were disabled by the tsunami simultaneously. The nuclear community took the risk of the loss of electricity in the Fukushima nuclear plants to be the probability of the loss of (R) times that of (E), which is proper only if these two phenomena are independent. They have, thus, underestimated the probability of the loss of electricity, and, hence, that of a nuclear disaster from the earthquake and tsunami. Citing Takeuchi

12 That is, the Fukushima nuclear plants failed to satisfy one of the three important rules of safety engineering, that is, multiple safety barriers: each barrier against a serious risk should be "independent of its predecessors so that if the first fails, then the second is still intact" and so forth (Hansson, 2014, Section 4). Although the subtitle of Kato's book is "Doubts about Safety Engineering", his view here is perfectly in line with what safety engineering dictates.

Note also that the plants failed to satisfy another of the three rules, inherent safety, which says that we should rather eliminate a serious hazard than reduce the risk associated with the hazard (ibid.). The nuclear plants cannot help but violate inherent safety because they cannot operate without the hazard, radioactive substance.

(2010), Kato argues that, in dealing with risks, we need to make sure that the law of multiplication concerning probability—Pro(A∩B) = Pro(A) × Pro(B)—is applicable in reality,[13] for example, by locating the electronic sources of a nuclear plant far apart.

These criticisms are diverse in kind. The first and fifth criticisms do not undermine the PSA *per se* but only its particular ways of application. I certainly agree with Kato that it is a mistake on Lewis's part to regard some very small but genuine probability of a catastrophic event to be 0. However, this mistake can be corrected within the framework of a cost-benefit analysis because the harm of such a singular event is so serious that the expected value of the event would not be 0 (not even practically 0). Additionally, it is a mistake to execute a PSA as if two events are independent when actually they are not, because the expected value would then be miscalculated. I agree with Kato and Takeuchi that this is an important lesson that must be learned from the Fukushima nuclear accident, but it is hardly a refutation of the PSA.

The second issue concerns the qualitative difference in the value between catastrophic harm and benefit. If there is such a difference, we should avoid or prevent catastrophic harm, whatever its alternative involves, unless the avoidance or prevention can cause catastrophic harm as well. The standard PSA or cost-benefit analysis cannot be applied here, because it presupposes the continuity axiom and does not allow the lexical ordering of value. However, I am not sure whether there is such a qualitative difference. It seems that the accumulation of the risk of death or serious health risks in everyday affairs can match or outweigh the risk of catastrophic harm in value; it sometimes makes sense to take the latter risk in order to avoid the former risk. At least Kato provides no argument for the alleged qualitative difference.

The third and fourth criticisms would also undermine the PSA if they were correct, but they presuppose that the frequency interpretation of probability is the only viable option. However, there are other possible interpretations of probability, such as the propensity interpretation and the subjective/epistemic interpretation. Under these interpretations, the probability of a catastrophic event makes sense even if there is not an indefinite series of events that can bring it about, and a particular event can have a probability that is neither 0 nor 1. In actuality, applying a PSA or cost-benefit analysis, the practitioners often use the subjective/epistemic interpretation (Hirota, 2011, pp. 162-163). Perhaps Kato discredits the subjective/epistemic interpretation for its arbitrariness. However, because we are not omniscient, a cost-benefit analysis based on the subjective notion of probability seems to be unavoidable in many situations. Can Kato provide an alternative?

Kato (2011, Section 2.3), in fact, suggests an alternative. He argues that even if the probability of a serious or irreparable harm is so low that the expected harm—the harm times its probability—becomes smaller than the cost of preventing harm, we should *not* reject the preventive measure for that reason. A nuclear disaster is one of those cases. In such a case, we should either reduce the probability of the

13 When two events A and B are not independent, Pro(A∩B) = Pro(A) × Pro(B given A), which is never smaller than Pro(A) × Pro(B).

potential harm to be practically 0 or else give up the use of the technology that can bring the harm in question. This might well be taken as an application of an interpretation of the precautionary principle. We will come back to the issue of applying the precautionary principle after browsing Ichinose's contributions.

2. Ichinose on the Risks of Avoiding Radiation and the Precautionary Principle

Masaki Ichinose is a professor at Tokyo University and specializes in the philosophy of causation and personhood. Like Kato, he deals with risk evaluation and control, but his focus is not on nuclear policies but on how we evaluate and cope with the ongoing problems of radiation arising from the Fukushima nuclear plants.[14] His *Philosophy Tackling the Problems of Radiation* again makes many significant points; four of the main theses are summarized in its introduction.

First, given that nearly 20,000 people were lost or feared dead and that a large number of people are still evacuees, the harm from the Great East Japan Earthquake and Tsunami is far greater than the harm from the radiation from the Fukushima nuclear accident. Therefore, we should not obsess over the problem of radiation and undervalue the other problems in decision making. Second, we should accept the fact that we cannot avoid receiving a dose of radiation higher than we received before the accident and consider what can change this condition as good as it can be given the condition. Third, the present and expected levels of radiation turn out to be much lower than what was feared.[15] Therefore, we should stop insisting on applying the precautionary principle to the risk of future radiation. Fourth, the earthquake, tsunami, and nuclear accident have produced a widespread sense of distrust of governmental agencies, scientific experts, and each other, which leads to disrespect for the facts and others' arguments. We should deal with this mistrust and anxiety, which brings about wrong-headed and hurtful behavior, for example, avoiding radiation through fraught evacuation.

While the second claim is not controversial, the other three claims are potentially problematic. As for the first and fourth claims, one might wonder whether the risk of radiation is really so small that evacuation is wrong-headed. Concerning the third claim, one might think that the precautionary principle should be applied to the problem of future radiation. So in this section, we examine Ichinose's views on these two issues.

Ichinose (2013, Ch. 1) argues that avoiding radiation, e.g., evacuating the areas

14 While he does not offer his view on whether Japan should stop operating nuclear facilities, Ichinose (2013, p. 254) suggests that the Japanese government should support the evacuees (except those whose houses are near the Fukushima-1 plants) to return to their homes in Fukushima and restore their lives gradually to the former state.

15 According to Ichinose (2013, p. 251), about 90% of the inhabitants in Fukushima prefecture have been exposed to only less than 5 mSv of radiation externally since the Fukushima nuclear accident, and most of them have been exposed to only less than 1 mSv externally. Internal exposure is almost zero except for those who have eaten vegetables grown in their own gardens (Ichinose, 2013, p. 252).

taken to be contaminated with radiation, has its own disastrous consequences; actually, while many people have died in the process of evacuation,[16] the radiation from the Fukushima nuclear plant has not killed any human or animal yet. The harm of radiation is different from the harm of avoiding radiation. For normal residents in Fukushima, the risk of radiation, i.e., the danger of death from radiation-caused cancer is smaller than the risk of losing a job, house, or community due to an evacuation.[17] While prioritizing the avoidance of radiation just after an accident is understandable, once we understand that the threat of radiation from the Fukushima nuclear plant is limited, we may well stop worrying about the radiation so much and take the harm of the avoidance into account.

I think that taking the harm of avoiding radiation into account is an important suggestion, and I agree with Ichinose, that by now, insisting that people continue to evacuate is not necessary and perhaps even harmful, except to those who live in the areas where the radiation level is still high. However, it is unclear whether the consequences from radiation can or should be distinguished from the harm caused by avoiding radiation. Some people living near the Fukushima nuclear plant were ordered by the Japanese government to evacuate, and as Ichinose himself admits, it was sensible even for other residents in Fukushima to have tried to avoid radiation just after the nuclear accident occurred, when nobody knew how serious its impact would be (Ichinose, 2013, p. 174). Moreover, once residents have evacuated for a while, found jobs elsewhere, and joined other communities, it is hard to go back home to Fukushima. Therefore, the nuclear accident either forces or rationally urges many people to avoid radiation. In this context, it is not clear whether, in applying a cost-benefit analysis, we can and should distinguish the harm of avoiding radiation from that of the radiation itself.

As for the precautionary principle, Ichinose (2013, Ch. 8) argues that it is appropriate to apply the strong version of the precautionary principle only to the limited cases where, for example, the relevant information is so lacking that the risks cannot be estimated. This is because, while applying the strong version enables us to evade the target risk, it might well have us suffer the countervailing risks, which might be larger.[18] Ichinose argues that as for the problem of radiation from the Fukushima nuclear plant, we already know that the target risk is smaller than the countervailing risk, that is, the risk of trying to avoid the radiation, so we should *not* apply the strong version of the precautionary principle.

Kato recommends using the (seemingly, strong version of) precautionary principle when the potential harm is an "abnormal danger," i.e., irredeemably huge. Ichinose criticizes the principle because the countervailing harm might well be larger. Apparently, here is a disagreement.

16 Ichinose (2013, p. 252) suggests that more than 600 people died in the process of evacuating and living as evacuees.

17 It is true that no resident has suffered acute radiation damage, and the increased risk of radiation-related cancer is apparently small (WHO, 2013, p. 8). However, as Yoshioka notes (2011, p. 373), the death toll of the earthquake and tsunami increased probably because the Fukushima-1 accident prevented rescue operations around the areas near the plant.

18 For a similar argument, see Sunstein, 2007, Ch. 3.

Ichinose's argument will not persuade Kato or the other defenders of the strong version of the precautionary principle, because it seems to depend on a cost-benefit analysis, which takes into account the target harm and the countervailing harm equally and recommends the policy that minimizes the balance.[19] However, the defenders of the (strong version of) precautionary principle, like Kato, are criticizing a cost-benefit analysis itself, so they would not accept the conclusion that is based on such analysis.[20]

Still, Kato does not provide a convincing argument that we may disregard the countervailing value when abnormal danger is involved. True, he suggests that the abnormal danger cannot be compensated by any normal benefit; however, he does not defend this disputable intuition by argumentation, and the radiation from the Fukushima nuclear accident might not be so abnormally dangerous,[21] so Ichinose is not convinced, either. We need to find some common ground for both and discuss which is more plausible on that basis: a cost-benefit analysis or the strong version of the precautionary principle.

Whichever framework is adopted, it must be applied by somebody, and its expected consequences should be communicated to those potentially affected. It is time to consider the problems of communication and social choice about risks.

3. Todayama's Insistence on the Accurate and Anti-Paternalistic Modes of Risk Communication

Kazuhisa Todayama is a professor at Nagoya University, and his specialties include philosophy of science. His focus is different from the former two. While being sympathetic to the cost-benefit analysis,[22] his focus is not on the evaluation of risk[23] but on the risk communication between specialists and non-specialists, though it turns out to concern the control of risks through democratic processes. His views are expressed in two works: "Science and Technology Communication after the Fukushima Nuclear Accident―Regarding Radiation Risks―"(2011a, *Society and Ethics* 25:pp. 121-138); and, *The Lessons of* "*Scientific Thinking*"*: the Sciences that Schools Do Not Teach* (2011b), where Todayama intends to increase the scientific

19 Following Graham *et al*. (1995), Ichinose calls this methodology a "risk tradeoff analysis."

20 Ichinose and Todayama (2011b, pp. 251-253) share the tendency to try to improve our judgments of risk by recognizing our mistakes and cognitive biases though a cost-benefit analysis. This attitude also presupposes the legitimacy of a cost-benefit analysis, which can be rejected.

21 Ichinose thinks that the harm of trying to avoid radiation is often more harmful than that of the radiation itself, so he probably argues that if the radiation counts as an abnormal danger, the attempt to avoid an abnormal danger could cause another abnormal danger. If this claim were true, Kato could not disregard the countervailing value for the reason that the abnormal danger cannot be compensated by any normal benefit.

22 See Todayama, 2011b, pp. 251-252. However, Todayama (2011b, p. 261) also points to the problem of fairness in risk distribution.

23 However, as we see in the next section, Todayama makes many insightful comments on the evaluation of risk in his works.

literacy of the readers as citizens. In this section, we focus on Todayama's two observations about scientific communication in and after the Fukushima nuclear accident. We examine his view on scientific literacy later.

Todayama's first point about risk communication concerns the following fact: as in evaluating the risk of being exposed to low-dose radiation, people often need to evaluate risks when many relevant facts are unknown. He argues that in those situations, it is important to communicate the obscurity of the situation, i.e., what is known, what is not known, and to what extent. However, in aiming at easy comprehensibility, science communicators fail to relate the obscurity accurately and mislead the readers through paraphrase, simplification, and the use of metaphors (Todayama, 2011a, p. 127).

This rather condescending attitude of specialists is related to Todayama's second observation. Whether science communicators are for or against the operation of nuclear plants, they assume the so-called "deficit model" of communication. They think that the beliefs and resultant behavior of non-specialists are emotionally driven and caused by a lack of scientific knowledge, and once they know the relevant scientific information, their emotional reaction is dissolved, and their beliefs and behavior change in the right direction. Therefore, their style of communication has been that of enlightenment and persuasion, failing to present alternative accounts and to cite the original data or the source of scientific theories (Todayama, 2011a, pp. 134-135).

Todayama (2011b, pp. 265-269) recalls that until the nuclear accident, non-specialists also took the deficit model of communication for granted. That is, both specialists and non-specialists presumed a kind of paternalism in science communication. However, after the Fukushima nuclear accident and the many failed predications from specialists about it, the specialists' authority was tarnished. Furthermore, people now face the real problem of radioactive contamination that can affect them, so the rhetoric of persuasion does not work, at least in terms of the risks of radiation. Todayama thinks that this is a positive sign: we need to change the goal of scientific communication from persuading citizens to assisting citizens' autonomous decision making, for example, in radiation protection.

From the vantage point of 2014 (rather than 2011 when Todayama wrote), I think he was a little bit too optimistic. It seems that many specialists in Japan still behave as if they have the right to tell normal citizens in Japan what they should think and do, for example, about technological risks. Many of the recipients go back to relying on the specialists and then criticize them for failing to give certain and conclusive answers and solutions to science- or technology-related problems. Specialists do not want to give up their apparent "right," and non-specialists do not want to take responsibility for their decisions. Todayama (2011b, p. 206) realizes this "complicity in a crime," but he does not provide a way to overcome the situation. We still need a way out.

4. The Extent of "Civilian Control"

Now, Ichinose shares with Todayama the emphasis on citizens' autonomous decisionmaking, but he simultaneously laments the public's mistrust of the information that only specialists can offer (Ichinose, 2013, p. 84). While Kato (2011, Ch. 6) criticizes technofascism, he also cautions against technopopulism. Technofascism points to the phenomena where experts in science or technology enforce certain scientific-technological policies without regard to consensus building among citizens. Now, the notorious "Japan's Nuclear Power Village" lobby has apparently espoused a version of technofascism (Kato, 2011, p. 119). Technofascism is opposed to democracy and violates the principle of informed consent. The opposite pole, technopopulism, takes the view that if scientific-technological issues are discussed democratically as all the relevant information is made open to the public, then rational conclusions will be reached on those issues. However, according to Kato, relegating the "determination" of scientific truths to non-specialists is problematic. Kato also points out that democracy about science-related issues, for example, the problem of how we should contain radioactive contaminants, does not guarantee that the interests of all those concerned, in particular, those of future generations, are taken into account.

I share Kato's worry about technopopulism. It is not guaranteed that what non-specialists democratically "decide" correctly represents the fact of the matter, for example, the mechanism of radiation and the nuclear plant; it is not guaranteed that their decision will be fair to future generations, the disenfranchised, and animals. We need to consider the respective roles of citizens and specialists in decision making on science-related issues, including the problem of radioactive materials, for the benefit of all the parties potentially affected.

Kato, Ichinose, and Todayama agree that personal choices must be left to the individual citizen unless their actions are harmful to others.[24] For example, Ichinose concedes that people in Fukushima may decide for themselves whether they should evacuate to escape radiation, while criticizing the act of urging others to evacuate by (over)emphasizing the risk of radiation (Ichinose, 2013, pp. 258-259).[25] The possible matters of disputes are individual decisions that affect others and collective decisions.

Todayama (2011b, pp. 198-199) points out that, while social problems frequently concern science and technology, many of them are not solvable by

24 In order to make decisions effectively, individuals need to know the relevant facts about their options. This means that if scientific-technological information is relevant to their choices, it should be available to them (Kato, 2011, p. 122). However, because it is difficult for normal individuals to check the correctness of such information, the government and experts can manipulate them by giving inaccurate information to promote their goals. In addition, in the Fukushima nuclear accident, even the experts do not agree on the risk estimation. We need to consider how to deal with these problems of manipulation and uncertainty.

25 Although what counts as harmful has been a perennial issue since Mill (1859) submitted a prototype of this harm-to-others principle, few doubt that many personal decisions are best left by the government and society to the individual actors themselves.

these two alone. The problems arising from the Fukushima nuclear accident, such as whether we may disregard the potential loss of all electricity sources for the nuclear facilities or whether we should prepare for that possibility, are not, thus, solvable for three reasons: first, the limits of current scientific knowledge and the infeasibility of the decisive solution; second, the inherent uncertainty of the object of investigation; third, the unavoidable involvement of values. The problems that share some of these characteristics are, to cite Weinberg (1972), "questions which can be asked of science and yet which cannot be answered by science." Todayama agrees with Weinberg that these "trans-science" problems should not be trusted to specialists in science but should be discussed and checked by normal citizens as well, because science is so powerful that runaway science is very dangerous.[26] However, while Weinberg holds that trans-science problems should be made solvable by science as much as possible, Todayama argues that this is not the best idea. When a trans-science problem is reframed as a problem of science, the problems that science cannot solve by itself might be put aside. Science only asks the questions that it can answer, so it tends to disregard certain problems systematically. Todayama (2011b, p. 220) regards social, economic, and cultural risks as the representative instances of such problems. I agree that these risks are often neglected, partly because they are hard to quantify, measure, or verify.

As another reason for having the public involved in social decisionmaking about risk, we can also cite the principle of informed consent. As Kato (2011, p. 120) points out, the creators of risks should explain the nature of the risks adequately to the potential suffers and get their free consent. Because nuclear facilities create the risk of radiation to people in large areas, many citizens have the right to be informed of the potential radiation and to influence the decision over nuclear policies.

The Japanese and perhaps people around the world have relegated many of the trans-science problems involved in nuclear facilities and radiation to the government and partly to specialists in science. As a result, the "civilian control" (Todayama, 2011b, p. 209f) of the nuclear plants and materials has not worked effectively and Fukushima suffers its consequences. There must be a system or process where the voices of citizens and specialists can be reflected in risk-related political decisions (Todayama, 2011b, p. 213f; Takamura, 2013). At the same time, we need to consider what the citizens can do to cope with trans-science problems, specifically the problems of nuclear risks, while being scientifically and technologically informed in a certain feasible way.

26 Note that Todayama is not anti-scientific at all. He believes that science, as a whole, is a reliable practice because it has been organized in such a way that individual mistakes and cheatings are found and corrected. However, the local groups of scientists and their practices sometimes get unsound, and when this happens, they will become less reliable and more dangerous (2011b, pp. 196, 296-297).

5. Todayama on the Scientific Literacy of Citizens and Their "Responsibilities"

This last task involves two clusters of important issues. First, what kind of knowledge and skill does a citizen need to critically consider and deal with trans-science problems, including the problems of risks arising from scientific technologies? Second, who is the citizen, and does she have the obligation to acquire the relevant kind of knowledge and skill and to join democratic processes with them at hand? If so, why? Todayama deals with these questions.

As to the first question, Todayama thinks that the amount of scientific knowledge is not that relevant to the civilian control of science—the end for non-scientists in this context. What the citizens need to know is not what science has discovered and verified but what kind of activity science is (Todayama, 2011b, p. 191). More concretely, they should know how science proceeds, how science and its results are incorporated into governmental policies, and what social conditions make science diseased. For example, in the case of nuclear science in Japan, citizens should know what social conditions and what power relations among various sectors had it produce dangerous technologies. Such metascientific knowledge enables citizens to evaluate the activities of scientists and examine the credibility of these experts (Todayama, 2011b, pp. 210-212). Todayama's *The Lessons of* "*Scientific Thinking*" is an attempt to provide readers with such metascientific knowledge.[27] For illustration, let us look at three of the lessons Todayama gives, which I take to be practically important. This illustration also gives you a glimpse of his ideas on evaluating risks.

