Global 7

Innovation Ethics

African and Global Perspectives

Editors Jean-Claude Bastos de Morais / Christoph Stückelberger

AFRICAN INNOVATION FOUNDATION

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INTRODUCTION

Jean-Claude Bastos de Morais / Christoph Stückelberger

Innovation is a core driver for economic growth and development. This is confirmed by the annual Global Innovation Index, as by many statistics and observations. Manifold efforts are undertaken to increase facilities for innovation through private-sector initiatives, governmental and multilateral programmes, new innovation hubs, techno-parks and increased research budgets.

Especially encouraging is that many emerging and developing countries make substantially increased investments in innovation, as the Global Innovation Index shows. Africa is one of the upcoming continents in this respect. Investors invest in production facilities, governments in infrastructure, and both in education and innovation. The United Nations Economic Commission for Africa (UNECA) developed broad innovation programmes; innovation encouragement happens with awards such as the Innovation Prize for Africa of the African Innovation Foundation; the rapid increase in the use of information and communication technologies (ICTs) is a key part of innovation.

But there are manifold ethical challenges in innovation. Which innovations serves human needs? Which innovations only widen the gap between poor and rich? What are the motivations for innovation: economic, technical, social, scientific or philosophical? To create a cluster bomb may be innovative but not ethical. To develop new training methods for brainwashing child soldiers may be innovative but not ethical.

This book is the fruit of an expert workshop: The African Innovation Foundation and the Globethics.net Foundation brought together an in-

ternational and interdisciplinary group of twelve innovation experts representing technology, entrepreneurship, international politics, ethics, philosophy, youth and religious organizations for an African workshop with the topic "The Ethical Innovator. Ethics of Innovation – Innovation of Ethics", in Cotonou, Benin, 23-24 August 2013. This book and the recommendations at the end are a fruit of the workshop. The different target groups of the recommendations are invited to discuss and consider these recommendations for action. Some authors have contributed an article without being participants of the workshop.

This book has three characteristics: 1) The focus is on the question: Which innovation is more ethical and which innovation is less ethical? There is often not black and white, but many colours in the spectrum of what serves human development and what hinders it. 2) A special focus is put on innovation in Africa and its potential and challenges. But contributions from Asia, Europe and North America are also integrated since innovation in an interdependent world cannot be limited to a country or a continent. 3) The articles unite surprising interdisciplinary perspectives that are innovative in themselves: Innovation is often seen as simply technological innovation. But innovation includes social, political, managerial and organizational processes. It includes cultural and religious dimensions and the tension between innovation and tradition. It includes ethical, philosophical and spiritual questions of the mind-set from Christian, Buddhist, Hindu, philosophical and secular perspectives. Most articles are in English, but two are left in their original language (French) to underline that innovation needs not only multidisciplinary, but also multilingual approaches and diversity.

The 17 articles can be grouped in different clusters:

a) *Technological innovation* (articles 1, 2, 3)*:* African entrepreneurs Jean-Claude Bastos and Herman Chinery-Hesse show the challenges and opportunities of technological innovation and the journalist

Sherelle Jacobs gives an overview of African mobile innovation as global trendsetting.

b) *Ethics of Innovation* (articles 4, 5, 6)*:* Three academics look at ethics: Ganesh Natan proposes an ethical innovation value chain, the African philosopher Jesse Mugambi raises ten critical questions from intellectual property rights to manifold identities, and the global ethicist Christoph Stückelberger develops the profile of an ethical innovator based on core values.

c) *Political frame for innovation* (articles 7, 8): Two authors with wide experience in multilateral organizations plead for innovation governance. Aida Opoku-Mensah calls for a strong role of governmental institutions in promoting ethical innovation. Walter Fust urges the inclusion of indigenous knowledge, African self-development and citizens' participation.

d) *Social and cultural innovation* (articles 9, 10)*:* The development specialist and networker Aurélien Atidegla emphasizes the potential and importance of the rural population for social innovation in Africa. Angèle Kalouchè Biao, speaking for young women in Africa, shows the potential and the need to include young African women in innovation processes.

e) *Religious, spiritual and philosophical foundations of innovation* (articles 11, 12, 13): Enabling and hindering innovation has often religious and philosophical roots. The Protestant Old Testament scholar Nicodème Alagbada shows the values and energy of the prophets as social innovators and transformers of society. The Indian Anindo Bhattacharjee proposes mindfulness and a mindful innovation programme (MIP) for new creativity, rooted in the Indian religious tradition and in interreligious perspective, as the foundation for sustainable growth and innovation. The Indian Catholic specialist on science and religion Mathew Chandrankunnel shows the ten-

sion and enrichment between innovation and tradition in the relation between science and religions in past and present.