First, Todayama (2011b, pp. 201-204) points out that when technologies are unleashed, they are inherently incomplete. Because we cannot make sure that these technologies are safe in every possible situation before they are applied in society, we often find problems and dangers only afterwards. Nuclear technologies are no exception; for example, the problem of stress corrosion cracking in the pipework of nuclear plants was found only after they were constructed and used worldwide. Second, Todayama (2011b, pp. 235-250) points out that science has uncertain areas where several alternative hypotheses are scientifically viable; there are various ways of modeling and estimating the target phenomena. Behind such scientific disputes, political conflicts might exist. For instance, the International Commission on Radiological Protection (ICRP) and the European Committee on Radiation Risk (ECRR) disagree on how to model the cancer-causing risks of radiation, and consequently, on what standards to adopt. Additionally, the ICRP criticizes the ECRR for being biased against nuclear technology while the ECRR criticizes the ICRP for being biased in favor of the nuclear industry. Third, in dealing with such uncertain areas, we need to consider not only whether the current condition is safe but also whether this safety will be secured even in the future. As for nuclear technologies, we should of course make sure that radioactive materials do not leak from operating nuclear plants and earthquakes and tsunamis do not cause another nuclear accident. However, we should also ensure that this safety would be systematically maintained in the future and for acceptable costs. Is there such a safety-securing and affordable technology? If so, can we maintain its proper application in the future at reasonable costs? Here we need to consider not only the scientific and technological factors but also the social, political, and economic factors, for instance, whether we can ensure the ethical conduct of nuclear researchers, the regulatory compliance of nuclear companies, and the independence of the supervising agencies (Todayama, 2011b, pp. 255-260).

As for the second cluster of questions, Todayama's attitude is a bit vague. He (2011b, pp. 263-264) takes citizens as subjects who serve certain social roles through dialogue. Citizens, unlike mere masses, know that they are a part of the public system and that the system does not work properly unless they play their roles. Citizens need the scientific literacy of the above sort to conduct the civilian control of science (Todayama, 2011b, *passim*, e.g., p. 221). Now, the question is whether we should all become citizens, acquire the relevant kinds of knowledge and skill, and join the democratic processes with them. Todayama (2011b, p. 195) seems to answer "yes" at one point, because he says that scientific literacy is necessary for all adults. At another point, Todayama (2011b, p. 269) states, however, that you do not need scientific literacy if you do not wish to become a citizen and to keep this science-infused society safe and sound. This condition seems to imply that people do not have the categorical obligation to acquire scientific literary as citizens. Because Todayama (2011b, pp. 269-271) praises Yasuko Tomabechi, who he takes to exemplify a citizen, he presumably takes being a citizen to be a type of virtue but hesitates to require all adults to acquire that virtue.[28] I suspect that Todayama does not believe that all adults have the ability and will necessary to become citizens.

If not every adult can acquire scientific literacy, what should we do? This question has been lingering at least since Morris Shamos wrote *The Myth of Scientific Literacy* in 1995, which Todayama (2011b, pp. 211-212) cites. Should we lower the level of scientific literacy so that everyone can acquire it? In that case, the civilian control of science, say, nuclear science, might not be socially beneficial, given that the controllers do not sufficiently know what they are dealing with. Should we rather ask—or require—only the capable and willing to join the democratic process concerning science and technology? It is not clear whether this selective response is consistent with the ideal of democracy.

Todayama (2011b, pp. 297-298) regards it as our challenge to harmonize two modern precious heritages—science and democracy—and *The Lessons of* "*Scientific Thinking*" is intended to help meet this challenge. The potential dilemma in the last paragraph suggests that this challenge is not that easy to meet.

27 Kato's and Ichinose's books also have such educational aspects.

28 Some criticize Todayama's praising of her for the attitude of taking responsibility for her decision to stop selling her (possibly) slightly radioactive rice and for its consequences. They say here he upholds neoliberalism (e.g., Takamura, 2013). However, note that Todayama does not say that the government may not interfere with the emission of nuclear materials or that her loss should not be compensated by the government, for the reason that it is a consequence of her free decision.

Concluding Remarks: Lessons for the Future

The problems of risks are varied.[29] The Fukushima nuclear accident, unfortunately, involves all types of risk problems, from the issues of evaluation through control to communication. It is my hope that examining this case and offering suggestions will provide some valuable lessons for other present and future problems associated with big risks.

As Kato emphasizes, if we construct or maintain a nuclear facility,[30] we should minimize the risks of nuclear accidents by making each security risk independent of the other. Additionally, we should not act as if the risk of a severe accident is zero: we should prepare for it. Once a nuclear accident occurs, as Ichinose emphasizes, we need to take into account the harm of avoiding radiation as a countervailing risk. In evaluating the risks, we cannot avoid the theoretical problem of how to apply a cost-benefit analysis and the precautionary principle. As Todayama observes, throughout the above series of events, accurate communications that do not conceal uncertainties are significant. The current one-sided way of communication from specialists to non-specialists is paternalistic, and it will not help personal and public decision making. We need to find some way to improve risk communication so that people can responsibly deal with individual and trans-science problems while being informed scientifically and technologically. This task invites the question of what type and level of scientific literary we can expect people to acquire, and, as Todayama argues, one of the most important will be certain metascientific knowledge. Furthermore, specialists and non-specialists should be given the proper respective roles in decision making on science-related issues, including the problem of radioactive materials, for the benefit of all the parties potentially affected. At the same time, there must be a system where the voices of citizens as well as specialists can be reflected in risk-related political decisions.

29 As Takamura (2013) emphasizes, there are other important issues of risk related to the Fukushima nuclear accident that this paper does not discuss. I take one of them to be the problems of conflicts of interests. For example, because the government and electronic companies often fund the studies of nuclear scientists and engineers, these scientists and engineers might not provide risk-related information to the public if it works to the detriment of their policies. For another example, many members of the regulatory agency in Japan have been nuclear scientists and engineers. It appears that this lack of independence has made supervision nearly moot.

Another issue is the distortion of risk judgments and democratic decisions caused by the presence of risk sources—nuclear plants, for instance. Once the plants are constructed, the locals work there and subsidies are given to the communities, and the inhabitants find it difficult to judge the nuclear facilities to be risky because their jobs and lives depend on their operation.

It is hard to estimate how much these factors contribute to the Fukushima nuclear accident, but we should expose such covert influences and lessen them where we can.

30 As the nuclear plants have been constructed and will be constructed around the world even after the incident of Fukushima, we will be haunted by the problems of risk arising from these plants and their wastes (Fukushima Project Committee, 2012, Ch. 7).

Acknowledgment

This research was supported by Nanzan University Pache Research Subsidy I-A-2 for the 2014 academic year.

References

Ethics, Policy and Environment (2011) 14 (3).

Fukushima Project Committee (ed.) (2012) *Fukushima Report: The Essence of the Nuclear Accident* (Nikkei Consulting).

Graham, J. D., Wiener, J. B., and Sunstein, C. R. (eds.) *Risk vs. Risk: Tradeoffs in Protecting Health and the Environment* (Harvard University Press).

Hansson, Sven Ove, "Risk", *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/spr2014/entries/risk/> (Retrieved: July 13, 2014).

Hirota, Sumire (2011) "Various Problems in Risk Communication and Uncertainty in the Great East Japan Earthquake." *Journal of the Society for Risk Analysis, Japan* 21(3) : pp. 157-164.

Ichinose, Masaki. (2012) "Uncertainty and the Precautionary Principle concerning Problems about Radiation Exposure—A Thought on Life and Death in a Disaster—" in H. Ieda and N. Park (eds.) *Vulnerability and Toughness in Urban Systems* (Global Center of Excellence for Sustainable Urban Regeneration).

Ichinose, Masaki. (2013) *Philosophy Tackling the Problems of Radiation* (Chikuma).

Ikeda, Saburo, and Maeda, Yasunobu. (eds.) *Emerging Issues Learned from the 3.11 Disaster as Multiple Events of Earthquake, Tsunami and Fukushima Nuclear Accident*. March 11, 2013. URL=<http://www.sra-japan.jp/cms/uploads/311Booklet.pdf> (Retrieved: July 13, 2014).

Investigation Committee on the Accident at the Fukushima Nuclear Power Stations. (2011-2012) *Interim Report and Final Report*. URL= <http://www.cas.go.jp/jp/seisaku/icanps/eng/> (Retrieved: July 13, 2014).

Kato, Hisatake. (2011) *Essays on the Disaster: Doubts about Safety Engineering* (Sekaishisosha).

Kurata, Nobuo (2012) "Kato, Hisatake. (2011) *Essays on the Disaster.* Sekaishisosha." *Society and Ethics* 27 (Nanzan University Institute for Social Ethics): pp. 204-205.

Lewis, Harold Warren. (1990) *Technological Risk* (New York: W.W. Norton).

Mill, John Stuart. (1859) *On Liberty.*

The National Diet of Japan (2012) *Reports of Fukushima Nuclear Accident Independent Investigation Commission*. URL=<http://warp.da.ndl.go.jp/info:ndljp/pid/3856371/naiic.go.jp/en/report/> (Retrieved: July 13, 2014).

National Police Agency of Japan. "The Damage Situation of the 2011 Tohoku-Pacific Ocean Earthquake and Police Measures." July 10, 2014. URL=<http://www.npa.go.jp/archive/keibi/biki/higaijokyo.pdf> (Retrieved: July 13, 2014).

Reconstruction Agency of Japan. "The Number of Evacuees across the Nation." May 15, 2014. URL=<http://www.reconstruction.go.jp/topics/main-cat2/sub-cat2-

1/20140523_hinansha.pdf> (Retrieved: July 13, 2014).
Reconstruction Agency of Japan. "The Number of Deaths Related to the Great East Japan Earthquake." May 27, 2014. URL=<http://www.reconstruction.go.jp/topics/main-cat2/sub-cat2-1/20140527_kanrenshi.pdf> (Retrieved: July 13, 2014).
Shamos, Morris. (1995) *The Myth of Scientific Literacy* (Rutgers University Press).
Sunstein, C. R. (2007) *Worst-Case Scenarios* (Harvard University Press).
Takamura, Natsuki (2013) "On Science and Technology Studies 'after 3.11'." Presentation Delivered at Hosei University, Ichigaya, on November 23, 2013.
Takeuchi, Kei. (2010) *What is an Accident?: Its Positive Meanings* (Iwanami).
Todayama, Kazuhisa. (2011a) "Science and Technology Communication after the Fukushima Nuclear Accident—Regarding Radiation Risks—" *Society and Ethics* 25 (Nanzan University Institute for Social Ethics): pp. 121-138.
Todayama, Kazuhisa. (2011b) *The Lessons of "Scientific Thinking": the Sciences that Schools Do Not Teach* (NHK).
Tokyo Electric Power Co. (2012) "Press Release (May 24, 2012): The Estimated Amount of Radioactive Materials Released into the Air and the Ocean Caused by Fukushima Daiichi Nuclear Power Station Accident Due to the Tohoku-Chihou-Taiheiyou-Oki Earthquake (As of May 2012)."
Uehiro, Tetsuji. (ed.) *Ethics for the Future of Life: Proceedings of the 2012 Uehiro-Carnegie-Oxford Ethics Conference* (2013), URL=<http://www.practicalethics.ox.ac.uk/publications/data/2013/conf_proceedings> (Retrieved: July 13, 2014).
Weinberg, A. M. (1972) "Science and Trans-Science." *Minerva* 10(2).
WHO. (2013) *Health Risk Assessment from the Nuclear Accident After the 2011 Great East Japan Earthquake and Tsunami Based on a Preliminary Dose Estimation*.
Yoshioka, Hitoshi. (2011) *The Social History of Nuclear Power: Its Development in Japan* (Asahi Shinbun Publication).

From Environmental Ethics to the Ethics of the Ecumene: The Landscape of the Genetically Modified Crops

Yu INUTSUKA

Introduction

0.1 Landscape of the Genetically Modified Crops

The question of today's landscape saturated with micro-scale technologies is, in short, the question of our existence. During the course of my research on the issue of genetically modified crops, I encountered the following passage. It was a comment by Aaron Woolf, the director of the documentary film *King Corn* questioning the pros and cons of genetically modified corn.

> If there had been reason to suspect that over-production of sorghum or rice lay behind our national health crisis, I don't think I would have been as excited about making this film or as somehow conflicted about bringing it out into America. But the thought that corn could be implicated—this hit where it hurts. (Woolf 2012, 4)

Woolf said, "I loved the landscape of Iowa," where he moved 16 years prior to making the documentary. He then described his shock and disappointment in learning that the corn had been replaced by genetically modified corn long before he moved to Iowa. Finally, he concluded that he had just started to understand the landscape that he enjoyed is causing the environmental destruction and harm to human health.

What led him to make a film focusing on the issue of corn, rather than sorghum or rice? More importantly, why did he feel "hurt" when he found out that the landscape around him was made of genetically modified corn? If we regard this simply as the issues of human health, or of the "environment" in the ordinary sense, i.e., the ecological environment, we will not understand the significance of his disappointment.

0.2 Deadlock in Environmental Ethics

The issues seen in the film director's comments raise the problems in general views of human existences and their environment. We need to rethink the relationship between them, and the French geographer Augustin Berque's "ethics of the ecumene" opens this possibility. Berque published his book *Être humain sur la Terre, principes d'éthiques de l'écoumène* (*Being Human on the Earth: Principles of the ethics of the ecumene*) in 1996. This book, published in the same year as *Environmental Pragmatism* by Andrew Light, Ernst Katz, et al., has suggested

the possibility of a significant turn in environmental ethics, but its importance has not been well examined. While environmental pragmatism has been raised and analyzed by many researchers, the philosophical investigation of the "environment" in the context of ethics has ceased or is said to be in "confusion" (Uegaki 2009). We must begin by critiquing this situation, and the next section explores and expands the ethic of the ecumene by Berque.

As is well known, environmental philosophy or environmental ethics has experienced a deadlock in the opposition between "non-anthropocentrism" and "anthropocentrism." In case of genetically modified crops, we also find radical oppositions. For example, one of the main activists opposing genetically modified crops, Vandana Shiva, insists that every species has basic rights and intrinsic value. "The conservation of biodiversity, at the most fundamental level, is the ethical recognition that other species and cultures have rights, that they do not merely derive value from economic exploitation by a few privileged humans" (Shiva 1997, 123). To the contrary, the moral philosopher Gregory Pence insists that "morality only belongs to human beings" and criticizes Shiva's position: "The statement that all organisms in an ecosystem are equal in intrinsic worth is simply stupid. Any ethics that holds a human baby and an ant to be equal in intrinsic worth is also evil" (Pence 2002, 132). According to Pence, the value of the environment is no more than a social construction. While he acknowledges concerns about environmental damage, he says that preservation of environment "is neither an absolute value nor the only value. Interests of humans matter the most, especially starving humans" (Pence 2002, 189). As long as the principles are compared, they are fundamentally opposed to each other and never reach a conclusion.

Since the 1990s, researchers of "environmental pragmatism" have broken the deadlock of such oppositional structures. They criticized the endless metaphysical discussion and attempted to build "useful" ethics. I agree that their approach of environmental pragmatism, which tries to solve the opposition in actual fields by clarifying the motivations of each statement, is powerful, as many researches have shown.

However, the criticism of the "intrinsic value of nature" by environmental pragmatism has posed the ontological examination of human beings and nature. Uegaki writes that environmental pragmatism has caused academic confusion in environmental philosophy which is supposed to be a philosophical investigation of "environment" (2009).

> Why then did this challenge cause "confusion?" I think it was because the researchers who made the "turn" had misunderstood the real moot point. They had seen the cause of failure mainly in "the limit of intrinsic value theories." They then directly linked the limit as of "abstract theories or discourses." The real problem, however, was that the contemporary environmental philosophy has placed environmental ethics at the center and been too much fixated on the ethical point of view or "world view problems." (Uegaki 2009, 5-6)

His statement that the limit of "intrinsic value theories" is not the limit of "abstract theories or discourses" is valid, and there remains a possibility for the further theoretical investigation. This investigation is necessary since the approach of environmental pragmatism can address the issues only when they are raised among people and oppositions in their claims arise. As an academic discipline, philosophy has its role to depict and predict the potential issues.

However, it is not necessary to make clear distinction between environmental philosophy and ethics as Uegaki states: in fact, they could be fundamentally inseparable. The ethics of the ecumene, as discussed below, shows that human existence as a moral subject emerges in the interaction with its environment. That means ontological investigation of human beings and their environment inevitably links to the ethical point of view.

While the theories of the "intrinsic value of nature" face an impasse, there still remains the possibility of theoretical investigation of the relationship between human beings and their environment. In this paper, I examine Berque's "ethics of the ecumene" by tracing its development in his works. Then from the view point of ethics, I analyze the comments of the film director and the moral issues of today's emerging technologies.

1. Berque's "Ethics of the Ecumene"

1.1 Criticisms of the Idea of the "Rights of Nature" and Ecological Holism

To propose a new ethical claim, the essential conditions of ethics must be clarified. In *Être humain sur la Terre*, Berque first criticized the idea of the "rights of nature" in the ecological movement as an unethical claim principally because of the inequality of rights and duties.

> Unlike customs, which are woven from approximations and unspokens of everyday life, ethics cannot go without explicit and consistent ontological principles. […] We must know precisely which beings, and in which condition (active or passive, full or partial, absolute or conditional...), are affected by the most important ethical categories which are rights, duties, virtues, etc. It is only on such foundations that it may be justifiable to enact moral rules. (Berque 1996, 64-65)

Moral philosophers like Peter Singer have attempted to expand the rights of humans to animals: however, Berque criticized their claims as based on "serious inconsistencies" at the fundamental level (Berque 1996, 65). The most obvious of which is related to the relationship between rights and duties. In terms of human beings, a symmetrical relationship exists between these two. Meaning, each subject has a duty to respect others' rights. However in case of the "rights of nature," only human beings have the duty to respect others' (here, humans' and animals') rights but we cannot force a cobra to have a duty not to bite a child (Berque 1996, 65).

Thus, the "rights of nature" argument violates the fundamental criteria to be an ethical claim.

> They [views claiming the "rights of nature,"] however, have a certain logic and involve a certain ontology, namely holism, that is to say, an ontology where, within the same category of being, the general being (l'être général) prevails in the value over the particular being (l'être particulier).
>
> The category of being concerned in the ecological holism is the living being, without distinction between humans and others. […]
>
> Ecological holism eliminates, as we see, the question of human subjectivity, which is nevertheless inevitably relevant to the double initial question of ethics. Therein its position is ethically untenable. Indeed, it explains *why* we must respect the ecosystems, but to the question of *who* must respect them, it is either silent or incoherent. (Berque 1996, 68-69)

The subjectivity of human beings is the basis of ethics. In other words, any judgments disregarding the human subjectivity are unrelated to or opposed to ethics at the fundamental level.

Underlying this statement was Berque's position of "possibilism" of Vidalian geography in France. Possibilism rejects "environmental determinism" wherein the environment determines the figure and behavior of a population. Berque has focused on the effects of the mutual interaction between the human subjectivity and his/her environment in his earlier works (Berque 1985; Berque 1990). To avoid falling into the "thesis of fascists" (Berque 1996, 73), the potential logic of ecological holism wherein goodness is to respect the whole while denying the individual subjectivity, Berque aimed to propose a new environmental ethics from this view point of geography.

1.2 Criticisms of Modern Ethics and View of Human Subject

While criticizing the "rights of nature" and ecological holism on one hand, Berque criticized modern ethics on the other hand. The later criticism was mainly that modern ethics regarded a personality as confined to the scale of individual's physical body. With the anthropological and ontological viewpoints, Berque tried to build a new ethics based on the fundamental comprehension of the human-environment relationship.

Modern ethics is based on the model of modern individual subject, which presupposes the universality of human existence, independent from the world. "It is the origin, in particular, of the Declaration of Human Rights of 1789" (Berque 1996, 28). Berque's quest of rebuilding ethics started from rebuilding the view of the human subject, first distinguishing the relationship between humanity and their environment as different from the relationship between other animals and their environment. He calls the former "ecumene (écoumène)," a term in geography meaning "human habitat."