f) *Innovation ethics as research ethics* (articles 14, 15, 16): Christoph Stückelberger develops criteria for research ethics, especially in North-South research partnerships, as a contribution to a global innovation ethics. The specialist on information technologies and ethics Bernd Stahl summarizes the request for ethics in research as a result of a research programme of the European Union. The business scholar Kirsten Martin looks at innovation ethics as a shared responsibility of researchers and the other stakeholders.

g) *Recommendations*: The workshop participants (see above) propose 24 recommendations for different target groups: researchers, policymakers, national and multilateral governments and others.

We thank all the authors for their creative – and innovative – contributions. We encourage our readers to integrate the ethical dimension more often in innovation efforts, not randomly, but systematically, in curriculum development, in innovation hubs, in governmental innovation programmes and in awards on innovation. We are convinced that people on the African continent in particular can become ethical innovators and important drivers for ethical innovation.

1

ARTIFICIAL INTELLIGENCE – INNOVATION WITH AN ETHICAL CHOICE?

Jean-Claude Bastos de Morais

Introduction

The technological innovations of the last century have no doubt transformed the world around us. More poignantly, they have changed the way that human beings interact with each other – yet the ethical dimensions have rarely been part of public debate. Innovation is thrust upon the world and its inhabitants almost without question and almost never through consultation. We may, however, be at a pivotal point. Technological innovation has pierced our lives, our collective consciousness and the way in which we are governed to such an extent that ordinary human beings are now being forced to confront some very difficult realities.

Innovation is an exciting and necessary realm. Scientists, inventors and entrepreneurs laud the concept of innovation and governments around the world invest billions of dollars pushing the innovation agenda. They provide tax incentives and build special institutions dedicated to the pursuit of the next major breakthrough. National spending on research and development is an investment in a country's economic success and its military power. One only has to observe the spending of today's super powers to see where technological innovation is headed, which brings me to the topic I wish to address in regard to ethical inno-

vation – *artificial intelligence (AI) and the need for an ethical framework of governance*.

Fascinating and frightening

27 years ago, when I first learned of the existence of AI, I found it both fascinating and frightening. The theory, which dated back to 1988, predicted that a time would come when independent virtual agents (intelligent algorithms) would be able to research, select, interpret and propose complex ideas to other agents or humans. Evidence of this is already visible in our day to day lives. Today, super computers analyse petabytes of data related to human behaviour and our preferences through virtually collated information be it pictures, sounds, history, images, stories, and every imaginable form of communication, and make independent judgments of who we are. These systems follow us around the world, feeding us with their own behavioural analysis of us, telling us which new books, music or movies to purchase or suggest a car rental company or hotels to us within seconds of booking a flight.

What is disconcerting here is that as the human consumption of such "intelligent technology" grows so too does the human disinclination to ask where these developments may lead us. Many of us are either unaware or perhaps too overwhelmed to consider the wider implications of how these super computers are intruding our lives and slowly but surely influencing it by predicting our actions. Many are unaware that these independent, virtual agents are the foot soldiers of the world's biggest organizations and that their infiltration in to our daily lives has crept upon us. Has humanity allowed itself to become monitored, understood, read and related to by global conglomerates by choice? I'm afraid we have. Was there ever a moment when mankind was given a choice as to how things should evolve? Maybe not in the past, but it is never too late to influence the outcomes and take charge of how innovation is allowed to evolve.

Perhaps the analogy of governments and their spying habits might put things in perspective. We now know that using email is the fastest route to being monitored by our own governments. Should humanity have seen this coming? For decades, nations have spied on each other – the notion of spying on our fellow man is considered normal practice. Despite the feigned shock from various world leaders in 2013, the US government's interception of highly confidential data from its "friends" abroad is broadly accepted as part of the game. The rules of the game may, however, be about to change. There may have been a time when it was considered unpatriotic for an individual to blow the whistle on his or her government's espionage activities. Yet in 2013, Edward Snowden – a former US NSA contractor – felt that a line had been crossed. Not only was the US secretly spying on its friendly diplomatic neighbours but it appeared to be working in partnership with the world's biggest internet service providers to spy on its own citizens and the citizens of other nations as well.