> The very notion of ecumene, derived from *oikos*, implies human habitation. Now this one, compared to those of other living species, presents a series of particular characters that one can summarize by saying that it is always and necessarily *both* of ecological order *and* of symbolic order. It is *ecosymbolic.* (Berque 1996, 79)

With reference to Heidegger's "Worldliness (Weltlichkeit)," Berque identified that every human being is thrown into the axiological order as well as biological life. This particularity of human beings serves as the basis for the ethics of the ecumene. Berque confirmed that the natural environment is neither a neutral object as in the modern view nor a subject with an intrinsic value but is imbued with the values of human beings. The "ecosymbolicity (écosymbolicité)" of the ecumene "implies as such an ethics because all places are always laden with human values" (Berque 1996, 80). This characteristic of humanity serves the starting point to include the environment in ethics.

1.3 Watsuji's *Fūdo-sei*: Human Existence Emerging from the Interaction with its Environment

The model above may seem as a one way projection of human value onto the environment. However, the particularity of the ethics of the ecumene lies in the mutual interaction between human beings and their environment. Human existence finds its *self* in the interaction with its environment. The essence of this relationship is called "mediance" in Berque's terminology, proposed in his earlier works (Berque 1986; Berque 1990). "Mediance" is the translation of the concept "fūdosei" of the modern Japanese moral philosopher Tetsurō Watsuji (1889-1960)'s book *Fūdo* (1935).

> Retaking the concept of *mediance* (*fūdosei*) that Watsuji introduced in 1935, and that I define for myself as *the meaning of a milieu*, that is to say, *the meaning of the relationship of a society to the terrestrial area,* I consider that the reality of ecumene (the ensemble of human milieux), which is therefore neither strictly objective nor strictly subjective, is of *trajective* order. (Berque 1996, 83)

In *Fūdo*, Watsuji proposed the concept of "fūdosei" as the "structural moment of human existence" which was said to be the spatial counterpart of Heidegger's notion of time to human existence in *Sein und Zeit* (*Being and Time*) (Watsuji 1962[1935], 1). The term "fūdo" is close to the meaning of "climate" in English but Watsuji distinguished it from natural environment which is the object of natural scientists. The latter was explained as an abstraction from the phenomena of "fūdo" in our daily life. Taking the phenomena of "coldness" as an example, Watsuji explained that human existence finds him/herself feeling cold as a state and the cold atmosphere surrounding him/her at the same time. In other words, the comprehension of the self and of its environment is a simultaneous event. The human existence also finds the self among other people going out together into the same "coldness." This comprehension appears not necessarily as the recognition

of the self consciousness but rather as an action, i.e., to avoid the coldness. The action is not mainly individual but also and more intensively social, such as parents who cover their child with coats or urge the elders nearer to the fireplace. The way of action is open but also restricted by the style of its community (e.g., clothing, houses, etc.). Thus, Watsuji's notion of "fūdosei" (where the suffix "-sei" is equivalent to "-ity") placed the interaction with the environment as the foundation of human existence and his/her ethical relationship with others.

Reffering to Watsuji, Berque situated "fūdosei" at the center of the ethics of the ecumene. Berque translated "fūdo" as "human milieu" and called such mutual interaction between human beings and their environment as the "trajective" relationship beyond the distinction between subject and object. And he placed "fūdosei," or "mediance" in his translation, as the principle of the ethics of the ecumene, the collection of human milieux, alternative of the ethics of environment. "It is in the ecumenal link which the ethical dimension of human existence is rooted and, correspondingly, the possibility of an ethics of the ecumene is based" (Berque 1996, 94). Inconsiderate modification of the environment may violate the self-comprehension of human existence, to which modern ethics did not respond.

1.4 Beauty and Goodness of Residence

Berque expanded this relationship to the issue of landscape, which is situated in the regime of beauty. He reinterpreted landscapes in a direct relationship with ethics. Landscapes are traced by human beings onto the environment, which functions in turn as the matrix of the human existence. Because of such a relationship, "there is thus a sort of obligation of our being to be where it projects itself onto the world" (Berque 1996, 110). Pointing to "fengshui" in China[1] and "monde" in Latin and in Greek[2], Berque argued that each civilization has understood moral obligation as inseparable with ontology and cosmology.

> This is the ontological, cosmological, and ethical foundation of all politics of the environment: for the human being to be human, the earth—our planet, our landscapes, our homes—*must* be both beautiful and worth living. This is an ecumenal necessity. (Berque 1996, 113)

Human existence is not confined to its individual physical body (Berque 1996, 136). Thus, the ethics of the ecumene proposed by Berque expands the regime of ethics to nature while avoiding ecological holism and expanding beyond modern ethics with its distinctive boundary between nature and human beings.

> The trajective reason on the contrary pushes to recognize, consciously, that we have duties to the places of our subjectivity (body, society, human species, animality, biosphere, planet, etc.), these nested places from which our life and consciousness emerge; that because they are the basis and

1 Fengshui is the systemic structure in which geography and ethics are closely related.

2 "Monde" is the word meaning "world" of which the anonym is "immonde" meaning "unclean."

> necessary condition for emergence. (Berque 1996, 173)

For human existence, its environment is the place of emergence and also of arrival after its death. Watsuji proposed the word "being towards life (sei e no sonzai)," criticizing Heidegger's notion of "being towards death (Sein zum Tode)" for regarding human existence too individualistically. Berque elaborated their understanding to explain the freedom and belonging of a human subject to its society and the nature. "Thus death, which brings us back to matter, roots our consciousness in nature, the place of our being as we are human. There I see the essential ethical reason to respect our link with the earth" (Berque 1996, 207). Because of our finiteness, we can indeed be individual as well as collective existence. The body is the source of subjectivity emerging from its interaction with its environment while the body will be the place for the next generations to emerge from after death. In such ecological and ontological relationships, we have rights and duties to the places of our subjectivity.

1.5 Eco-Techno-Symbolic Relation of the Ecumene

Later, in his principal work *Écoumène. Introduction à l'étude des milieux humains* (*Ecumene: Introduction to the study of human milieux*) in 2000, Berque developed his theory of the relationship between humanity and their environment. It was a trial to address the issue in the academic world in which a large boundary lies in between geography and ontology and the issues in today's society of encountering environmental problems.

Here the ecosymbolicity of the ecumene was reinterpreted as "eco-techno-symbolic (éco-techno-symbolique)" relation (Berque 2000, 90). This was done through reference to André Leroi-Gourhan, the French anthropologist who proposed that humanity is the species evolving differently from other animals through its technology and symbols in *Le geste et la parole* (*Gesture and Speech*) (1964 & 1965). Leroi-Gourhan placed them both as externalization of the human body. While Berque accepted that technology is the externalization of the animal body of human being, he reinterpreted symbols as the internalization of the world (Berque 2000, 129). The bi-directionality of technological *pro*jection and symbolic *intro*jections was what Berque sought as "*tra*jection."

His reinterpretation of the mutual interaction between human beings and their environment as "trajection" constituted by technological projection and symbolic introjection is important to explain today's society in which the technological and symbolic systems have evolved to the micro-scale. As Watsuji described, the phenomenon of "fūdo" is directly related to our self-comprehension: "going out together" with others into the same "fūdo" is the foundation of ethics. Critically, it is the micro-scale modification which causes the inconsistency in such relationships. As described in the comments of the film director, the meaning of landscape could be greatly different depending on whether it is made of genetically modified crops or not, but such inconsistencies could be widespread without notice until the moment they are suddenly revealed. The difference in the landscapes in turn means the difference in our existence which is found simultaneously with the

landscape.

2. Identity and Morality of Human Subjects and Landscapes

The comments of the film director at the beginning of this paper can be analyzed as the realization of the ecumenal relationship, i.e., the source of the self, others, and environment. Remarking that he made a film because it was about corn not sorghum or rice, Woolf explained;

> I first found corn when, like the plant itself, I moved from my home in Mexico to Iowa 16 years ago, to study film. **I loved the Iowa landscape**, and would ride my motorcycle through the fields, implausibly comforted by the notion that if I crashed, I would somehow be safe in those green rows. During those long rides, it never occurred to me that those plants would someday be the focus of a film that I would make, or that there was trouble in the garden. (Woolf 2012, 3, emphasis added)

In his realization that the landscape which he "loved," was "comforted by," and was "safe in" was completely different, we can find a realization that the issue is not only the issue of "environment" but also the "existence of the self." Thus the issue is not about his health but about the comprehension of his existence. In other words, the change in the landscape appeared to be not just an objective outlook but a new comprehension of his existence and his relationship with others. In fact, in another article, he described the history of corn as "one that is deeply written into our national mythology," and his affection for corn grew from "stories of Native Americans greeting pilgrims on Massachusetts shores with armfuls of corn" and numerous Hollywood films which have shown corn fields (Woolf 2008, 2).

In the film *King Corn*, two university students grow corn by themselves, trace the final destination of the corn, and cease cultivation in the end. Through the process, Woolf let them choose the ways to recover an acceptable landscape and of the comprehension of his existence. This film continuously shows long shots of the landscapes of corn fields from the beginning to the end of the film as if asking us to rethink the meaning of landscapes.

Such shock as Woolf felt, in fact, has become common in our lives as lands are considered exterior to our existence and their privatization has prevailed. If it is the case of obvious modifications like buildings, it is still easier to reject. In Japan, there have been movements by citizens against the rapid change in their landscapes, and the Landscape Act was enacted in 2004, "to build a beautiful and dignified land, create an attractive and comfortable living environment and realize vibrant communities with distinct personalities" (Landscape Office 2006, 3), and helped respond to people's affection to the landscape. However, today's emerging technologies, such as biotechnologies, can spread in our life without giving us the opportunities to judge whether it is beautiful and acceptable or not.

Against such invisible modification of landscapes, as in the film *King Corn*,

there are people's movements to understand the reality of their own landscapes and verify whether they are acceptable or not. For example in Japan, there are people who voluntarily research the spread of genetically modified canola in the wild with test kits. After the nuclear power plant explosion in Fukushima, some people bought Geiger counters to monitor the radioactivity in the area they live. In the recently published book titled *Life without Genetically Modified Crops*, the author tries to live without foods containing genetically modified crops (Teshima 2013). If we consider their behavior just as consciousness for health or environmental damage or for the rights of nature, we will misunderstand the essence of the problem. After her one month trial, the author of the book went back to the normal diet, including genetically modified foods. What they are trying to do is to recover their landscape and their ability to trust their eyes. It is the question of whether they can love and accept the place and their life in it.

Here, I am not opposing the genetically modified crops themselves. In this paper, I criticize the violation of people's comprehension of existence by the introduction of biotechnology in present situation, which is indeed what was proposed by Woolf. If it is accepted as beautiful and good by people and if the natural environment can sustain to establish a landscape—harmonization among individual, society, and nature—there is no reason to oppose genetically modified crops which can now be said to be a part of culture.

Instead of the ethics of "environment" or "human" in the modern view, we may begin considering the ethics of the "ecumene." If we consider the environment as exterior to human beings, the difficulty continues to bring it to the regime of ethics. Because the interaction is the source of the emergence of human existence as moral subject, the environment can be incorporated into ethics. If we consider that ethics belongs to the regime of human beings and if we place the environment outside of it, it may violate people's comprehension of their existence and their moral behavior.

Rather than giving intrinsic value to the environment, we can encourage the realization of ontological (and of course ecological) linkage between human beings and their environment to lead termination of the behavior of the exploitation of resources. In other words, not building an external norm ("we should protect the nature") to force obedience, we can start from rethinking our existence and building the sustainability of the environment and of our identity.

This is just a beginning, and the reconsideration of modern ethics continues to break the deadlock of environmental ethics to go further. What Watsuji and Berque found resonates with the philosophy of "intercorporeality (intercorporéité)" by Merleau-Ponty. Also, as Gibson's notion of "affordance" played the important role behind Berque's acceptance of Watsuji's thought, we can further examine the ecological aspects of the emergence in the interaction of human beings and their environment. Recently there is also a movement to rethink modern ethics from the view point of the phenomenological understanding of technology.

> A few centuries ago the Enlightenment, with Kant as its major representative, brought about a turnover hitherto unequaled in ethics by

> moving the source of morality from God to humans. Do contemporary analyses of the social and cultural role of technology now urge us to move the source of morality one place further along—considering morality not a solely human affair but also a matter of *things*? (Verbeek 2011, 12)

In phenomenological analysis of technology, the important starting point has been Heidegger's analysis of tools. Watsuji indeed started framing his theory in *Fūdo* with his criticism of Heidegger's analysis of tools (Watsuji 1992, 388). Opposing Heidegger for considering only the active aspect of technology to the natural object, Watsuji's analysis of the passive aspect in their interaction may lead further discussions in ethics.

Conclusion

This paper confronted the issue of landscape modification through micro-scale technologies by analyzing the comments of the director of the film *King Corn* with reference to the ethics of the ecumene by the French geographer Augustin Berque. In *Être humain sur la Terre*, Berque criticized environmental ethics, insisting that ascribing intrinsic rights to nature is unethical as well as modern ethics for not fully accounting for the reality of human existence. Referring to Tetsurō Watsuji's *Fūdo*, Berque illustrated the interaction with the environment as the foundation of human existence, and this relationship provides the basis to include our environment in our ethical concern. The self-comprehension of human beings emerges from the interaction with their environment, and the ecumene involves ethics fundamentally through its eco-techno-symbolic relation.

In the comments of the film director, we can observe his realization that the change in landscape through genetically modified corn is not about the issue of environment but his existence and relationship with others. People's identity and morality have their basis in their landscape at the ontological level and inconsiderate introduction of micro-scale technologies may create potential violations to them.

References

Berque, A. (1986) *Le sauvage et l'artifice. Les Japonais devant la nature*, Paris: Gallimard.

Berque, A. (1990) *Médiance, de milieux en paysages*, Montpellier: Reclus.

Berque, A. (1996) *Être humain sur la Terre, principes d'éthiques de l'écoumène*, Paris: Gallimard.

Berque, A. (2000) *Écoumène. Introduction à l'étude des milieux humains*, Paris: Gallimard.

Berque, A. (2005) A Basis for Environmental Ethics, *Diogenes*, 207, pp. 3-12.

Gibson, J. (1986) *The Ecological Approach to Visual Perception*, Hillsdale, N.J.: Lawrence Erlbaum Associates.

Heidegger, M. ([1927] 2006) *Sein und Zeit*, Tübingen: Max Niemeyer Verlag.

Inutsuka, Y. (2014) Formation and Structure of Augustin Berque's Mesology, *Journal of Information Studies*, Interfaculty Initiative in Information Studies, the University of Tokyo, 86, pp.207-224 (Japanese).

Landscape Office, the Ministry of Land, Infrastructure and Transport, Japan (2006) *Landscape Act (English translation)*, http://www.mlit.go.jp/crd/townscape/keikan/pdf/landscapeact.pdf, accessed 30 January 2014.

Leroi-Gourhan, A. (1964) *Le geste et la parole, 1. Technique et langage*, Paris: Albin Michel.

Leroi-Gourhan, A. (1965) *Le geste et la parole, 2. La mémoires et les rythmes*, Paris: Albin Michel.

Light, A. & Katz, E. (eds.) (1996) *Environmental Pragmatism*, London: Routledge.

Merleau-Ponty, M. ([1964] 1979) *Le visible et l'invisible, suivi de Notes de travail*, Edited by Claude Lefort, Paris: Gallimard.

Pence, G. (2002) *Designer food: Mutant Harvest or Breadbasket of the World?*, Lanham, MD : Rowman & Littlefield.

Shiva, V. (1997) *Biopiracy: the Plunder of Nature and Knowledge*, Boston, MA: South End Press.

Teshima, N. (2013) *Life without Genetically Modified Crops* (*Idenshikumikae-sakumotsu no nai seikatsu*), Tokyo: Raichosha.

Uegaki, T. (2009) Can Environmental Thoughts Exist as an Original Discipline?: Consideration about Academic Model Embracing Pragmatic Turn with Criticism, *Journal of Environmental Thought and Education*, 3, pp.31-39 (Japanese).

Verbeek, P.P. (2011) *Moralizing Technology: Understanding and Designing the Morality of Things*, Chicago: The University of Chicago Press.

Watsuji, T. ([1935] 1962) Fūdo: Thoughts on a Study of Human Beings (Fūdo: Ningengaku teki kōsatsu), *Complete Works of Tetsurō Watsuji 8* (*Watsuji Tetsurō Zenshū 8*), Tokyo: Iwanami Bunko.

Watsuji, T. (1992) 'Thoughts on Nationalcharacter' Notes (extract) ('Kokuminsei no kōsatsu' nōto (shō)), *Complete Works of Tetsurō Watsuji separate volume 1 (Watsuji Tetsurō Zenshū bekkan 1)*, Tokyo: Iwanami Bunko.

Woolf, A. (2008) Letter from the Film Maker, *King Corn Discussion Guide*, Independent Television Service, http://www-tc.pbs.org/independentlens/kingcorn/resources/kc_discussion.pdf, accessed 30 January 2014.

Woolf, A. (2012) Director Statement, *King Corn Press Kit*, http://www.kingcorn.net/the-film/synopsis/, accessed 30 January 2014.

Patients' Self-Determination Revisited: a Legal, Medical-Sociological and Ethical Examination of Patients' Autonomy in End-of-Life Care

Yicheng CHUNG

Introduction

The principle of respecting patients' autonomy has been widely applied in clinical settings. As the use of informed consent has been commonly accepted, the belief that patients should have the right to make their own decisions concerning their bodies is also growing stronger. The extension of this belief is a legislative movement concerning a patient's right to make an advance directive. The right to make an advance directive concerning life-support treatment during end-of-life care has been legalized in most states in the US,[1] some European countries[2] and a few Asian countries.[3] The purpose of these laws is to respect patients' right to self-determination concerning end-of-life care; however, the recognition of such a right differs by degrees between countries according to the cultural background of each country.

In this paper, I will first provide an overview of laws and guidelines concerning patients' self-determination in end-of-life care in both Western and Eastern countries, and analyze the difference between these countries in weighing patients' autonomy against their best interests. Respecting a patient's autonomy involves a decision-making process between physicians and patients, and patient's expressed wishes are the crucial facts in such a process. The patients' best interests, on the other hand, are based on the medical judgments of physicians. Almost all medical decision-making involves a balance between the patients autonomy and the patient's best interests; however, the balance is achieved differently in each country according to its regulations.

Following the examination of the legal aspects of patients' autonomy, I will turn to the real situation of the decision-making process in end-of-life care, and, from a medical-sociological perspective, discuss how each participant deals with this situation and faces death. As the relationships between patients and their families play an important role in end-of-life care, I will review the three types of awareness of death in medical-sociological theories, and show the connection between awareness of death and the idea of good death. Although it has been suggested that open discussion of an impending death is the key to a good death, I will pay attention to the various ways of facing death and argue for an open concept of good death.

After the examination of the legal and sociological side of patients' autonomy, I will raise some ethical concerns about decision-making in end-of-life care, especially the use of prognosis. In end-of-life care, the use of prognosis is considered to be the basis of all decision-making, and a patient's self-determination may depend on it. However, the uncertain nature of prognosis has been overlooked in the ethical discussion of end-of-life care so far. In this paper, I assert that, despite the constraints of medical uncertainty, the way that the patient, family and medical staff come to be aware of dying is the key to respect a patient's self-determination.

1. Legislation Concerning End-of-life Care

A patients' right to make an advance directive concerning life-support treatment has been recognized in many countries. The aim of these laws is to promote patients' interests and respect their self-determination; however, the central ideologies that justify the laws differ from country to country. Here I take the USA, France, and Taiwan as examples to present three types of ideology behind end-of-life care legislation.

1.1 Respecting a Patient's Autonomy: USA

The first legislation about end-of-life care was the Natural Death Act[4] enacted in

1 The Natural Death Act of California, which was enacted in 1976, is the first law to recognize the use of living wills in end-of-life care. After its enactment, other states also considered the legislation of living wills. By 1992, all 50 states had passed legislation to legalize advance directives.