The ethical dilemma

What I would like to point out here is that if we as society find it unthinkable for governments to intrude on our privacy for the sake of national security, then how is it okay for large conglomerates to infiltrate our lives for the sake of profit? And don't the organizations that have created the innovative technologies that we now consider to be integral to our existence have a responsibility towards its end users?

The ethical dilemma is whether or not individuals were ever given free choice in how much information about themselves would be revealed to other people or organizations. When the internet originally entered our lives and we set up our first email accounts, most of us could never have imagined that we were entering in to a pact with a system that would go on to manipulate our most private correspondences for profit and power-oriented purposes. Nor could we have known how al-

gorithms would be used to make important life decisions for us. Algorithms have become a crucial tool for organizations – they provide a direct route to the individuals that are most likely to need their services or buy their products. While this is certainly intelligent and for many people, incredibly useful, the question is, was the internet created for this purpose, to enable businesses to hunt down potential customers – and did we ever have an opportunity to say whether or not we wanted to be hunted in this way? Should we simply accept that this is the way it is?

As technology develops, we are moving in to an age where human beings become ever-more complicit in their own surveillance. Smartphones have heralded a new age of spying – between private citizens. Facebook launched a new service in April 2014 that enables users to locate their Facebook friends, in real time, on a map. This raises enormous ethical questions: why do we need to know where people are at any given time? Whose idea was it? Who will stand to benefit? More worryingly, if the personal user is allowed to access such information, it means that Facebook already has had the ability to do so. Ever since GPS, location-based services were incorporated in to Smartphones, anybody carrying such a device is essentially traceable. Services such as these are launched and promoted as fun ways to interact with our friends, but is it really?

Google's newest innovation, Google Glass, is currently being tested by users in the US. It has only been made available to US citizens who are aged 18 and above. There are obvious reasons why Google may be nervous about launching this new product. A wearable computer that is controlled by the retina marks a new era in the way in which human beings interact with the internet and with each other. Whilst smartphones bring their own dilemmas (such as GPS tracking), Google Glass brings the human being much closer to the computer – the relationship becomes much more personal. This new technology may help us to perceive the world in a different way. The very things that *we see*

will also be seen by Google. The big picture is clear: do we wish to become ever more intimately connected to a major organization, letting it see the things that we choose to look at: which shops we walk into, which items we pick up, which roadside advertisements we read and who we are attracted to. Will we be able to make audio recordings of people we are looking at? Will it be possible to google somebody while looking at them?

Intellectual property and personal privacy

This is as much a matter of intellectual property as personal privacy. Businesses rely almost entirely on the confidential electronic delivery of highly sensitive information. Is the intellectual property that is shared between consenting parties truly confidential? Will new innovations, such as Google Glass, put businesses and their intellectual property at greater risk? Can businesses trust the organizations that they rely upon to deliver their business-critical information safely or will it be shared? This is an increasingly complex issue as more and more businesses store their data in the cloud. Cloud services offer great cost efficiencies but they also present businesses with potential risks. Storing all data in one place may leave a company vulnerable as so many IT technicians choose to use multiple cloud storage companies. With data being spread further away from the company and in multiple spaces, the risk of losing control of a company's intellectual property is increased.

It is not only companies that are at risk of developments such as cloud storage or analytics. In this modern age customers – and employees – engage with each other across multiple platforms such as telephone, email and social media. This enormous volume of data, referred to as "big data", can now be mined via web services that offer businesses the ability to process huge amounts – terabytes – of unstructured data and make sense of it. This data can be mined from multiple platforms and used to draw patterns and conclusions. These services offer busi-

nesses a far greater insight to the customer's patterns of behaviour, their preferences and concerns – data that may be collected without consent or disclosure.

Africa to take the lead for ethical innovation?

I believe the age of AI is here to stay and it will continue to advance in ways unfathomable to many. I am a strong supporter of such innovation as long as it benefits rather than harms society. In that context, the real questions we should be asking are who will watch over these super computers and their ability to act as free thinking agents at the behest of capitalist profit-oriented enterprises? How do we ensure that the programmers who provide the very DNA to these super computers act within a set of fundamental restraints that protect rather than exploit society? These questions are not new, and they are certainly not just mine, but they have yet to be answered because there is not yet a universally defined and enforceable framework for ethical innovation.