2 Besides countries which legalize the act of euthanasia, regulations concerning a patient's right to make advance directives can be seen in England, France and Germany. In England and Wales, the use of advance directives is legally enforceable under the Mental Capacity Act 2005. http://webarchive.nationalarchives.gov.uk/+/http://www.dca.gov.uk/legal-policy/mental-capacity/mca-cp.pdf (latest access: 2014.1.31) In Germany, the legal enforcement of advance directives is derived from the third revision of the Guardianship Law (Betreuungsgesetz) in 2009.

3 The first Asian country to recognize a patient's right to self-determination in end-of-life care was Singapore. The Advance Medical Directive Act, which was enacted in 1996 and later revised in 1997, permits adult patients to make advance directives to refuse life-support treatment. Following the legislation in Singapore, the Hospice and Palliative Care Act was enacted in Taiwan in 2000. Other attempts at such legislation can be seen in Korea and Japan. In Japan, there is no specific law regulating end-of-life care. But a guideline made by the Ministry of Health, Labor, and Welfare in 2007 clearly specifies that a patient's wish should be the basis of decision-making regarding end-of-life care. In Korea, according to media reports, the National Bioethics Committee in 2013 finalized an advisory report regarding pointless life-sustaining treatment and its discontinuation. In the report, the committee suggests legislation to permit the discontinuation of life-sustaining treatments on the conditions that at least two doctors have made a diagnosis of terminal illness and two close family members have agreed to discontinue the treatment on behalf of the patient. If the patient's wish is unknown, the decision to discontinue treatment should be agreed to by the legal representative of the patient, as well as two next-of-kin. http://www.lawtimes.co.kr/LawNews/News/NewsContents.aspx?serial=77330 (latest accessed: 2014.1.31; in Korean only)

4 The Natural Death Act of California was replaced by the Health Care Decisions Law in

1976 in California State. According to the law, adult patients can make living wills to refuse or discontinue life-support treatment. Later, in 1990, the US Congress passed the Patient Self-Determination Act,[5] which requires health care institutions, such as hospitals, nursing homes and hospice providers, to provide information about advance health care directives to adult patients, and to assist them in making medical decisions and advance directives upon admission to the institutions. In the process of enacting the Natural Death Act and the Patient Self-Determination Act, the legislation first granted the right to make advance directives and then stipulated that patients be aware of this right. However, as the goal of the legislation is to respect a patient's autonomy, there is no description in the laws concerning the role of family members in end-of-life care, nor are there any provisions for making decisions on behalf of patients who neither signed advance directives nor appointed a health care surrogate. In other words, both laws state clearly that only the patients themselves can make decisions about life-support treatment at the end of their lives.

1.2 A Patient's Best Interest and Human Dignity: France

The situation in France, however, differs from the US in regards to autonomy. The Public Health Code, as revised in 2005,[6] has specific regulations concerning incapacitated patients who are without advance directives. Article L1111-13 states that "when patients in an advanced or terminal phase of a serious and incurable disease, whatever the cause, are incapable of expressing their wishes, the doctor may decide to limit or discontinue a treatment which is pointless, disproportionate or has no effect other than the artificial prolonging of life, after respecting the relevant procedure laid down by the code of medical ethics and consulting the trusted person…, the family or, failing such, a close friend"(Public Code, 2005). The law permits doctors to make decisions on behalf of patients who have made no advance directive and states clearly in Article L1111-10 that the duty of doctors is to safeguard the dignity of dying people and ensure the quality of their end of life.

According to the law, when patients have made advanced directives, it is for the physicians to take patients' wishes into consideration as well as to treat them according to their best interests. In this respect, a patient's self-determination is a part of the concept of maintaining human dignity. Instead of regarding patients' written advanced directives alone as the expression of self-determination, the Public Code in France allows physicians to make decisions according to their best interests even in the absence of advance directives.

1.3 Joint Decision-making among Family Members: Taiwan

In contrast to the US and France, the latest revision in the Hospice and Palliative

2000. For full text of the act please see, http://codes.lp.findlaw.com/cacode/PROB/1/d4.7/2 (latest accessed: 2014.1.31)

5 For full text of the act please see, http://thomas.loc.gov/cgi-bin/query/z?c101:H.R.4449.IH: (latest accessed: 2014.1.31)

6 For full text of the French code of public health please see, http://www.legifrance.gouv.fr/affichCode.do?cidTexte=LEGITEXT000006072665&dateTexte=20140201 (latest accessed: 2014.1.31)

Care Act[7] in Taiwan not only respects patient's self-determination and human dignity, but also goes one step further to include family members into the decision-making process. When the Hospice and Palliative Care Act was first enacted in 2000, it stated that adult patients could make advance directives to refuse life-support treatments as well as appoint health care surrogates. For those unable to express their own wishes and without signed advance directives, the law allows one close family member to make medical decisions on behalf of the patient. In the latest revision in 2013, the law states that in cases of no advance directives, family members may act for the patient in refusing or discontinuing life-support treatment. Furthermore, for those who have no family and have not signed an advance directive, physicians and health care providers should form a team to make decisions for the patient according to the patient's best interest.

The inclusion of family members in the decision-making process and the recognition of them as representatives that can act on behalf of patients make the Hospice and Palliative Care Act in Taiwan unique among legislation regarding end-of-life care. In Taiwan, the cultural factor of joint decision-making among family members may become weaker in the future as the social function of the family changes; however, at present, when it comes to end-of-life issues, it is still common that family members make decisions for patients. It is also quite common for physicians and health care providers to consult with the family about the patient's wishes. The law in Taiwan accepts the relationship between patient and the family as an important factor in end-of-life care; at the same time, it specifies the duty of the physician to protect the patient's best interests. Although it appears that the law tries to cover all aspects of end-of-life care, the result of this is to blur the importance of patient autonomy.

The above three examples of legislation show three different ideologies for recognizing a patient's autonomy in end-of-life care. If put it into a continuum, the laws in the US represent a strong version of patient autonomy while the law in Taiwan indicates a weak one. Therefore, even though the principle of respecting a patient's autonomy has been accepted as an ethical rule in each country, the differences in legislation might suggest differences in the reality of its application in the clinical scene of respective countries.

2. Theory of Awareness Context

From the legal aspect concerning end-of-life care, at least two parties are considered important: the patient and the physician. However, in Taiwan, a third party—family members—is accepted in the decision-making process. The legal status of family members may differ according to the different legislation in different countries, but it is difficult to exclude the family from decisions regarding end-of-life care in real situations. Therefore, in this section, I shall summarize studies of death in the medical-sociological field and examine the interactions

7 For full text of the Hospice and Palliative Care Act in Taiwan please see, http://www.tho.org.tw/xms/toc/list.php?courseID=14 (latest accessed: 2014.1.31; in Chinese only)

between patients, family members and physicians in facing death.

1.1 Four Types of Awareness of Dying

The medical-sociological study of death began in the 1960s, most prominently, with the publication in 1965 of *Awareness of Dying* by American sociologists Glaser and Strauss, who based their research on fieldwork at six hospitals in San Francisco. In their research, they found that, at the end of a terminal patient's life, there are four types of awareness in the context of dying: 1) closed awareness context, 2) suspected awareness context, 3) mutual pretense awareness context and 4) open awareness context (Glaser and Strauss, 1965). Closed awareness is where the patient does not know about his/her impending death even though the medical staff and the family members do. Suspected awareness is where the patient starts to suspect what others know and tries to confirm the suspicion while everyone else attempts to deny the suspicion. Mutual pretense awareness is where each party knows about the impending death and yet pretends not to know mutually. Both the terminal patient and the medical staff act as if the patient can still live long, while in fact it is not so. Open awareness is where each party knows that the patient is dying and acts openly toward this reality.

Glaser and Strauss identified these four types of awareness, and explained their features. The closed awareness context exists mostly when the patient is a newborn infant or in a vegetative state. In the suspected awareness context, there is a contest over the control of information between the patient and the medical staff. Mutual pretense awareness context emerges as a showed courtesy, where everyone tells lies out of good will. Open awareness is seen as the ideal way of facing death by Glaser and Strauss, but awareness of impending death might be rather vague because the patient does not know about the exact situation of death. Through their discussion of the four types of awareness, Glaser and Strauss provided descriptions of the social-structural conditions and interactions between patients and medical members in hospitals, and inspired further research on death in medical-sociological theory.

1.2 Three Types of Open Awareness of Dying

In 1994, following on Glaser and Strauss' work, Timmermans published a paper, "Dying of awareness: the theory of awareness contexts revisited," which revised the open awareness context by splitting it into three sub-contexts (Timmermans 1994). He used the introspective ethnography approach to examine his own experience of accompanying a dying family, and observed in the hospital that providing more information does not necessarily lead to open awareness of death (Temmermans 1994, 325). He argued that, besides the disclosure of information, the emotions involved in facing a terminal illness play an important role in the awareness of dying. He suggests there should be three types of open awareness context: 1) suspended open awareness, 2) uncertain open awareness, and 3) active open awareness. In the suspended type, the patient or family is in a state of disbelief and pretend as if nothing has happened. They ignore or disbelieve the message communicated by the physician and refuse to discuss the illness. Even when the medical staff tries to convey the message and open the process of talking about it, in the suspended open awareness context the impending death is a taboo subject.

The uncertain open awareness context is where physicians withhold information, soften information, or counterbalance the disclosure with treatment possibilities for the best interests of the patient. In this context, physicians leave room for uncertainty in the disclosure of information so there can be hope for the patient and the family. Those who receive information may also dismiss the bad parts of the message and hope for the best outcome. Because of the margin of hope, both physicians and the patient may feel less stressed in the communication of terminal illness. Physicians can break the bad news gradually and the patient can face the illness in a positive way. Ultimately, as physical deterioration becomes severe, the patient and family members will finally come to active open awareness, where all parties understand the full implication of the impending death and no longer hope for recovery. The focus of hope then shifts to the preparation of death.

Similar to Glaser and Strauss, Timmermans refrained from making judgments about these awareness contexts. He concludes that family members and patients are powerful actors in the construction of an awareness context since the way they emotionally cope with the information determines the kind of open awareness context (Timmermans 1994, 335).

1.3 Complexity of Knowledge and Emotion

Following on the studies of Glaser and Strauss and that of Timmermans, Mamo amplified their theories in her paper, "Death and dying: confluences of emotion and awareness," by stressing the complexity of knowledge and emotion in the process of being aware of dying (Mamo 1999). As with Timmermans, Mamo's research was based on an introspective-ethnography of her experience of caring for a dying family. In Mamo's case, the family and the patient never had one open discussion of death throughout the dying process, from the diagnosis of terminal illness to the patient's death. The family had all the information about patient's terminal illness, but failed to communicate it with the patient, as they found it difficult to integrate the information with their emotions, so their emotions ended up blurring their cognition.

In her observations of the dying process, emotional management and the existence of emotional surges in the context of dying is far more complex than the descriptions provided by Glaser and Strauss or Timmermans. Mamo understands emotion as an embodied experience—a seemingly irrational emotional surge which intervenes in the cognitive process of information management (Mamo 1999, 19). In the social context of dying, such intervention in the cognition process obstructs awareness of the impending death. The meanings of truth, objectivity and emotions are reinterpreted because of the close connection between emotion and cognition.

2.4 Various Ways of Facing Death

The view towards disclosure of information in the hospital today is clearly very different from the 1960s, when Glaser and Strauss did their fieldwork. Nowadays, disclosure of information and support of terminal patients in the preparation for

death is accepted as the ideal practice in clinical settings. As I have laid out in the previous sections, the different ideologies behind the legislation regarding end-of-life care suggest the existence of the concept of good death in each society. Sociologists have also developed theories concerning a 'better' way to die. The context of active open awareness of dying is considered as one of the ideal ways to face death (Ross 1969). However, as shown by the early concerns of Glaser and Strauss, the focus on open discussion of death among all parties and the expectation of taking action for the full preparation of death might be unrealistic and thus overlook the actual needs of terminal patients (Glaser and Strauss 1965; Timmermans 1993) Moreover, as both Timmermans and Mamo have pointed out, it should be understood that there is no good or ideal way to be aware of dying. There is not one optimal or appropriate emotional response to a terminal diagnosis and the acceptance of death varies from case to case (Timmermans 1994, 335-6). As Mamo proposed, sociologists should not assert an ideal way to die but provide a fuller understanding of the multiple ways in which death occurs.

3. Uncertainty of Prognosis and Ethical Concerns

Now that I have examined the awareness of death in the social context and the connection between emotions and information, I will turn to ethical concerns regarding a patient's autonomy and discuss the use of prognosis in end-of-life care. Medical prognosis has been considered as a support to ethical discussions regarding patient's end-of-life care and the foundation to respecting a patient's self-determination. However, there have been few studies on the nature of prognosis and its uncertainty. As a physician and a social scientist, Christakis raised such ethical questions concerning prognosis in his book *Death Foretold: Prophecy and Prognosis in Medical Care* (1999). He points out that in clinical settings, many ethical decisions, such as making advance directives, involves a sort of "hypothetical prognosis" in which physicians describe various scenarios that patients might experience in the future (Christakis 1999, 55). The reason why the physicians adopt such a hypothetical prognosis is to elicit the patient's preferences. However, as Christakis stated, while some of the scenarios might be quite realistic and well grounded according to the patient's condition, others might be purely hypothetical. The use of such highly hypothetical prognosis can be seen as a risk to the patient's autonomy, for the patient is making decisions based on information that might not likely happen. Thus, in cases of making advance directives, patients may not be able to know their best interests when signing advanced directives. In addition to the ethical concerns regarding hypothetical prognosis, it is also pointed out that the various factors that influence prognoses and physicians' responses to them need to be taken into consideration. In cases like the withholding or withdrawing of life-support treatment at the end of life, physicians' prognosis becomes the core element in decision-making. As the use of prognosis has played an important part in daily clinical settings, there should be further examination of the relationship between prognostics and end-of-life care.

Conclusion

In this paper, I first looked at laws and guidelines in both Asian and Western countries concerning end-of-life care and described the position of patients' self-determination from the legal perspective. Second, I discussed awareness of dying from a medical-sociological perspective, and showed how, in the process of a terminal illness, both information and emotion play a role in awareness of death. I further explained that, because open awareness of death may not be suitable in every situation, the concept of an ideal way to accept death has been rejected in the later theories. Finally I raised a small concern that a doctor's prognosis, which is the basis of a patient's signing of an advanced directive, is by its nature rather uncertain. By gaining a better understanding of the nature of prognosis, we may be able to improve the communication between physicians and patients in end-of-life care. This may lead to a more comprehensive view of the recognition of dying, which is the core of self-determination at life's end.

References

Christakis, N. A. (1999) *Death foretold: prophecy and prognosis in medical care*, Chicago: The University of Chicago Press (= 死の予告：医療ケアにおける予言と予後，進藤雄三訳，ミネルヴァ書房, 2006).

Glaser, B. G., & Strauss, A. L. (1965) *Awareness of dying*, Chicago: Aldine Publishing (= 死のアウェアネス理論と看護：死の認識と終末期ケア，木下康仁訳，医学書院, 1988).

Mamo, L. (1999) 'Death and dying: confluences of emotion and awareness' *Sociology of Health & Illness*. 21(1): 13-36.

Timmermans, S. (1994) 'Dying of awareness: the theory of awareness contexts revisited' *Sociology of Health & Illness*. 16(3): 322-339.

Applied Ethics and Decision Making: A Method for Quantifying Risk and Utility

Yanick FARMER

Introduction

Generally, the reasoning that guides ethical decisions uses two distinctive approaches: it can focus on a certain state of the world produced through action, which include the different mental states of the agent, or it can concentrate itself on the processes, which, if looked at beforehand, can promote "just" or "good" actions. In the first case, the reasoning proceeds by maximization of a predefined magnitude. This is the strategy employed by classical utilitarianism whereby it first defines goodness as pleasure, well-being or happiness, and then maximizes it in terms of costs resulting from foreseeable consequences of each action. In the second case, the agent's approach is mostly concerned by the introduction of formal constraints, which, when applied to reasoning or institutions, favor the achievement of various behaviors considered acceptable from a normative point of view.[1] This approach is primarily associated with deontological theories like those of Kant and Rawls.

These two modes of reasoning are so common in ethics that they are, to this day, still widely used in various fields that go beyond mere philosophical or ethical thought. However, when it comes to solving somewhat complex practical problems, social ethics is limited by the lack of specification of the conceptual tools it uses. Too often, the mode of reasoning proposed by ethical theory is so broad and imprecise that the agents have no other choice but to leave behind their rational analysis and rely on their intuitive morals or, basically, their instinct. In practical life, the value of intuition or of sentiment should not be disdained. It must, however, remain peripheral as much as possible when it comes to addressing problems in which agents must process a considerable volume of information while applying a rigorous analytical method.

The limits of qualitative and purely verbal thought in social ethics appear in at least two recurring dimensions of decision-making: the aggregation of utility and the evaluation of risk.[2] The first part of the article will attempt to point out that if an agent bases his reasoning on the verbal concepts of the classical utilitarian theory, he will find himself confronting "undecidable" dilemmas for which making a specific choice becomes almost arbitrary. The second part will propose an alternative method overcoming the obstacles presented in the first part. Thus, the overall objective of this paper is as follows: to demonstrate that a slightly

1 On consequences of this approach concerning questions of justice, see Amartya Sen, The Idea of Justice, (London: Penguin Books, 2009).

2 Since it is presumed later on in the article that probabilities are assignable to events, the term risk, in this case, is privileged.

more formal quantification of utility and attitude towards risk can help the agent overcome the uncertainties emanating from a strictly qualitative perception of the real world's configuration. In what lies ahead, the proposed approach aims to take conceptual tools, which were originally conceived for economics and applied mathematics, and implement them into the field of social ethics. We will now tackle these two aspects of decision-making by attempting, for each of them, to prove that there are indeed alternative forms of quantification. These help the agent specify his choices in contexts where social ethics would usually leave him in a blur of despair.

1. The Problem of Aggregation within Classical Utilitarianism

The classical utility theory, as developed by Jeremy Bentham and later on by John Stuart Mill, includes three basic components for decision-making: a definition of "good" (teleological axis), an imperative (maximization), and other specific criteria meant to weigh out preferences. These aspects are derived from a very attractive philosophical anthropology from which the two Anglo-Saxon authors expose what they believe is the most powerful motives of human action.

In this theory, the good, seen as an assessable magnitude, relates to the intensity of pleasure and the minimization of pain, which is perceived here as a negative quantity.[3] To this general finality (telos) is added an imperative (an obligation), which determines the agent's rule of action: to maximize happiness for the greatest number.[4] Finally, the works of Bentham and Mill also provides different criteria that facilitate the balancing of pleasures and the calculation of various utilities. For Bentham, we find a series of seven criteria that allow a quantification of pleasure under an arithmetic form. The criteria are the following: 1) intensity, 2) duration, 3) certainty, 4) proximity, 5) productiveness, 6) purity, 7) extent.[5] According to these criteria, an intense pleasure with a sure and long duration would be preferable to a fleeting, uncertain pleasure, and so forth. While Mill deviates from the quantitative view of Bentham, he also offers a way to calculate different forms of pleasure with a qualitative vision. For example, according to Mill, some intellectual or aesthetic pleasures, even if felt less intensely than sensual pleasures, can be more satisfactory.[6]

3 The problem with the measurability of welfare is already very old in economics. To read about a few classic contributions on this topic see: Lionel Robbins, "Interpersonal Comparisons of Utility; a Comment," in *Economic Journal*, 43, December (1938): 635-641; Alfred Marshall, *Principles of Economics* 8th Edition (New York: The MacMillan co., 1949); John R. Hicks, "The foundations of Welfare Economics," *Economic Journal*, 49, (December 1939): 696-700.