In order to create a universe where society is allowed to flourish through innovation and reap the benefits of AI as opposed to being lost or victimised by it, we need to define a framework for ethical innovation that is founded upon principles of what innovation should bring, and also about what it should not bring (the outcomes we want to avoid). One of the truest principles that we can all understand but find it so difficult to get right is the principle of simply doing the right thing. For innovators, the greatest obstacle to simply doing the right thing is money. Knowing how to invest in the right kind of innovation is a challenge as both government and private companies want to see a good return on investment.

The answer is to remove *profit, power* and *control* from the equation and instead promote *transparency, consent* and *choice*. Yet why is this so difficult to put into practice?

Perhaps next-frontier regions like Africa, where the infrastructure for innovation is just being laid, can take the lead on developing such an ethical framework for innovation. While ethical innovation is a global matter, change has to stem from some place, so why not Africa? The region could take the lead on establishing an Ethical Charter that would see innovation harness the power of artificial intelligence for the benefit of society.

2

AN AFRICAN ETHICAL INNOVATOR: HERMAN CHINERY-HESSE

Christoph Stückelberger / Mandy de Waal

Innovation is often result of team work, but often also enabled and pushed by outstanding innovators. An outstanding African innovator, a creative entrepreneur, CEO of the most important and successful IT company in Ghana, SOFTtribe (*www.softtribe.com*), passionate about innovation in Africa through innovative IT and especially mobile phone based solutions for daily problems. This is how Herman Chinery-Hesse is described in many media and how I got him to know in the workshop "The Ethical Innovator" in Cotonou 2013.[1] He is a good, attentive listener and when he speaks he is a volcano of ideas, projects, success stories and a talented motivator. He is a visionary and an implementer as well, passionate for the continent of Africa as a whole and at the same time committed to the people in the street and their participation in concrete and simple solutions for daily problems and needs of development.

The software products and mobile-based solutions include a broad range of topics:[2] financial services via mobile money transfer, the pay-

[1] See the Introduction and the Recommendations in this book.

[2] Some described in the video "Herman Chinery-Hesse" posted on Got Africa Inspired, 14 June 2014 based on CNN's African Voice, *gotafricainspired.com/2014/06/16/the-story-of-herman-chinery-hesse.html*.

roll system Akatua, hospitality solutions, transport systems solutions (Keba-Ekong card, reloadable e-ticket cards for one person), security solutions via mobile phone alerts where neighbourhood help against robbery and thieves (*hei-julor*,[3] a security alert system), alerts of clients by SMS on services or not delivered services in hospitals which is also an instrument for transparency and against corruption, and ShopAfrica53 as "Ghana's first online mall"[4] with the goal to become an ebay-type of e-commerce from Africa to the world. The goal of the mobile applications is often that customers get faster and better services and at the same time serve in monitoring and improving the services and markets.

"Africans don't need to beg, we need to participate in the global economy" declares Herman Chinery-Hesse on the website of SOFTtribe, and he adds. "Technology is the only way for Africa to get rich. We don't have proper infrastructure and we can't compete in manufacturing. But if you put me behind a PC and tell me to write software for a Chinese customer, then I can compete brain for brain with anyone trying to do the same thing in the US." The company's "mission is to provide tropically tolerant software solutions to the West African market. We are committed to ensuring that we are responsive to rapidly changing information technology and to changes in our clients' environments." His compassion for humans in needs and his commitment to affordable solutions for masses and benefit for society makes him what we can call an 'ethical innovator'.[5]

Herman Chinery-Hesse got awards and is invited as speaker in famous universities and conferences. He became a symbol of the new Africa: self-confident, creative, solution-oriented, non-ideological, well trained and connected, admired by ordinary people and taken seriously

[3] *www.heijulor.com*
[4] www.*shopafrica53.com*
[5] See in this volume Christoph Stückelberger, "Innovation ethics for value-based innovation", point 4 on ethical innovators.

by international investors and institutions. He became a media star. He is featured by television, print media, blogs and social media.

Mandy de Waal featured him as follows:[6]

"Innovator, disruptor, and West African software pioneer, Herman Chinery-Hesse wants to make Ghana the "Singapore of Africa". Given he's already created one of Ghana's most successful software companies and is spawning innovations that solve barriers to trade between Africa and the rest of the world, he has a good chance.