4 See preface, Jeremy Bentham, *A Fragment on Government*, which was brought to attention anonymously in London in 1776.

5 Bentham, *An introduction to the Principles of Morals and Legislation*

6 See John Stuart Mill, *Utilitarianism*, chapter 2.

1.1 Decision Making with the Help of the Classical Utility Theory

To this day, the three components of Bentham and Mill's utility theory—especially the first two—are used to analyze ethical choices in many areas. Clearly, throughout the decades, various critiques were formulated against one or the other of the theory's foundation. The objective here is not to review them all. Among these critiques, many of them focus on the difficulty of evaluating, within a set of options, which one corresponds most accurately to the principle of the greatest happiness for the greatest number. In fact, an agent who wishes to make a decision by using the utility theory is quickly confronted with the uncomfortable assignment of evaluating mental states that are variable not only in time, but also from one individual.[7] This issue, recognized in philosophy and economics, is known as *the aggregation and the interpersonal comparison of utilities*.[8]

To demonstrate the limits of the application of classical utilitarianism in social ethics as well as the advantages of introducing quantification techniques, what follows in this paper is a case study. The case study is fictitious. However, its structure corresponds to what is found in many situations in social ethics. Thus, its heuristic scope is relatively extended. The case tells the story of a public servant working for the Ministry of Public Security. As part of his duties, he was asked to evaluate the permission to grant the conditional liberation of Nero, a powerful gang lord who, just a few years back, had the whole community terrorized. According to the social psychological expert evaluation that the public servant analyzed, the criminal received sufficient therapy to change the risks of recurrence of crime from "significant" to "moderate." The official knew, however, that upon his arrest 10 years ago, the criminal had sworn to commit significantly damaging crimes when released from prison. Meanwhile, after several budget cuts, the official's superior had demanded the liberation of more prisoners in order to reduce the Ministry's expenses. In light of this, the employee's professional experience as well as his moral intuition did not encourage him to grant parole to Nero. In his opinion, even if the risk had significantly decreased, the consequences of a recurrence would be disastrous. Nevertheless, the employer was a very imperious man and the public servant couldn't help thinking about the precariousness of his non-permanent working status. He was afraid of not being able to feed his family. Also, he was absolutely torn and in need of all the necessary resources to be able to use good ethical reasoning about the issue since he would certainly not have want to be wrong. What should he have done: grant Nero's liberation or keep him behind bars?[9]

7 Bentham himself recognized this difficulty up until a certain point. See section on this topic in Kenneth J Arrow, *Social Choice and Individual Values* 2nd Edition (New York: John Wiley & Sons, 1963), p. 23 n.

8 The amount of literature on this topic is vast. For an overview in philosophy, economics and applied ethics see, amongst many, the following: Philip Pettit (ed.), *Consequentialism* (Aldershot: Dartmouth pub.), 1993; Derek Parfit, "Inumerate Ethics," *Journal of Philosophy and Public Affairs*, 7, 4, (1978): 285-301; John M. Taurek, "Should the Numbers Count?," *Philosophy & Public Affairs*, 6, 4 (1977): 293-316; Daniel Kahneman *et al*., "Back to Bentham? Explorations of Experienced Utility," *The Quaterky Journal of Economics*, 112, 2 (1997): 375-405; Norman Daniels and James E. Sabin, *Setting Limits Fairly* (New York: Oxford University Press, 2002).

Even for an ethical problem with a moderate level of complexity like this one, the shortcomings of the classical utility theory rapidly become apparent. First, the theory does not indicate, with much clarity, how to balance personal utility and overall utility of the consequences attached to an action. From the principle of greatest happiness for the greatest number, it is difficult to achieve a fair balance between the intensity factor of the "greatest happiness" and the expansion factor of the "greatest number." Even if the agent does not wish to act in an egotistical manner, the fact remains that according to Bentham's calculating criteria, the certain and the immediate are preferable to the distant and the uncertain. In our example, the sum of the possible dangers affecting the population if Nero were to satisfy his criminal instincts is considerable. Who would be affected and to what extent? In this case, the public servant also understands very well the consequences involving the relationship between his employer and himself and those concerning the loss of his job. Indeed, these consequences concern a small amount of people (his family and himself), but to him they appear immediate and certain.

Furthermore, when the ratio between two effects produces equal intensities of pleasure or displeasure, it is the likelihood of their realization that makes the difference. In other words, at equal intensity, a highly likely consequence will be of greater importance than a consequence of low probability. However, how could one be able to calculate probabilities from a sum of purely qualitative judgments? If you put yourself in the employee's place, how do you add up several probabilities that are not quantified? In his reasoning, the employee must calculate the overall utility linked to Nero's liberation, and do the same with the option of keeping Nero behind bars. He would then select the option of the dilemma that overall would be more useful. In figure 1 below, the types of analysis he can do with the conceptual tools developed by the classical utilitarianism are elaborated.

Figure 1

OPTION A : NERO'S LIBERATION	OPTION B : LEAVE NERO IN PRISON
Consequences = people affected + intensity + probability	Consequences = people affected + intensity + probability
Severe criminal actions menacing public security. Indeterminate amount of people affected. Moderate probability.	Decrease of criminality and menace to public security. Very high probability.
Employer's satisfaction. Job kept and capacity to nurture family met. Very high probability.	Conflicts with boss. Job loss. Economic insecurity risk for the whole family. Somewhat high probability.
Remorse and feeling of deceiving the ethical and professional integrity requirements. Very high probability.	Feeling of an accomplished duty. Very high probability.

9 The reader is cautioned not to consider the realism of this situation or keep track of the current legislation in criminal law. The reasoning must be based solely on information provided in the example. In any case, once the method is acquired, it is possible to apply it to other contexts with differing information.

The analysis recaps the most striking aspects of the qualitative analysis of the ethical problem experienced by the public servant. The tension arises mainly with the opposition between the employee's personal *interest* in wanting to keep his job and the professional *duty* inciting him to see the problem with a broader perspective, focused on public protection. When the consequences and their probabilities have been established, how does the calculation go forth? The two options present consequences that are equivalent in their intensity. If Nero is released, the potential significant criminal acts added to remorse give the option a very important negative intensity. The fact that many people can be victims of Nero's actions adds an extension factor to this negative intensity. On the other hand, the possibility of keeping his job, eliminating tensions with the boss and fulfilling the family's needs is a very powerful result that is hard to ignore. This tension between positive and negative consequences also occurs if Nero stays in prison, only in reverse. In short, the mere comparison of the intensity of the consequences appended to the options does not promote a clear, rational choice.

The review of the probabilities expressed qualitatively hardly facilitates the choice. The degree of difficulty would undoubtedly be multiplied were the number of options are greater. In option A, there are two "fairly high" probabilities and one "moderate" probability whereas in option B, there are two probabilities that are "very high" and one that is "fairly high." In terms of probability, there is therefore a slight advantage for option B. However, we must not overlook the average probability associated to a severe consequence: the possibility of Nero's criminal acts touching a large portion of the population. This reasoning, which is based on a qualitative evaluation, brings us to a dead-end. In this case, it would seem that the final decision ultimately rests on the public servant's personality and on the subjective intuition made up of an accumulation of temporal experiences, which cannot be expressed as a mature and explicitly justifiable choice.

1.2 The Problem with Uncertainty and Attitude Towards Risk

The difficulty of considering the probabilities of consequences through a qualitative reasoning method is not the only problem with the classical utilitarian approach. If we integrate the notion of *the attitude of the agent towards risk* to the framework defined earlier, the choice becomes even more complex. Actually, integrating many qualitatively defined probabilities does not suffice. The particular psychological personality coming from the type of agent involved also adds itself to the equation. In the end, the ethical choice is made by, on one hand, objective considerations fundamentally linked to the values attributed to the consequences (monetary value, social norms, probabilities, etc), and on the other, by subjective considerations linked to certain dispositions, beliefs and attitudes. Yet, in a selection process which aims to be as accurate as possible, what should we think of an evaluation resulting from the agent's fear, audacity or temerity?

The attitude towards risk is crucial because it can substantially modify the agent's calculation of the objective aspects of an uncertain consequence.[10] For

10 A criticism of the same nature is elaborated by Harsanyi and directed towards John Rawls's principle of the maximin. See John C. Harsanyi, "Can the Maximin Principle Serve as a Basis for Morality?," *American Political Science Review*, 69, 6 (1975): 594-606. The works of Harsanyi are by far a significative contribution to the modernization of the utilitarian ethical theory.

example, it may be that the public servant considers option A of his dilemma (Nero's liberation) as the most favorable because he cannot live with the thought of provoking his boss or losing his income. This result, even if it is un-asserted, would give the agent the impression of total loss. Meanwhile, if the public servant has a flare for risk, since we saw that his professional duty is finely tuned, he could ignore the job loss consequence and choose to follow his good professional judgment, which indicates him not to grant the liberation of a dangerous criminal like Nero.

If we go back to fig. 1, how will the agent integrate the risk factor in the ethical evaluation of the dilemma? Should there be another feature, which would specify the interval of fear or confidence associated to each consequence and its probabilities? In this case, the problems with aggregating qualitative data are accentuated since new parameters are being introduced. How do we "average out" the objective aspects of one consequence and the personal beliefs of the agent? Classical utilitarianism does not help us in answering these questions. To avoid this dead-end, the problem's analysis will be resumed by a more mathematical method inspired by John von Neumann and Oskar Morgensterns's work on game theory, as well as Howard Raiffa's work on decision-making.[11]

2. Quantification of Ethical Reasoning with the Expected Utility Model

The following method applies itself to a *single agent* (person, company, government, etc.). Once the problem's options and their respective consequences are defined, the ethical problem's analysis is then quantified. First, the numbered value of each consequence and their likelihood is determined. Second, the desirability of the consequence and the attitude towards risk are evaluated. In this way, the agent takes into account both the "objective" values, which he associates to each consequence, and the consideration of his own desires and beliefs.

2.1 Monetary Value and Probability

The method's first step consists of measuring the consequence's utility by attributing a monetary value to it. Evidently, this exercise is partly subjective since it demonstrates the agent's tastes. But, it is also objective in so far as the value of goods often results in recognized social conventions (example: the value of goods and services). If the monetary value is not defined and the agent wishes to transform the qualitative value of a consequence into a quantitative value, he can do

11 John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behaviour* 60th anniversary edition (Princeton: Princeton University Press, 2004); Howard Raiffa, John Richardson and David Metcalfe, *Negotiation Analysis. The Science and Art of Collaborative Decision-Making* (Cambridge: Harvard University Press, 2007).

so by asking himself this question: how much money would I be willing to spend to have this consequence manifest itself or, on the contrary, be avoided? The agent is including an essential step in what is referred to as the cardinal measuring of utility.[12] In the case study, for every consequence of option A, the public servant asks himself these questions: 1) What amount of *my* money would I be willing to pay to avoid newly committed crimes by Nero?[13] 2) What amount of my money would I be willing to pay to keep my job and to maintain a good relationship with my boss? 3) What amount of my money would I be ready to spend to avoid the remorse of having not fulfilled my professional obligations? Once all the monetary values are attributed to the consequences of option A, the agent repeats the procedure for option B. After carefully analyzing the problem, the public servant obtains values are summarized in the figure 2 below. Obviously, these evaluations are subjective and can vary considerably from one agent to the next. It is important to note here that the primary objective is to understand the quantification technique in so far as it allows the agent to make commensurable choices, which would have been almost impossible to evaluate from solely qualitative judgments.

Fig. 2

OPTION A		OPTION B	
Monetary Value	Probability	Monetary Value	Probability
Consequence 1A = -8000$	0,5	Consequence 1B = 5000$	0,95
Consequence 2A = 6000$	0,95	Consequence 2B = -10000$	0,8
Consequence 3A = -2000$	0,9	Consequence 3B = 2000$	1

Although it is not always the case, in this example, the consequences of each option are almost symmetrical in their form, but not in their values. Thus, as in the qualitative analysis, monetary values alone do not lead to a clear choice. The global utility is quite similar for the two options. For the analysis to progress, the qualitative judgments of the probabilities associated to each consequence must be quantified. Every probability finds itself on a 0 to 1 scale in which 0 corresponds to an impossible consequence, and 1 corresponds to a certain consequence. The probabilities of each consequence are portrayed in fig. 2. If, for each consequence, we multiply the monetary value by the probability, we obtain the *expected monetary value*. The sum of the expected monetary values indicates the expected

12 The notion of cardinal utility distinguishes itself from the notion of ordinal utility. Cardinal utility is generally understood as being the intensity of pleasure experienced by the agent at the time of a consequence's realization. As for ordinal utility, it is the result of classification of preferences concerning various consequences managed by the agent.

13 In this case, the monetary value is accounted as a negative magnitude since it represents a negative consequence for the public servant. All negative consequences will thereby be considered as negative magnitudes.

monetary value for each option.[14]

In our example, the calculation gives us these following results:

- Expected monetary value for option A = (0,5 x -8000$) + (0,95 x 6000$) + (0,9 x -2000$) = -100$.

- Expected monetary value for option B = (0,95 x 5000$) + (0,8 x -10000$) + (1 x 2000$) = -1250$

Contrasting to the trend that was previously observed, the integration of the quantified data exposes, for the first time, a clear advantage for option A. However, the suspense of the final decision is yet to come since there are still a few more steps to reach a comprehensive analysis of the problem.

2.2 Desirability, Risk and Expected Utility

Already, the quantification of the ethical analysis encourages a better understanding of the problem and shows that options A and B are less symmetrical than what the qualitative assessment suggests. Nevertheless, as it has been previously suggested, it is still possible to go deeper into the analysis by using a model that helps systemize the agent's "interiority" which he expresses through his desires, attitudes and beliefs. The previous steps focused on the events while these following steps examine what is happening within the agent as he is confronted by the ethical problem's data.

According to Raiffa, the monetary value that the agent attaches to a consequence is not necessarily proportional to the desire he feels in front of the consequence. This is particularly true when the monetary value is objective and not dependent on the agent's taste. However, the desirability is a fundamental dimension of cardinal utility measuring because it indicates the intensity of the agent's preferences.[15] For example, if it is obvious that the monetary value of a Ferrari 458 Italia is much higher than that of a Toyota Prius, it is possible to perceive the agent's desirability for the second choice as being stronger assuming that he has an ecological tendency or dislikes *bling*. Yet, there is more. Desirability also measures the real impact of a good or a consequence affecting the agent. For most people, winning one million dollars is extraordinary; for Bill Gates, it is pretty banal. Consequently, it is sometimes preferable, says Raiffa, to add a desirability factor to the calculation of the monetary value.[16] Desirability is represented by a number between 0 and 100—100 being the highest degree of desirability and 0 the lowest. In the example of the public servant, the monetary values are the direct

14 To see more on these notions, see Raiffa, Richardson and Metcalfe, *op. cit*., pp. 23-24.

15 On this topic, there is no consensus on the employed terminology. For more precisions, see amongst others: Irving Fisher, Is Utility the Most Suitable Term for the Concept It is Used to Denote?," *American Economic Review*, 8 (1918): 335-337; Peter C. Fishburn, "Retrospective on the Utility Theory of von Neumann and Morgenstern," *Journal of Risk and Uncertainty*, 2 (1989): 127-158.

16 Raiffa *et al.*, *op. cit*., pp.24-26.

expression of the agent's desires. Desirability is therefore proportionate to monetary values in this case and, hence, we can exclude it from our calculations, as it will not contribute to any extra information.[17]

Once the agent has identified his preferences and their intensity by attributing a monetary value to them, he must go through another step to conclude the utilitarian reasoning. Even if two agents can agree on the consequences, which in their view are most desirable, it is far from certain that they will agree on what they are willing to risk in order to see the consequences manifest themselves. The variable of this decision lies in *the attitude towards risk*. We have seen that in a qualitative type of reasoning where the risk factor seriously affects the complexity of the ethical problem's analysis. Hence the question: how can we integrate it to the rest of the quantification of the decision-making process?

Again, numerous authors have dwelled on the question of modeling decisions in risk contexts. However, following Raiffa,[18] the ethical analysis method elaborated in the later part of this essay will reflect John von Neumann and Oskar Morgenstern's ideas proposed in *Theory of Games and Economic Behavior*. Thus, when the utility of a consequence depends not only on its intrinsic value or desirability, but also on the risk factor (odds and beliefs) that is appended to it, the agent's choice will take the form of a lottery. Indeed, like all uncertain consequences, the lottery produces a certain gain factor—(X) with a probability (p) for example. If the rule of the lottery specifies that I will obtain 10$ if, by rolling a die, I get a six, this means that (X) is equal to 10$ and therefore (p) is equivalent to 1/6. This data will help characterize the lottery and calculate its utility. According to Neumann and Morgenstern, when faced with the core of this situation, the agent, if he is rational, will search a way to maximize the expected utility. Consequently, between two lotteries, he will choose the one whose expected gain is the highest. In the context of ethical decision, the concept of lottery is therefore used to model choice within a risk context. Altogether, it is an analogy of realistic bets, which an agent must sometimes make when he finds himself in front of an uncertain future.[19]

Through the acceptance of certain postulates or axioms[20] that reflect the consistency of the agent, it becomes possible to reformulate the data of the ethical

17 If we apply the desirability notion to the example of the public servant, the results would be the following: the consequence 2A would have the highest degree of desirability (100) and the consequence 2B would have the lowest degree of desirability (0).

18 Raiffa *et al*., *op. cit*., pp.27-32.

19 In economics literature, many authors believe that von Neumann and Morgenstern's notion of expected utility does not describe realistically the agent's behavior in risk contexts. For example, this was the case for the French economist, Maurice Allais. This essay does not strive to take position on the matter, but rather suggest the calculation of utility according to vNM is a practical conceptual tool for decision making in applied ethics.

20 These postulates have been criticized by numerous authors. Since this article does not make its case on their critical examination, the reader can consult the vast literature dedicated to this subject. See Peter C. Fishburn, *Utility Theory for Decision Making* (New York: Wiley, 1970); Mark J. Machina, "Expected Utility : Analysis without the Independance Axiom," *Econometric*, 50, 2 (1982): 277-323; and more recently Mathias Risse, "Harsanyi's 'Utilitarian Theorem' and Utilitarianism," *Noûs*, 36, 4 (2002): 550-577.

problem in the form of lotteries. The utility calculated by this method is called *expected utility* or *von Neumann-Morgenstern's utility* (vNM). The first consistency or rationality postulates are considered natural.[21] They may be conformed to the rules of logic usually employed by an agent when he reasons with different choices. In fact, these assumptions provide the agent with the stability and reproducibility of his preferences. In this way, it is possible to make "understandable" choices that are rationally justifiable and predictable. These postulates are also necessary for the establishment of formal preference profiles referred to here as *utility function*.

The first of these postulates requires the formulation of preferences in the form of a complete pre-order.[22] This concept states that within a set of consequences, the agent can compare *all*[23] consequences by pairing them up two by two. He can then establish that, if he prefers consequence x to consequence y, and y to z, he therefore prefers x to z.[24] The second assumption is very important for modeling. Under this assumption, if lottery Q ranks, in terms of preferences, between two other lotteries, let's say P and R, it is thus possible to reconstruct lottery Q as a lottery formed by P and R while keeping its preference order. This is a *continuity* postulate. The third postulate is also essential for what follows. It is a *substitution*[25] postulate. This postulate provides two forms of equivalence.[26] On one hand, whether they are composite or single,[27] the utility of the two lotteries that have equal expectations of gain will be deemed equally preferable by an agent.[28] Here, the physical process that produces a result is not important since what counts is the result itself. On the other hand, at the end of a calculation method, which we will now explain, the probability of a lottery is the direct expression of its utility.[29]

The technique von Neumann and Morgenstern propose is clever and very useful in social ethics. For the modeling of the ethical problem to simultaneously reflect the probabilities, the desirability and the attitude towards risk, the agent

21 It should be noted that the following presentation is an *informal* interpretation of the formal demonstration conceptually originating from von Neumann and Morgenstern.

22 On this topic, see John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *American Economic Review*, 68, 2 (1978): 223-228.

23 For some authors, including Amartya Sen, this requirement is too strong and is not necessary to ensure the consistency of choice. For details, see Amartya Sen, *Rationality and Freedom* (Harvard: Harvard Belknap Press, 2001).

24 The order is qualified here as *transitive*. This axiom also presupposes the comparability of the options.

25 In various writings, this postulate is also described as an independence axiom.

26 This explanation is borrowed from Binmore's work. See Ken Binmore, *Fun and Games: A Text on Game Theory* (London: DC Heath, 1992).

27 A composed lottery is one in which the prizes are themselves the lottery. According to the substitution postulate, a composed lottery can be brought back to a simple lottery by calculating the total probability. See Binmore, *op. cit*.

28 Evidently, this excludes any case in which the "player" is not primarily motivated by the results, but rather by the mere pleasure of playing. After all, if the fun of the game were not sometimes stronger than the systemic research of results, Las Vegas would be bankrupted!

29 Binmore offers an excellent summary of von Neumann and Morgenstern's demonstration. See Binmore, *op. cit*.

must transform the consequentialist qualitative analysis into a lottery characterized by certain gain expectancy. From a psychological standpoint, we find in this mathematical procedure the idea that the decision in front of risk is pulled from one extreme to the other: the temptation to make a significant gain or the deception of an important loss. The risk-seeking agent will be more attentive to the lottery's promise of gain whereas the risk-averse agent will be more preoccupied by the potential losses. To create a lottery, the best consequence of the considered option must be first identified, followed by the identification of the worst. We must then link these consequences to their monetary value thus exposing either the benefits (gains) promised by the lottery, or the losses. This lottery is graded Q; the superior prize (the "gain") is graded G and the inferior prize is graded L. Each lottery is defined by the set [G, L]. Next, the agent must identify, within the interval [G, L],[30] the amount which, to him, seems to be an "average desirability." That is to say a desirability of 50 on an interval [0,100].[31] This amount is very significant as it helps measure, specifically, the agent's attitude towards risk. We will see why later in the presentation.

Now, putting ourselves in the public servant's shoes, we must compare the options to construct the lottery and ask ourselves these following questions: *what is the best outcome I can achieve from choosing one or another option? And which is the worst?* For the model to adequately reflect the ethical choice, it is important to grasp the tension between the temptation for gain and the great loss that would result if the worst consequence were to occur. By establishing beforehand the monetary value and the desirability, we have already gone through this exercise. In option A, the best consequence for the public servant is keeping his job (2A), and the worst one is Nero's recidivism (1A). The sum of the lots would therefore be {6000, -8000}. This lottery structure indicates that should he choose option A, the public servant would want, above all, to keep his job. However, he would have to accept the risk of Nero's recidivism. Inversely, should he choose option B, the public servant opts for the idea of avoiding public security threats (1B) while risking his job (2B). For option B, the sum of the lots would therefore be {5000, -10000}. The final choice will result in the comparison of option A and B's lotteries.[32] In the interval {6000, -8000}, we will assume that the average desirability grade is -1000$. This amount signifies that the public servant feels indifferent about choosing either option whether it be that of paying 1000$ from his pocket or that of participating in a lottery. In the interval {5000, -10000}, the desirability's average is set at -2500$.

To determine the probability and, therefore, the utility[33] associated to each lottery deriving from the consequences, the agent must first ask himself this question: what would have to be the probability attributed to lottery Q's gain to

30 Contrarily to the group that contains only elements G and L, the interval includes all values between G and L.

31 See footnote 16 for further explanation.

32 This model choice seems closer to a common type of reasoning. In real life, the agent would compare the risks and gains of each option and do likewise for the two lotteries.

33 This results from the substitution postulate that was defined earlier.

incite me to change X amount of my consequence in exchange for a ticket allowing me to participate in the lottery? Normally, if the agent is risk-neutral, the average desirability scale will correspond to a 0,5 probability. This means that he would be indifferent to choose between the option of paying 1000$ (or 2500$ for option B) and the option of participating in the lottery. However, if the agent is timorous, he would even be willing to pay a substantial amount to avoid the risk of loosing prize L of the lottery. After, the agent must repeat the process and ask himself that same question for each of the dilemma's consequences. The ingenuity of the procedure comes from the fact that by asking this question, the agent not only compares utilities and probabilities, but also assesses how far he is willing to go to see the realization of the consequence for which he cares most. The obtained probability for each consequence becomes a way to measure the lottery's utility *while taking into account the attitude towards risk*. This is then multiplied by the probability, in figure 2, to which the consequence's realization is attributed.[34] The multiplication's result is the consequence's *expected* utility. The sum of the expected utilities for each option's consequence gives us the total of the expected utility of an option.

Here are the results of the consequences transformed into lotteries. The reader can refer to fig. 1 and 2 for further details. Note that in fig. 3, the number associated to the consequence is the probability determined by the agent in a range between 0 and 100.

Figure 3

OPTION A	OPTION B
Consequence 1 A = 0,01 (x 0,5 = 0,01)	Consequence 1B = 1 (x 0,95 = 0,95)
Consequence 2 A = 1 (x 0,95 = 0,95)	Consequence 2B = 0,01 (x 0,8 = 0,01)
Consequence 3 A = 0,4 (x 0,9 = 0,36)	Consequence 3 B = 0,8 (x 1 = 0,8)
A's total utility = 1,32	B's total utility = 1,76

As was reported earlier, to calculate the expected utilities of each result, the utility noted in fig. 3 must be multiplied by the consequence's probability and each option's results are to be added. This is the calculation in brackets in fig. 3. We now have all the necessary data to go ahead with the two option's comparison within a utilitarian perspective. In light of these results, we can observe that, with an ethical point of view, the most desirable option for the state employee is option B, not granting Nero's liberation. The method makes it possible to aggregate all of the problem's data and end up with a clear choice. One must note that this was not the case with a purely qualitative analysis. This can prove how the qualitative judgment becomes hazy when a large amount of information is to be considered.

34 It is important to understand here the difference between each probability. The one from fig. 2 is an "objective" evaluation of the possibility of seeing the outcome of a consequence while the other integrates a measurement of the agent's desire in a risk context.

The quantification of the problem promotes, instead, a more accurate model that encourages the agent to distance himself from the ambivalence generated by a fixation on the qualitative data of his dilemma.

2.3 The Deontological Constraints, which Assure the Choice's Ethicality

Obviously, for some critics of utilitarianism, the "ethicality" of such a decision is never guaranteed as it is based on determinants, such as desirability, which may be contaminated by personal interest. The addition of what might be called deontological "constraints" could create a procedural "lock" of some sort that would secure the decision-making process. This issue alone would require another article. Harsanyi and other authors have suggested solutions to this problem.[35] If we refer to Kantian's ideal, the essence of deontological ethics obliges the agent to a certain form of universality through which the agent's actions must obey to principles of symmetry between agents, impartiality towards his own interests, and exemplarity. The integration of these constraints to the model proposed in this paper is not an easy task. Through his notion of the categorical imperative, Kant placed more emphasis on the formal properties of practical reasoning. However, it is difficult to make choices and respect these properties without considering the consequences that these choices produce. The introduction of ethical constraints would probably require a closer look at the issue of distribution of utilities, since this question reflects the moral status of agents in a community. This issue, therefore, calls for the definition of principles of justice. Clearly, this goes beyond the scope of this article. However, it would be enticing to delve deeper into the subject to make the method of decision-making more beneficial to public officials.

Conclusion

Ethics, like other realities, is grasped through the complex overlapping and intermingling of magnitudes, intensities, movements, spaces and forms. Ethicists can, therefore, gain from the advantages in precision and generativity, which are almost infinite in the mathematical language. It should be remembered that philosophy, as a discipline, is not experimental, but rather analytical. Like mathematics, it contributes to knowledge by using reasoning and new logical sequences that likely renew our perception of the world. Unfortunately, practitioners of ethics usually choose to limit their analytical methods to the categories and modes of designating that is specific to natural language.[36] They then lock themselves up in very general principles that too often lead to ineffective reasoning. This is because the syntax of natural languages is very old and mostly related to spatial and temporal phenomena reflecting everyday life. This limits its modeling and analytical power. In social ethics, issues concerning the aggregation

35 See Harsanyi, *op. cit*., p.226-228.

36 For other considerations on the relation between mathematics, ethics and limitations of natural languages, see Yanick Farmer, "Topologie et modélisation chez René Thom: l'exemple d'un conflit de valeurs en éthique," in *Philosophiques*, 37, 2 (2010): 369-386.

of utility and risk assessment are eloquently demonstrated. As dramatically portrayed in the history of physics, natural language is primarily a means of communication. Nevertheless, nowadays, social ethics is slow to integrate the mathematical tool in its basic training. It emphasizes history and condemns those who practice it as being mere commentators who endlessly repeat the words of the past. If ethics practitioners want to change the world instead of remaining passive describers of it, they will have to discover new grounds that have already been broken by Archimedes' descendants.

On Food Ethics. Is Genetic Modification Technology Friend or Foe?: Reflections on the Documentary Film *Le Monde Selon Monsanto*

Wu-Tso LIN

Introduction

The development of biotechnology now is been widely used in various fields, and one of the issues to be concerned about is "genetically modified organisms (GMOs)." (Curtis, McCluskey, & Wahl, 2004) The production of genetically modified foods has proliferated within our culture and society since we began to manipulate the gene in the early nineteen-eighties. It may be argued that the human species has not learned the lesson from the story of the 'Tower of Babel'. When violating natural laws in order to reap large profits or increase production, we usurp the role of God. As with techniques such as the cloning of organisms, abortion and the production of non-biodegradable materials, we face a contradiction between a natural and manmade way to live. As the Chinese philosopher Lao-Tzu proclaimed, "Humans have to follow the earth, the earth has to follow the sky, the sky has to follow Taoism and Taoism has to follow nature." (Tzu, 1963) In essence, what Lao-Tzu is saying is that we can never forget that the natural way as it is the most harmonious way to live in our daily life.

In this modern age of food modification, it is asked, "Is genetic modification technology friend or foe?" This question posed by *Le Monde Selon Monsanto* is a serious dilemma which we have to confront. At this point in time we as a society are discovering just how pervasive and prolific the spread of the GM agro-food business has become. It is not only an issue concerning the reasonable or unreasonable use of technology within food science, but also a problem of food ethics. For example, we would like to discuss such as this issue, 'should use of genetically modified organisms be labeled?' (Caswell, 1998) To reach the conclusion we must explore the issue further, research and examine the information we have and compare both sides in an unbiased debate.

When discussing GM techniques we cannot avoid the obvious elephant in the room, the largest and most recognized of the enterprises involved in the production of GM foods, Monsanto. Monsanto is a company that specifically produces insecticides, herbicides, growth hormones and seeds incorporating genetically modified organisms that have been derived from genetic engineering techniques. The modification and changes in the deoxyribonucleic acid (DNA) of genes represents a much more serious danger to us than the process of selective breeding, which has been a part of our agricultural practice for so long. Rather than the gradual adaption of DNA over time, the potential for unforeseen side effects is much greater.

1. Lessons Learned from the Documentary Film, *Le Monde Selon Monsanto*

Agricultural biotechnologies are fixed to a scientific pattern firmed in experimental biology, whereas sustainable agriculture depends on a biological example that is best described as ecological. (Lyson, 2002) This is the reason why the GM technology can be regarded as a panacea in the modern world. But, evidence supporting the case against the GM food and technology industry can be seen firsthand in the documentary film *Le Monde Selon Monsanto*, a 2008 film directed by Marie-Monique Robin. Originally released in French and bearing the same title of the book written by her, the film was based on Robin's three-year long investigation into the corporate practices around the world of the United States multinational corporation, Monsanto.

This documentary film explores the role of Monsanto in the agro-food industry. It opens up and examines the ethical conflicts within the production and use of GM technology and ends on Monsanto is at the hub of an international conspiracy to control a large part of the world's seed supply, was brought on behalf of a coalition of small farmers and farm groups that accused Monsanto of giving farmers false and fraudulent guarantees about the safety and marketability of a new breed of bio-engineered seeds. (Barboza, 1999)

Furthermore, the documentary film explores the public perceptions of both the science and the scientists from the technologies inception to the present day. This film presents specific arguments that critique the business strategies and the ethical policies in use by Monsanto. The spotlight focusing more and more on the current debates that are being held in the public square as to the future consumption of GM crops and livestock and use the GM food technology. Whether you are someone who sees Monsanto as the wolf in sheep's clothing, the proverbial 'Frankenstein's Monster' let loose to create chaos or one who celebrates the increased production and efficiency created by the new technology, Robin's documentary argues that there is a shared inability to see any great distance into the future. It is important to note that no human-trial on long term consumption of GM food has ever been done, for obvious ethical reasons. Therefore, the scientific community is yet to reach a conclusion as to how GMOs affect humans over a long period of time. In the same way the long term effects on our environment and eco system cannot be accurately be predicted. Without this data and until the scientific community finds an answer and agrees with itself, we will be left to form our own opinions on the subject.

Robin's documentary is not just warning us of dire implications in the future. The negative consequence, Robin argues can be seen and felt in the more immediate future in the loss the plant diversity and the harm for human health. Seed produced by Monsanto generates crops that are essentially without variation. There are designed to withstand extreme cold or heat, be resistant to insects and to be more productive. Other variants of crop within a local area will stand little chance against its new stronger and well designed competitor. Comparisons can be made to the Irish Potato Famine of the mid nineteen century where the dependence

on a single crop led to a great cultural disaster and the death of countless people.

To Robin the story of 'Frankenstein's Monster' is becoming all too real. The documentary claims, that Monsanto now owns about ninety-five percent of the GM seeds produced is astounding is true. The corporation and its method of coercing and threatening farmers are well documented in the film with firsthand accounts given by farmers and activists, victims of, as Robin puts it in the first chapter heading, 'One of the Great Polluters of Industrial History' are also on film telling of the negative impact of Monsanto's policies and products.

Alternatively, we are also ingesting toxins into our bodies when we eat Bt (Bacillus thuringiensis) corn. There are a number of studies done by corporate producers of Bt corn (Monsanto, Syngenta) suggesting that it is perfectly safe. The problem is that these major corporations pay their own scientists to come up with a particular outcome. There is a great deal of research in favor of genetically modified corn with very little evidence against it. And considering that sixty-five percent of corn in the United States is genetically modified it would behoove the industry to have more in-depth research that explores the impact of Bt corn in humans. (Lawrentz, 2012)

The use of genetically modified (GM) ingredients in food products has been highly controversial. (Curtis et al., 2004) Under the spotlight too are the political influences Monsanto wealds. The documentary exposes how one of Monsanto's senior executives was quoted as saying that Monsanto's job was to make money. According to the executives, it was the job of the American Food and Drug Administration (FDA) to ensure safety, not Monsanto. The political influence Monsanto can have been seen in the 'revolving door' policy between Monsanto, the American government and the FDA officers were been explored in the documentary. Therefore one also needs to comprehend that the actions and policies of those in the FDA and government can also have negative consequences just as the GM technologies themselves may. In appraising the corporation, we must also assess the individuals that it comprises of. The questionable motives and ethics of the company employees, the strategies and vision that Monsanto follows and the technologies and food it produces, seemingly, leads us a way from the way nature production processed.

2. Friend or Foe?

We are entering a new era of applying genetically modified technology on food production. This technology can increase the quantity and quality on agricultural outcome. (Ahmed, 2002) These applications of scientific methods can solve the lack of food as well as obtain the best quality of agricultural product. (Gaskell, Bauer, Durant, & Allum, 1999) The GM technology has the potential to increase a food's nutritional value and this cannot be overlooked.

Another positive aspect to consider is the reduced amount of crops lost to damage. (Qaim & Zilberman, 2003) With a stronger, more resilient plant with more powerful defense mechanisms that fight against disease and predator, there is more

efficient production. The increase in production of each agricultural production unit is an attractive prospect for any farmer. More efficiency and production are the slogans used by GM companies.

We can see some successful paradigms of GM technologies in Taiwan. There are two famous examples worth discussing. One is the application on the research of orchid planting. Horticultural scientists developed many new species by way of GM technology and they have created a lot of new breeds. The new varieties flowering period is designed to be much longer and they are more able to generate new and interesting colors and appearances. The result of the use of GM technologies on the orchid is very successful. The export value of orchids has for the last three years has been seventy percentages than others flowers export in Taiwan.

The second successful use in GM technology in Taiwan was pioneered by Professor Su-May Yu who created the new variety of rice that it more immune to drought, cold and excess heat. Professor Yu has received recognition from the Bill & Melinda Gates Foundation and was invited to join them in their fight against with world famine. Rice, as the most popular wide spread and practical crop, benefit more people in more place than any other and the impact of increased rice production is the most important tool we have in combating famine worldwide.

From the contrary position, although beginning from a positive perspective, the documentary move on to suggest that Monsanto represent the devil. Taking advantage of the power government support, Monsanto has gone so far as to collaborate on writing specific laws that give it greater legal protection and easier access to foreign and domestic markets. Through this control they developed their technology at an alarming speed. The Robin's documentary demonstrated the dangers of this and the companies lack of ethics citing product that have been exposed to cause serious damage to human health, these being PCBs and Dioxin. Furthermore products they have been responsible for innovating the Roundup and Bovine Growth Hormone have proliferated agricultural production to such and extend that Robin suggests that the effects are irrecoverable. In the United States, the corporation is legally of obliged to place the financial wellbeing of is shared holders above all of priorities. This environment the Monsanto is able to skirt its own responsibility. As a consequence, a culture of dishonesty and immorality can pervade without any serious regulation.

It is very difficult to distinguish advantages and disadvantages of GM food. There are few international controversies exist in the world. Prince Charles warns GM crops risk causing the biggest-ever environmental disaster. (Randall, 2008) In his most outspoken intervention on the issue of GM food, the Prince said that multi-national companies were conducting an experiment with nature which had gone 'seriously wrong'. He also has argued that GMOs take "mankind into realms that belong to God and God alone." (Goldburg, 1991) The Prince also expressed the fear that food would run out because of the damage being wreaked on the earth's soil by scientists' research. He accused firms of conducting a "gigantic experiment I think with nature and the whole of humanity which has gone seriously wrong." On the contrary, The Economist published many articles to declare her position to support

the GM technology. The articles warned us, it is the best policy to develop the GM technology on food producing for the reason to increase the quantity and deal with the shortage of world's food.

One case study in Robin's documentary involved the use of GM corn seed in Mexico. As of the introduction of modified seed there are 1,500 unique species of corn thriving in the farmlands. The refusal of local farmers to pollute their crops with tainted seeds has led to conflict with Monsanto's policies. Farmers extol the virtues of their natural traditional farming methods and currently fighting to protect their way of life and future.

3. GMOs and Food Ethics

In any case, we have to care about the balance between the use of GM technology and the food safety of human being. In fact, the shortage of food is destined for the future of human being. Therefore, the biotechnological scientists presume they could found a method to deal with the world famine. The method is depending on the producing of GMOs. (Mohmand & Frogley, 2011) Use of biotechnology in food producing is one of the most important strategy to solve the problem of agricultural producing insufficiency. (Lusk, Jamal, Kurlander, Roucan, & Taulman, 2005) It is not only a research subject in modern agriculture, but also a controversial issue in the modern food ethics.

Now, the consumption of GMOs and the technology applied on food products has ignited a passionate debate, particularly in the developed countries. On the suggestions of recommendations from the scientific community, official authorities such as the FDA in the United States, the FSA (Food Standards Agency) in the United Kingdom, the DGAL (Direction Générale de l'Alimentation) in the France and the FSC (Food Safety Commission) in the Japan, they all have recognized that the GM products currently available are safe for the consumer and the environment. Moreover, there is a consensus among scientists that biotechnology has the latent to breed and grow agricultural products that will enhance nutrition, increase crop yields, create quantity and quality of meat and reduce the use of toxic pesticides and herbicides. Nevertheless, polling of developed countries' consumers consistently indicates a high degree of hostility to the presence of GMOs in the food supply. The misgivings on GMOs are based on those considerations, such as potential health risk and a preference for natural foods, as well as social dimensions, such as environmental effects and ethical concerns. It appears that the unsuitable view has been deteriorated by the spread of the 'mad cow' epidemic, the lack of benefit that the first generation of GMOs provides to the consumer and the initial introduction of GMOs without the public's knowledge. (Noussair, Robin, & Ruffieux, 2004) Although 'mad cow' disease is totally unrelated to GMOs, it did create a "shapeless sort of fear that really sensitized the whole country to the possibility of something going wrong with the food supply," Harwood says. (Goldburg, 1991) Similar food debacles in Belgium and other countries have undermined European confidence in scientific reassurances.

Labeling policy for GMOs is related to food ethics. To date, the FDA has not required labeling that indicates a product has been genetically altered unless it contains one of the eight most common food allergens. That way, at least consumers could choose whether they wanted to expose themselves to the potential risks of eating GMOs. The European Union already requires labeling of any food with one percent or more genetically modified ingredients.