Herman Chinery-Hesse is an anomaly for western media who can't see beyond that stereotype that exists for those who don't know this continent, a reduce it to clichés pulled from a pool of nouns that include dictator, corruption, conflict, hunger and Mugabe. The western media call Chinery-Hesse the "Bill Gates of Africa". A successful Ghanaian technologist whose software company, the SOFTtribe, spawned systems that empower much of West Africa, it is Chinery-Hesse's disruptive inventions that are making the world sit up and take note.

A generous man, Chinery-Hesse doesn't mind the nickname that the likes of the BBC and Inc. Magazine have given him. "I am flattered, but I haven't achieved what Bill Gates has achieved and I certainly don't run around wearing this on a T-shirt," he says. "It is positive and it motivates younger people, but I certainly don't have the kind of wealth that Bill Gates has," Chinery-Hesse adds before breaking into a deep belly laugh.

"I am an African innovator. I am a man who's trying to change the continent, make things better and I'm trying to help myself a little bit while I do that." Chinery-Hesse's dream is to turn Ghana into the next Singapore, an ambition that can only be appreciated once you

[6] Mandy de Waal: *Herman Chinery-Hesse, Africa's 'Father of Technology'*, *Daily Maverick*, 15 Sept 2011, cover story.

know who he is, where he's come from and the contribution he's making to Ghana and the continent.

Born in Dublin where his parents were studying at Trinity College, Chinery-Hesse went to Mfantsipim School, a prestigious place of learning also attended by Kofi Annan. "My parents ended up having international jobs so we lived in Zambia, Sierra Leone, Geneva, Uganda, and Tanzania. I went to high school in Texas, and then to Texas State University, the same alma mater as Lynd Johnson."

After varsity Chinery-Hesse moved to the UK where he buried himself in manufacturing technology before working as a manufacturing engineer. "I had the idea of being in manufacturing when I returned to Ghana, but I didn't have money to set up a factory and couldn't get a loan so I had to think about what it was I was going to do. The minute I saw my PC I realised my computer was a factory that required no capital, only brainpower, and that I could use it to accumulate capital." He laughs and says if his parents had been millionaires perhaps he would have ended up owning a car factory rather than a software empire.

SOFTtribe was started close on 20 years ago in Chinery-Hesse's bedroom, which was sparsely furnished, but did have a chair, a bed and an Amstrad XT with a 20MB hard drive. Chinery-Hesse didn't get to use the chair because he took in a former classmate as a partner and who was so large he needed the chair. So the SOFTtribe founder sat and coded on his bed.

"I created programmes which we sold and we grew very fast. We had to hire more people and soon my bedroom was full. When my father returned to Ghana and saw people overflowing from the bedroom, he evicted us to the outbuildings where we had an old Kelvinator air conditioner from the sixties that we used for five years. Believe it or not it never broke."

SOFTtribe's initial software programs were coded for the travel industry, and evolved into point-of-sale and payroll systems that drove growth. However, in 2006 the company hit a wall. SOFTtribe had largely saturated the market and needed to gear its business to compete with established global software companies for larger more lucrative government contracts. After partnering with Microsoft SOFTtribe could compete more aggressively with the likes of IBM and pursue a market that until then had been dominated by international players.

Today SOFTtribe's clients include Unilever, Guinness Breweries Ghana Limited, Pricewaterhouse-Ghana, the British High Commission, Ghana's Millennium Development Authority, Ghana National Petroleum Company, Zenith Bank, Cargill and a host of other government, multinational and private sector blue-chip clients. SOFTtribe's reach includes Kenya, Nigeria, Senegal, Togo, Burkina Faso, Gambia, Guinea, Liberia and Côte d'Ivoire.

In 2007 Chinery-Hesse spoke at TED in Tanzania at a time when the Intern and SMSes flooded his mind with possibilities. Off the back of this talk he was able to raise funds from investors and create a company called Black Star Line. "It is the eBay of Africa, but also an African PayPal in that it harnesses the power of the Internet and SMSes to enable global trade with this continent."

The consumer-facing front end of this business is ShopAfrica53.com which is in beta and has yet to be officially launched, but it's in the back end where the magic lives. Technologies that enable the trade site include The MX Payment Platform which was created to eradicate barriers to trade in Africa.

"If someone from Sweden orders product from someone in Ghana, the interface to them is through the Internet. But the Ghanaian trader receives all the information via SMS. However, there was no payment system to handle trade done in this manner so we created the 'African

Liberty Credit' which is mobile and Internet payment system, so trade can be initiated online, but the payment can be executed both online and through mobile," says Chinery-Hesse.