Another important food ethics aspect we should evaluate, the GM technology is new, has unlimited potential, is promptly developing, and can be applied for all living beings, it can be used for beneficial purposes but there are also risks. It is also conform to no conventional pattern technology and needs developed laboratory facilities and particular environmental conditions that require investment. Many kinds of GMOs are developed for environmental purposes and for health and medicine. Genetic engineering has been particularly successfully used and applied in food and agriculture to produce genetically modified foods. GMOs are good or bad for our body, for the community or for farmers? Let us consider the example below. This case made us feel anxious is the insecticidal crystal protein gene of Bt has been the most extensively used one in plant insect resistant genetic engineering. Along with commercialization of large groups of Bt-transgenic crops, the impact of Bt toxins released from transgenic plants on the soil eco-system has aroused high concerns. The GM scientists have to face up to the environmental behaviour and biological effects of the Bt toxin, addressing ways of Bt toxins released into the soil from transgenic plants, its movement, bond onto soil surface-active particle, degradation, persistence and effects on organisms and enzymes in the soil.

The following issue need to be considered is the genetic engineering has both sped up the process of developing crops with 'enhanced' or new characteristics and allowed for the transfer of genes from one organism to another, even from great evolutionarily distances, such as the insertion of a gene from an African frog into rhododendrons to confer enhanced resistance to root rot. Moving genes between species creates transgenic plants and crops. (McLean, 2012) In this way to overuse the genetic engineering, we will inevitably create the 'Frankenstein' in the near future.

To sum up, Ethical reflection on genetic modification seems to be of little concern to some research fields in the society today. The advance of genetic modification has allowed scientists to change or modify plants and even animals in ways that would make them better from a human standpoint. That is why there are now genetically modified plants that proliferate in many countries that seem to happen hidden from the public. Almost some kind of genetically modified organism has been used either in foodstuffs. But why is it that most people don't seem to notice this happening today? Despite the many advances that genetic modification has gone through, it just seems that an ethical structure of some kind in its practice might be missing. A lot of research that has been done on the field of genetic modification has been greatly used for personal gain especially for those who belong to the mighty corporations of late. A technology that is considered as powerful enough to change human life itself has been placed in the hands of a few enterprising corporations with the aim to gain a lot from it without ever considering

the possible implications of its use. (Comstock, 2010)

Conclusion

Genetic modification involves methods that make it possible for scientists to create new plants and animals by taking parts of the genes of one plant or animal and inserting them into the cells of another plant or animal. (Lang & Hallman, 2005) The genetic biological research consensus has been achieved on the principles regarding evaluation of the food safety of genetically modified plants and animals. The concept of substantial equivalence has been developed as part of a safety evaluation framework, based on the idea that existing foods can serve as a basis for comparing the properties of genetically modified foods with the appropriate counterpart. (Kuiper, Kleter, Noteborn, & Kok, 2001) It is only recently that the American FDA has been asked to approve the salmon, containing manipulated genes, for human consumption. This marks the first time that permission has been given to sell GM contaminated animal products on the open markets. The salmon have been engineered with growth-hormone gene. Rather than growing to full size in the usual three years, the gene has reduced the process to around eighteen months. In light of a more informed public and greater public scrutiny retail stores are hesitant to place the product in their stores.

The above example reminds us of the power held by as global citizens. Whatever GMOs is good or bad to us, we all have right as global citizen to have our say. This is a social issue with social implications. The increasing of the radiation levels in our shared oceans are a concern to our global community. Comparing this subject with the current nuclear energy disaster taking place in Fukushima we understand that both issues necessitate a popular opinion. It is this opinion that Robin has indented informed in *Le Monde Selon Monsanto*. The documentary as a medium has a real role in the observation of applied human ethics and understanding.

In Mary Shelly's 'Frankenstein,' it is science that enables the monster to come to life. Science can be of benefit to all of us in our daily life. In this example of GM technology science is not responsible for the monster. We can learn from the documentary that without applied ethics or regulation, that which is seemly beneficial can morph into the something more dangerous. How best should different information about what risks are assessed within risk analysis be communicated to the public? We can list some advanced questions below between GM technology and our society. How can public concerns be incorporated into this process? How does this relate to strategic decisions about the development and commercialization of bioscience innovations applied to food production and more generally? Who should communicate to whom? (Frewer et al., 2004) The advance of technology must be accompanied by an equally advancing use of ethics. In this way, the prospect for humanity travelling hand in hand with nature into a brighter and more healthy future looks cleaner.

If we will certainly vote against the issue to develop the GMOs technology

unlimitedly, may be exist some reason like following statement, for we cannot control the GM Effect and we never know what will happen after some time. In fact, we are easy to create a monster by GM and we found some cases indeed.

References

Ahmed, F. E. (2002). Detection of genetically modified organisms in foods. *TRENDS in Biotechnology, 20*(5), 215-223.

Barboza, D. (1999). Monsanto Sued Over Use of Biotechnology in Developing Seeds. *New York Times, 15*, C1.

Caswell, J. A. (1998). Should use of genetically modified organisms be labeled?

Comstock, G. (2010). Ethics and genetically modified foods *Food Ethics* (pp. 49-66): Springer.

Curtis, K. R., McCluskey, J. J., & Wahl, T. I. (2004). Consumer acceptance of genetically modified food products in the developing world.

Frewer, L., Lassen, J., Kettlitz, B., Scholderer, J., Beekman, V., & Berdal, K. G. (2004). Societal aspects of genetically modified foods. *Food and Chemical Toxicology, 42*(7), 1181-1193.

Gaskell, G., Bauer, M. W., Durant, J., & Allum, N. C. (1999). Worlds apart? The reception of genetically modified foods in Europe and the US. *Science, 285*(5426), 384-387.

Goldburg, R. J. (1991). Attack of the Killer Tomatoes. *JAMA: the journal of the American Medical Association, 266*(3), 362-362.

Kuiper, H. A., Kleter, G. A., Noteborn, H. P., & Kok, E. J. (2001). Assessment of the food safety issues related to genetically modified foods. *The Plant Journal, 27*(6), 503-528.

Lang, J. T., & Hallman, W. K. (2005). Who does the public trust? The case of genetically modified food in the United States. *Risk Analysis, 25*(5), 1241-1252.

Lawrentz, S. (2012). Genetically Modified Organisms. from http://www.eaterethics.com/genetically-modified-organisms/

Lusk, J. L., Jamal, M., Kurlander, L., Roucan, M., & Taulman, L. (2005). A meta-analysis of genetically modified food valuation studies. *Journal of Agricultural and Resource Economics*, 28-44.

Lyson, T. A. (2002). Advanced agricultural biotechnologies and sustainable agriculture. *TRENDS in Biotechnology, 20*(5), 193-196.

McLean, M. R. (2012). The Future of Food: An Introduction to the Ethical Issues in Genetically Modified Foods. *Nanotechnology: Ethical and Social Implications*, 241.

Mohmand, E., & Frogley, J. (2011). Genetically Modified Foods.

Noussair, C., Robin, S., & Ruffieux, B. (2004). Do Consumers Really Refuse To Buy Genetically Modified Food?. *The economic journal, 114*(492), 102-120.

Qaim, M., & Zilberman, D. (2003). Yield effects of genetically modified crops in developing countries. *Science, 299*(5608), 900-902.

Randall, J. (2008). Prince Charles warns GM crops risk causing the biggest-ever

environmental disaster. from http://www.telegraph.co.uk/earth/earthnews/3349308/Prince-Charles-warns-GM-crops-risk-causing-the-biggest-ever-environmental-disaster.html

Robin, M.-M., Juan, A., Thalie, P., & France, A. (2008). *Le monde selon Monsanto*: Office national du film du Canada.

Tzu, L. (1963). Tao Te Ching. Translated by DC Lau: New York: Penguin.

Hope or Fear? How the Public Voice on the Usage of Electronic Patients' Records in the UK Could Be Represented: Beyond the Bioethical Row over the Informed or Presumed Consent Model

Kaori SASAKI

Introduction

The emergence of new applications of personal information technologies has often evoked general uncertainty and concern regarding privacy. Whereas analysis of anonymised data of personal behaviour (e.g. credit card purchase history and public transportation logs) for business purposes has seldom developed into a serious socio-political issue in any developed country, use of personal/genetic/medical information per se has provoked public debate in the UK, Japan and elsewhere.[1] Is the usage beneficial to each individual and/or society in general? Is the confidentiality of each contributor's personal/medical/genetic information sufficiently guaranteed? Why and how can personal/medical/genetic information be disclosed to, and used by, a third party? Specifically, legal and ethical questions have arisen regarding the usage and storage of (1) personal information, e.g. identity card and its database; (2) genetic information, e.g. Biobank, and (3) medical information, i.e. electronic patient records (EPR).

This article is a response to the socio-ethical issues arising from the new information technology in connection with the former British national policies, *Information for Health* (1998-2005) and *Connecting for Health* (2005-2013). The main purpose of these policies was to develop EPR 'from cradle to grave,' whereby clinicians and medical researchers could access patients' clinical records and medical history (NHS Executive 1998, 28; see also NHS Connecting for Health 2005). The anticipated benefits of accumulated data included enhancing both public health and the quality of medical services and research (for example, Friedman 2006). Whilst the policies themselves were effectively aborted in 2013, the core theme could be said to have survived, for example in the Social Care Act 2012.

Whilst the scrapping of these policies may be mainly attributed to the shortage of financial and human resources, certain socio-ethical issues arguably contributed to their demise. The policies surrounding EPR raised ethical and bio-political questions regarding citizens' rights over their own medical data, and fears about a database surveillance society. On what terms and in what ways could a personal anonymised medical record be used for medical treatment and research? Under

1 For example: in the UK there has been public controversy over government attempts to adopt an identification card scheme; in Japan, the introduction of its counterpart, the resident registration (*jumin kihon daicho*) card and its database networking, has generated huge public debate and disapproval.

what conditions, and by which medical workers, researchers and experts in relevant fields, could each individual EPR be accessed? These anxieties concerned not only the bioethical matter of *informed consent*, but also the matter of *public trust* in the authority that would utilise EPR for medical treatment and research. Indeed, questions regarding the consent model and public trust in (medical) professionals have played a significant role in the current development of bioethics and applied ethics. Hence, further consultation is necessary over these issues in relation to the development of EPR.

Earlier studies have already provided excellent outcomes; however, because they tend to examine two related issues in isolation from each other, they have been unable to develop ways forward to reduce the level of public anxiety. On the one hand, some enquiries have explored the matter of the *consent model*, through: (1) a dualistic consultation on whether we should adopt the informed-consent or the presumed-consent model; (2) an examination of the better usage of EPR with or without consent, or (3) a discussion over the ethical ground for the usage of EPR without consent (see for instance: Robling et al. 2004, Parker 2005, Clark and Findlay 2005, UK Clinical Research Collaboration 2007, UK Clinical Research Collaboration and Wellcome Trust 2007, de Lusignan 2008, Wilson et al. 2009, NHS Connecting for Health 2009. See also: Win and Fulcher 2007, Miller 2008, and Goldstein 2010 for consideration of the informed consent model in the use of EPR, although their cases are American). On the other hand, some studies have explored the *public understanding of EPR*, including: (1) public hope and fear about the usage of EPR, and (2) public understanding of the consent model (see for example: Luchenski, Reed et al. 2013, Luchenski, Sasaki et al. 2012, Royal Academy of Engineering 2010, Greenhalgh et al. 2010b, Ipsos Mori 2007, Campbell et al. 2007, Armstrong et al. 2006, Stevenson et al. 2012, Wilson et al. 2003). This division in the research leads to a limitation in its consideration of the EPR issues. That is, neither type of prior study has sought a better consent model for EPR alongside consideration on gaining public trust vis-à-vis public understanding of EPR. Hence, there is a need to make a bridge between these two separate strands of research.

Indeed, Jewell (2011) has discussed this limitation, albeit with reference to the usage of Australian psychiatric patients' records. He considers the conflict between public health and interests versus patients' rights and confidentiality, in relation to the expected role of the medical service, and patients' consent. Whilst informed consent and the patient's voice should be vital factors in this area, Jewell suggests that in order to achieve the balance between the importance of improved public health and medical treatment for each patient on one hand, and the value of informed consent on the other, a 'compromise procedure' in the consent model for EPR should also be necessary (2011, 491). Jewell's suggestion is in accord with the approach I will put forward in this paper to overcome the limitations of previous studies in consideration of the matter of consent in the use of EPR. In that sense, this study may be considered a response to Jewell's suggestion of the 'compromise procedure'.

Hence, this article examines public understanding of EPR, in the hope that this

may enable it to provide an applied ethics consideration and recommendation to overcome the limitation in the studies surrounding the British EPR. To begin this enquiry, I provide a brief explanation of the background of the development of EPR in the UK. Because both *Information for Health* and *Connecting for Health* focused upon NHS England, my analysis and explanation of the policies concentrate on the English case. NHS Wales and NHS Scotland did develop EPR systems at the same time, but these entailed some minor differences from their English counterpart. In fact, this concentration on England follows the practice of earlier studies, even though they might claim to study the UK EPR. Then, through mapping out the articulated public voices on the development of EPR, I explore how they have been encompassed within the contexts of bioethical issues of informed-consent and public trust in medicine. The data for analysis derive from: (1) literature reviews; (2) interviews conducted in London during Spring 2010, and (3) observation study of the Wellcome Trust public engagement programme, implemented in early 2010. The last mentioned of these included performance of a play, *Breathing Country,* at which the audience was invited to participate in a course of discussion (see Wellcome Trust, 2009 for further information). Finally, the study outlines my argument towards a challenging proposal for amendment of the current EPR policy, based upon analysis of both public understanding of EPR, and mistrust of medicine in the UK.

1. Background to the UK Development of EPR

In 1998, the British Government and National Health Service (NHS) adopted a programme titled *Information for Health: An Information Strategy for the Modern NHS 1998-2005*. The strategy was to consist of two phases. First, patients' healthcare information was to be kept electronically. Second, these electronic patient records were to be linked to a national database and local network in order to improve healthcare service and research. As was seen in the 'dotcom' explosion of 1997-2000, the advent of the World Wide Web had ushered in an era of information technology. Hence, this policy could be seen as one of the embodiments of the spirit of the age.

However, by 2005 the planned phases had not been completed. Subsequently, the policy continued for some years under the *National Programme for Information Technology within NHS*, better known as *Connecting for Health*, which began in 2005 and terminated in March 2013.

Under *Connecting for Health*, two projects were established. First, the Summary Care Record was intended to create a database containing key health information of each patient, such as details of allergies, current prescriptions and bad reactions to medicines. Once an individual's electronic record had been set up, whenever he or she paid a visit to any clinic or hospital under the NHS, the medical staff treating them would update their record. Such records would be kept for all patients who had not opted out. Any NHS medical worker would be able to access the basic medical history of a patient anytime, anywhere within the country. This

database was expected to provide relevant information more quickly, especially in an emergency situation.

The second project under *Connecting for Health* was the Electronic Patient Clinical Record. The aim was to store detailed clinical records electronically, including diagnostic test results such as x-ray pictures and blood tests. This sort of detailed record would be made at each healthcare organisation, then subsequently the records were to be linked and shared amongst local healthcare institutes, such as hospitals, specialist clinics and general practitioner (GP) surgeries. It was expected that this would enhance the efficiency of medical care and cooperation among healthcare sites.

The collection of medical data electronically was also expected to produce benefits in research. Policy makers hoped that the medical data collected could be used for analysis of public health, clinical governance, health improvement programmes, and performance management. The outcome of such analysis should, in their view, contribute to further improvement of healthcare service and treatment.

Meanwhile, policy makers paid particular attention to the public voice. This willingness to listen apparently owed much to the recent public controversy over the UK Identity Card Scheme. A significant proportion of the population strongly disagreed with the idea that the nation state should hold core personal information through a national electronic database (Whitley et al. 2007; *Daily Mail* 6 June 2010). For the majority of British people, an ID card database would not only infringe their privacy, but would lead to the emergence of a new form of police state. The policy led to the formation of a civil movement, *NO2ID* (2004-onward), alongside the development of public debate. Consequently, the ID card plan was abandoned. Because EPR could be regarded as a policy parallel to the ID database, the NHS and other policy makers were obliged to take account of the public understanding when developing the project.

Despite their efforts, however, the aims of *Connecting for Health* could not be achieved, particularly with regard to patient clinical records. This failure was chiefly attributed to lack of resources, but public mistrust on the development of EPR also played a part. Ultimately the NHS was unable to handle the public scepticism toward, as well as the administrative and technical difficulties in, the NHS development of EPR (see such as Greenhalgh et al. 2010a). Nevertheless, it has continued to attempt to realise at least the basic framework of *Connecting for Health*. Hence, it is worthwhile exploring how public voices were articulated in terms of EPR.

2. Public Understanding of and Attitudes towards EPR

I have mentioned that EPR was met with public scepticism. This was not simply because people feared for their privacy and safety vis-à-vis EPR. Of those British people asked whether they welcomed the idea of EPR and an associated national or regional database, very few were able to give a clear answer. In other words,

the majority had mixed feelings about the development of EPR. Almost all, i.e. 98.15 percent, of the research population in Luchenski, Reed et al. (2013), were in favour of EPR per se in terms of its usage for clinical treatment. No doubt they recognised benefits in it. For instance, one of my own interviewees, whom I name *Alex* (middle-aged, university educated), found EPR convenient in comparison with the current paper recording system. S/he understood that it would hasten transfer of medical diagnosis and test results between not only two different medical institutes but also two different departments within the same hospital, partly because s/he was experienced in the problem of data transfer in both cases. Surveys by Ipsos MORI (2007, 57) and Greenhalgh et al. (2008a) show that those who have received higher education, like the abovementioned *Alex*, are able to identify and comprehend the benefits in the utilisation of accumulated medical data for research; for example, medical statistics of a particular illness. Indeed, interviewed about the development of EPR, *Alex* referred to this when expressing his/her willingness to participate in medical research if s/he considered it valuable to him/herself and the society.

Yet at the same time, people expressed strong concern about the development of EPR. In particular, they worried about its accessibility, confidentiality and misuse by medical workers and students (see such as: NHS Connecting for Health 2009, Ipsos MORI 2007, Greenhalgh et al. 2010b). As the following will show, these three concerns were so closely linked that it would be difficult to examine them separately.

First and foremost, there was a widespread unease as to who would be able to access an individual's EPR. People did not object to their GPs and specialists seeing their records. However, research by Ipsos Mori (2007) and Armstrong et al. (2006) revealed that some would not wish any medical worker who was not a doctor, such as a radiologist or nurse, to see their records. In fact, whereas the aforementioned *Alex* only implied it, another interviewee, whom I name *Chris* (youth, ethnic minority), emphasised that s/he would want to choose whether other medical workers should have access to his/her EPR, and expressed scepticism about nurses with regard to misuse or accidental mishandling of the EPR. Indeed, a survey by Luchenski, Reed et al. (2013) confirms that ethnic minority individuals in London, like *Chris*, are likely to express such doubts. Furthermore, earlier studies (see for instance, Ipsos Mori 2007 and Armstrong et al. 2006), together with the views expressed by the audience of the abovementioned public engagement programme, showed the specific concerns about usage of EPR by medical researchers and private sectors (e.g. insurance companies and pharmacological industries), as people assumed that such usage would be based upon self-interest rather than the common good. The great majority of the general public did not want their EPR to be used for research and commercial purposes without their clear consent (see especially Ipsos Mori 2007 and NHS Connecting for Health 2009).

The second issue was the matter of the individual's right over their EPR. Here there could be seen a deep division between the generations. Previous research, such as Armstrong et al. (2006) and Ipsos Mori (2007), revealed that if a health database were to be fully developed, people aged between 35 and 54 tended to

assume that it would be almost impossible for them to control who could access their information. Those over the age of 55 were even less keen on EPR itself (Ipsos Mori 2007; Luchenski, Reed et al. 2013). This result could be ascribed to their lack of experience and knowledge of information technology.

In contrast, younger people, aged between 15 and 24, showed keen interest in exercising their own control over to what extent and by whom their data could be accessed, seeing parallels with the privacy setting of many social networking services provided through information technology (see especially Royal Academy of Engineering 2010). Indeed, the abovementioned *Chris* expressed how much s/he took the individual right over accessibility of their own EPR for granted, mentioning several times in the interview that "*even Facebook* [one of the most popular social networking services] *can*." Likewise, surveys by Luchenski, Reed et al. (2013), Royal Academy of Engineering (2010) and Ipsos Mori (2007) demonstrate that younger people, most of whom are familiar with social networking services, were far more positive towards EPR because they tended to trust such technology and to utilise it daily. Hence, in contrast to the apathy, pessimism and/or indifference regarding an individual's rights over their EPR as expressed by the elderly and the middle-aged, the majority of the younger generation supported EPR; they naturally believed, like the aforementioned *Chris,* that the information technology ought to guarantee the individual right regarding which kind of private information could and could not be shared.

Third, previous research also revealed that a significant proportion of the population feared that their EPR would be monitored and used for purposes other than medical treatments. This view was often articulated in conjunction with the matter of the development of the database society in the UK (see Verity and Nicoll 2002, Armstrong et al. 2006, and Ipsos Mori 2007, in particular). During my observation study at the aforementioned public engagement programme, very many participants clearly expressed their concern on this matter. Both that audience, and the participants of the earlier surveys in Ipsos Mori (2007) and Armstrong et al. (2006) recognised that our contemporary life style relies upon various databases containing detailed personal information, such as credit card purchase details; electronic railroad, tram, metro and bus cards that enable the transportation companies to get each user's travel history (e.g. Oyster card); and online shopping records such as those of Amazon and e-bay. For these respondents, notwithstanding the potential benefits of these databases, they still represented an invasion of privacy. Because big data from those databases could be used for various commercial purposes, people assumed that medical data held electronically would also be utilised in various ways, such as to draft new health insurance policy and search for testers for new drugs. In addition, some people worried that the government and big companies would secretly access their health information, thereby infringing their human rights. Indeed, a few participants in a study by Armstrong et al. (2006, 66-82) referred to "*Big Brother*"—the fictional character in Gorge Orwell's *Nineteen Eighty-Four* who has the population of a totalitarian state constantly under surveillance by way of a huge computer database—in connection with the development of EPR.

In fact, this fear overlapped with the then current British political row over identification cards. As noted earlier, a significant proportion of the UK population strongly opposed the idea that the nation state should hold core personal information through a database. This opposition developed into the *No2ID* campaign (2004-onward). Similarly, this view has been reflected in a civil movement against the development of the EPR database, *Big Opt Out* (2006-onward). This movement is not opposed to EPR per se, but rather challenges both a national database of individual medical histories, and local computer networks of patient records. Thus, it could be said that the public views towards EPR were on the whole sceptical, especially in terms of the usage of health databases by third parties.

Bearing in mind the concerns articulated about this policy, let me then consider how to solve the issues surrounding EPR, public mistrust in medicine and the individual right over their own EPR in particular. Specifically, I would like to discuss a better consent model for accessibility of the EPR, with reference to the public understanding of it.

3. Towards a Better EPR Development

3.1 The Problem in the Current Consent Model

As was noted earlier, the British health policy makers envisaged a national EPR database, under the *presumed consent model*. This meant that a summary care record would automatically be made unless an individual refused it. To inform the population about this policy, letters were sent out to all households. However, surveys by Greenhalgh et al. (2008b) and Bratan (2010) found that few people had actually read this letter, partly because, in my opinion, it looked like a piece of junk mail or an advertisement. Without reading the letter people were in no position to make a specific demonstration of their unwillingness to allow the NHS to make their summary care records, and in the meantime each Primary Care Trust went ahead to produce the electronic summary care records and put these into the database. Hence, individuals were unable to practice their right over their medical record.

Nevertheless, the NHS was able to defend itself on the ground that an additional option was available to the population. This option, which an individual might discover if he or she either (1) read the aforesaid letter and then requested further information about the EPR from the relevant authority, or (2) searched meticulously through the NHS Care Records service website, allowed people to choose whether or not some sensitive health information, for example regarding abortion, mental health or HIV, should be added to their summary care records. Also, an individual would have the right to ask to put limits on who would have access to their medical information. Hence the NHS was able to maintain that it guaranteed patients' rights over their medical record, even if only '1.35' percent of the population apparently practiced this right (NHS Connecting for Health, 26 March 2013).

In view of the above, it could be said that the UK policy allowed an individual control over access to their summary care records *only if* he or she paid close and careful attention to *Connecting for Health* in 2009-2011. In other words, the vast majority were not able to exercise their individual right over their EPR. This highlights the need for a better informed consent model, particularly considering the aforementioned public concerns about the usage of the EPR database. It is therefore worthwhile exploring how the consent model should be amended.

3.2 In Response to the Public Understanding of the Usage of EPR: Beyond the Consent Model Debates

To begin this consideration, let me separate the issue of consent to the usage of anonymised data from that of consent to the use of non-anonymised data, and the issue of consent to doctors' access to a patient's record from that of consent to access by medical examiners and nurses. Non-anonymised data include some personal information or particular characteristics that make it possible to identify an individual. In response to concerns over privacy, in the UK and other developed countries researchers are not allowed to use non-anonymised data without patients' consent. In contrast, anonymised data do not include information that might allow identification of any individual; for example, these data include public health statistics such as what percentage of the population of England suffers from asthma. The use of such data represents a kind of grey zone in terms of application of the informed consent model, partly because it does not infringe individual privacy or human rights, and partly because there is no established ethical standard or guideline on this matter. Despite the different procedures in the usage of anonymised and non-anonymised data, the majority of the British population expressed disquiet that researchers would use their personal medical records without consent, even if these records were fully anonymised (see for instance, Ipsos Mori 2007; NHS Connecting for Health 2009). Likewise, as noted earlier, some people did not wish their records to be seen by medical workers other than doctors. Taking both of these conditions into consideration, my discussion focuses upon access to medical data in clinical domains and the use of anonymised data for research.

First and foremost, it would be inefficient to seek each person's consent whenever a research uses anonymised data and whenever medical workers access patients' records. In fact, when most records were paper-based, doctors would not have sought such individual consent. Therefore this option must be eliminated. Rather, as with the paper-based system, it is necessary to seek a comprehensive method to gain patients' consent to the usage and accessibility of their records.

One of the best options might be the choice the NHS originally made available only to those who requested further information or who looked carefully at the NHS electronic patients website. The programme I outline here would allow the wider population to exercise that choice. I suggest that the NHS should make the opportunity to practice this right more widely and easily available, considering the general public's attitude towards informed consent for access to their electronic records, the attitude of younger people in particular. For instance, I propose that in

GP surgeries and NHS hospitals and clinics, as well as through the NHS website and letters from the DVLA, which issues each individual driving licence in the UK, people should be asked whether they wish to put limits on who should have access to their information, along with other relevant questions. This model is not one of presumed consent as adopted by *Connecting for Health*. Such an approach to EPR should satisfy the general public's demand for the patient's right over his or her own medical record.

Nevertheless, it is essential to pay attention to feasibility. It would be impractical to expect the entire population to respond, considering that only 31 percent of the UK population have granted their clear informed consent to organ transplantation (NHS Blood and Transport 2012-2013), and that not all people in the UK have driving licences or visit NHS sites or its website. Yet, it would be unwise to leave (1) their anonymised medical data unused for research and (2) their EPR unused for their treatment if they are too ill or unconscious to give consent to its usage. With regard to the first matter, early studies (see for instance, Gnani and Majeed 2006, UK Clinical Research Collaboration and Wellcome Trust 2007, NHS Connecting for Health 2007, Wellcome Trust 2009b) notably demonstrate the importance of the usage of EPR for research in various ways. For instance, if the NHS needs to count the number of breast cancer patients, it is necessary to include all patients as far as possible. Likewise, if EPR could not be used for patients' treatment without their express consent on each visit to a healthcare site, medical workers would be unable to provide good treatment or care, especially in emergency situations. Indeed, Jewell (2011) demonstrates this dilemma, albeit in the specific context of mental health. Jewell also argues that there is a need for a compromise procedure in this consent model row over EPR. In view of this, a second option should be added to the aforementioned proposed modified consent model for the usage of EPR.

To formulate this option, I would like to explore who could be the gatekeepers of the usage of both anonymised EPR for research and EPR for patient treatment, if patients fail to provide clear consent or will. First of all, in view of public scepticism, it is essential to take account of the matter of trust in the usage of EPR. The survey by Ipsos Mori (2007) provides a promising direction in this regard. It reveals that 'the vast majority (87 percent) trust GPs to have access to their' EPR, whilst some other medical professionals have relatively lower levels of trust (:43). On the basis of this public positive attitude towards GPs, Ipsos Mori (2007) together with NHS Connecting for Health (2009) and the Wellcome Trust (2009b) suggest that GPs could take a firewall role between researchers and individuals.[2] In fact, Ipsos Mori (2007) introduces the following consent model:

> GP can pass on anonymised data at own discretion[.] If personally identifiable information is needed, GP to send/pass on a letter to individual, explaining the research. It is up to the individual to agree or

2 Francis (2010) also argues that public trust, the doctor-patient relationship in particular, is a key factor in connection with the development of EPR, albeit that conclusion derives from the American case.

not (:20).

However, bearing in mind the general public keenness to practice their right over EPR, I suggest that this Ipsos Mori model should be applied only for those who do not seek to practice that right. In other words, GPs should be the safeguard and gatekeeper only in the case of those patients who fail to take the opportunity to make a choice through the aforementioned proposed informed consent model. Thus amended, the proposal from Ipsos Mori (2007) should be effective in meeting the demands implied by the following research findings: (1) patients' keenness to control access to their EPR even if it were to be anonymised; (2) the general public's trust in their GPs, and (3) their fears about the usage of their anonymised EPR for research and some other purposes in connection with current developments in the database society in the UK (see such as Armstrong et al. 2006, Ipsos Mori 2007, NHS Connecting for Health 2009).

Summary

This article has demonstrated how the British NHS developed EPR and the way in which the general public articulated their hopes and fears about its development. Whilst EPR met with hope from the public with regard to improving healthcare services and medical research, it also generated fears regarding the accessibility and confidentiality of records. However, these voices were not fully reflected in the NHS presumed consent model for the usage of EPR for clinical domains and anonymised EPR for research. In the light of this, I have proposed a new system. This would seek informed consent for the usage of EPR as far as possible, but given that it would be unrealistic to expect the entire population to practice their right over the EPR clearly, it would also include a second option, whereby each GP should be a gatekeeper and firewall for the usage of anonymised EPR for research and for access to the EPR by other medical workers. As discussed earlier, the public places more trust in GPs than in any other medical professionals or related personnel. Hence, this model should strike a balance between the expected benefits of anonymised data for research, and the desired safeguarding of access to patients' medical records. Informed consent should be paramount in this system, and the GP's role as gatekeeper should be used only as a second best option. As this system takes account of not only public voices but also the current bioethical model and values of informed consent and privacy regarding the usage of non-anonymised EPR, it should be among the most feasible of suggested schemes. Therefore I suggest that it should be adopted by NHS EPR programme planners as soon as possible, in order to respond to the publicly articulated hopes and fears about EPR. This suggestion also represents one of the best answers for Jewell's proposal to seek an ethical and feasible 'compromise procedure' (2011, 491) to solve the difficulty in gaining public trust, public health benefits, and ethical accountability through the usage of EPR.

Acknowledgements

The author would like to express her sincere gratitude to the Wellcome Trust for financial support for the entire research plan for the public understanding of electronic patients' records at Imperial College London. She is also grateful to her research managers and colleagues, Professor Derek Bell, Professor Azeem Majeed, Dr Cicely Marston and Dr Julie Reed, as they provided her with constructive and critical guidance. Cordial appreciation goes to the audience—Dr Alistair Duff, Dr Nick Munn, Dr Paul Jewell and Dr Donrich Jordan, in particular—of the earlier version of this paper, presented at *The Eighth International Conference on Applied Ethics,* for their kind and helpful feedback.

References

Armstrong, Victoria, Julie Barnett, Helen Cooper, Michelle Monkman, Jo Moran-Ellis and Richard Shepherd. (2006) *Public Perspectives on the Governance of Biomedical Research: A qualitative study in a deliberative context*. London: Wellcome Trust.

Big Opt Out (2006-onward) http://www.thebigoptout.com/about-nhs-confidentiality/ [Accessed 11 December 2013].

Bratan, Tanja, Katja Stramer BA and Trisha Greenhalgh. (2010) 'Never heard of it: Understanding the public's lack of awareness of a new electronic patient record,' *Health Expectations*, 13(4):379-91.

Campbell, Bruce et al. (2007) 'Extracting information from hospital records: what patients think about consent,' *Quality and Safety in Health Care*, 16(6): 404-408.

Clark, Alexander M and Iain N Findlay (2005) 'Attaining adequate consent for the use of electronic patient records: An opt-out strategy to reconcile individuals' rights and public benefit,' *Public Health*, 19(11):1003-1010.

Daily Mail (2010) 'Cabinet Debates ID Card Plan,' *Daily Mail,* 6 June 2010, http://www.dailymail.co.uk/news/article-201469/Cabinet-debates-ID-card-plan.html [Accessed 20 January 2014]

Francis, Leslie Pickering (2010) 'The physician-patient relationship and a National Health Information Network,' *Journal of Law, Medicine and Ethics*, 38(1):36-49.

Friedman, DJ (2006) *Assessing the potential of national strategies for electronic health records for population health monitoring and research: Vital and Health Statistics Series 2(143)*, Hyattsville, MD: National Center for Health Statistics.

Gnani, Shamini and Azeem Majeed (2006) *A User's Guide to Data Collected in Primary Care in England*. Cambridge, UK: Eastern Region Public Health Observatory.

Greenhalgh, Trisha, Gary W Wood, Tanja Bratan, Katja Stramer, Susan Hinder, (2008a) 'Patients' attitudes to the summary care record and Health Space: qualitative study,' *British Medical Journal*, 336:1290.

Greenhalgh, Trisha, Katja Stramer, Tanja Bratan, Emma Byrne, Jill Russell, Yara Mohammad, Gary Wood, and Susan Hinder. (2008b) *Summary Care Record Early*

Adopter Programme: an Independent Evaluation by University College London, http://www.discovery. ucl.ac.uk/6602/1/ 6602.pdf [Accessed 10 December 2013].

Greenhalgh, Trisha, Katja Stramer, Tanja Bratan, Emma Byrne, Jill Russell, and Henry W W Potts (2010a) 'Adoption and non-adoption of a shared electronic summary record in England: a mixed-method case study,' *British Medical Journal,* 340:c311.

Greenhalgh, Trisha Katja Stramer, Tanja Bratan, Emma Byrne, Jill Russell, Susan Hinder, and Henry Potts. (2010b) *The Devil's in The Detail: Final Report of the Independent Evaluation of the Summary Care Record and Health Space programmes*. London: University College London.

Goldstein, Melissa M (2010) 'Health information technology and the idea of informed consent,' *Journal of Law Medicine and Ethics*, 38 (1):27-35.

Ipsos MORI (2007) *The Use of Personal Health Information in Medical Research General Public Consultation Final Report*. UK: Medical Research Council.

Jewell, Paul (2011) 'The conflict between accountability and confidentiality in Medicare's access to psychiatrists notes,' *Australasian Psychiatry*, 19(6): 489-492.

Luchenski, Serena, Kaori Sasaki, Anjali Balasanthiran, Cicely Marston, Azeem Majeed, Derek Bell and Julie E Reed (2012) 'Survey of patient and public perceptions of electronic health records for healthcare, policy and research: Study protocol,' *BMC Medical Informatics and Decision Making*, 12:40.

Luchenski, Serena, Julie Reed, Cicely Marston, Chrysanthi Papoutsi, Azeem Majeed, and Derek Bell (2013) 'Patient and public views on electronic health records and their uses in the United Kingdom: Cross-sectional survey,' *Journal of Medical Internet Research*, 15(8): e160.

de Lusignan, Simon (2008) 'Using routinely collected patient data with and without consent: trust and professionalism,' *Informatics in Primary Care*, 16:251-254.

Miller, Franklin G. (2008) 'Research on medical records without informed consent,' *Journal of Law Medicine and Ethics*, 36(3):560-566.

NHS Blood and Transport (2012-2013) *Transplant Activity Report 2012-2013,* http://www.organdonation.nhs.uk/statistics/transplant_activity_report/ [Accessed 1 January 2014].

NHS Connecting for Health (2005) *A Guide to the National Programme for Information Technology April 2005*, http://www.connectingforhealth.nhs.uk/all_images_and_docs/npfit_brochure_apr_05_final.pdf [Accessed 15 December 2009].

NHS Connecting for Health (2007) *Report of the Care Record Development Board Working Group on the Secondary Uses of Patient Information*, http://webarchive.nationalarchives.gov.uk/20071204131327/http://www.connectingforhealth.nhs.uk/crdb/workstreams/secusesreport.pdf [Accessed 10 January 2014].

NHS Connecting for Health (2009) *Summary of Responses to the Consultation on the Additional Uses of Patient Data 27th November 2009*, http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_110715.pdf [Accessed 15 December 2013].

NHS Connecting for Health (2013) *Key Statistics for Summary Care Records (26 March 2013)*, http://www.connectingforhealth.nhs.uk/systemsandservices/scr/staff/aboutscr/benefits/scrkey [Accessed 1 January 2014].

NHS Executive (1998) *Information for Health: an Information Strategy for the Modern NHS 1998-2005, a National Strategy for Local Implementation*. London: NHS Executive.

No2ID (2004-onward) http://www.no2id.net/ [Accessed 11 December 2013].

Parker, Michael (2005) 'When is research on patient records without consent ethical?' *Journal of Health Services Research and Policy*, 10 (3):183-186.

Robling, M R K Hood, H Houston, R Pill, J Fay, and H M Evans (2004) 'Public attitudes towards the use of primary care patient record data in medical research without consent: a qualitative study,' *Journal of Medical Ethics*, 30: 104-109.

Royal Academy of Engineering (2010) *Privacy and Prejudice: Young People's Views on the Development and Use of Electronic Patient Records.* London: The Royal Academy of Engineering.

Stevenson, Fiona, Nigel Lloyd, Louise Harrington and Paul Wallace (2012) 'Use of electronic patient records for research: views of patients and staff in general practice,' *Family Practice*, 30 (2): 227-232.

UK Clinical Research Collaboration (2007) *UKCRC R&D Advisory Group to Connecting for Health: Report of Research Simulations*. UK:UKCRC.

UK Clinical Research Collaboration and Wellcome Trust (2007) *Frontiers Meeting on the Use of Electronic Patient Records for Research and Health Benefit*. London: Wellcome Trust.

Verity, Chris and Angus Nicoll (2002) 'Consent, confidentiality, and the threat to public health surveillance,' *British Medical Journal*, 324:1210-3.

Wellcome Trust (2009a) http://www.wellcome.ac.uk/News/2009/News/WTX057808.htm [Accessed 11 December 2013].

Wellcome Trust (2009b) *Towards Consensus for Best Practice: Use of patient records from general practice for research*. London: Wellcome Trust.

Wilson, Donald J, Karim Keshavjee, Kalpana Nair, Charlie Goldsmith and Anne M Holbrook (2003) 'Patient consent preferences for research uses of information in electronic medical records: interview and survey data,' *British Medical Journal,* 326:373.

Wilson, Donald J Valerie Steeves, Cathy Charles, Lisa Schwartz, Jennifer Ranford, Gina Agarwal, Ji Cheng and Lehana Thabane (2009) 'Consent for use of personal information for health research: Do people with potentially stigmatizing health conditions and the general public differ in their opinions?' *BMC Medical Ethics*, doi:10.1186/1472-6939-10-10.

Win, Khin T and Fulcher John A (2007) 'Consent mechanisms for electronic health record systems: a simple yet unresolved issue,' *Journal of Medical System*, 31(2):91-96.

Whitley, Hosein, Ian, Edgar A, Angell, Ian and Davies, Simon (2007) 'Reflections on the academic policy analysis process and the UK identity cards scheme'. *The information society*, 23 (1): 51-58