An inventor in the best sense of the word, Chinery-Hesse is all about creating solutions to problems, but his genius lives in disruptive technology. His company launched a new version of the payroll product which works off the cloud. "We partnered with a bank and an accounting firm, and anyone can use this payroll product, called Akatua, for free as long as they are with the bank which is our partner for this project." A cloud-based offering, Akatua had its genesis in a payroll system designed by SOFTtribe which today is the software most widely used in Ghana to pay salaries timeously, sort out taxes, manage deductions and resolve the myriad other management hassles related with remunerating staff.

"We've also created what is called a Keba-Ekong! card, similar to the 'Oyster card' used in the UK, Oyster cards are an electronic ticketing system widely used in London and other parts of the UK for public transport. The Keba-Ekong!-card is a re-useable plastic card that allows customers to purchase tickets for multiple purposes, such as concert tickets, journeys or even for buying goods from gift shops. Our pre-paid card is a general-purpose one so if you buy a movie ticket in Ghana you keep the card, which has a unique number on it and you can go to any gas station to reload the card."

3

AFRICAN INNOVATIONS BECOME GLOBAL TRENDSETTERS

Sherelle Jacobs

The changes that Africa is now going through do not cease to amaze. It seems only yesterday when Africa was at the bottom of the class in terms of technological innovation – passively accepting whatever new technology it was deemed capable of "handling". Things have changed remarkably since. Africa is now becoming a global in the innovative application of technology – not in producing faster cars or louder speaker systems but in critical areas such as finance, communication, energy generation, agribusiness and finding home-grown solutions to problems that seemed intractable only a short while ago. For once, Africa is leading and the world is following. Sherelle Jacobs presents a panoramic view of Africa's innovative genius at work.[1]

The way the international business community talks about Africa has altered dramatically over the last decade, In the eyes of Western investors, organizations and media, the region has gone from basket case to fierce participant in a frenzied catch-up race. But excited discussions about Africa are unlikely to stop there. Perhaps in another decade from now, business discourses about Africa will have further mutated – from

[1] The article was first published in African Business, April 2013, 17-22.

Africa the "catching up continent" to "Africa the innovator", inspiring global trends in certain fields.

What are these areas likely to be? The most promising, according to experts, will be those based on digital technology. The prefixes 'e' (standing for electronic) and 'm' (standing for mobile) have become ubiquitous in Africa.

The range spans e-learning, m-learning, e-health and m-health, e-commerce and m-commerce agribusiness tech and a host of others. There are exciting start-ups in all of these fields virtually every week. There are even signs that other countries, including some in the West, are taking inspiration from business products and services developed in Africa.

Setting trends in mobile money

If, generations from now, economic historians attempt to trace Africa's ascent from follower to innovator, they will undoubtedly start with M-Pesa. The mobile money transfer service that Kenyan operators Safaricom launched in 2007 has revolutionised banking practices in Africa.

And it has inspired the world. Last year, the British bank Barclays launched Pingit, Europe's first mobile money transfer system. A consortium of UK banks including HSBC, Lloyds and RBS will offer a similar service from 2014 through a scheme administered by the Faster Payments service. Across the Atlantic, Hillary Clinton has famously been quoted questioning why the "brilliant innovation" had not reached the US.

Worldwide, 130 mobile money systems have been implemented since March 2012 with around 80 of them in Africa: 31% of Kenya's GDP in 2012 ($12.8bn) was moved on mobile money platforms. Total African mobile transfers are expected to exceed $200bn by 2015, accounting for approximately 18% of the continent's GDP.

Mobile money innovation has continued since the launch of M-Pesa six years ago – the service has spawned a number of further products built around the mobile money concept. Safaricom has developed many of these.

In February, the company and Kenya's KCB Bank teamed up to offer M-Pesa agents access to loans. Amounts available to those agents vary from Ksh 50,000 ($575) to Ksh 5m ($57m). Joshua Oigara, KCB Group's Chief Executive, commented: "Our partnership will play a big role in expanding economic opportunities for our customers and this will help create more jobs."

Another mobile money-inspired Safaricom innovation is M-Shwari, which was launched in January and allows customers to borrow and save money via their mobile handsets, generating interest.

Michael Joseph, Director for M-Pesa within the Vodafone Group, said at the time of launch: "M-Shwari is a transformational service: saving is no longer the privilege of an elite; all Kenyans can now save, even the smallest amounts and at their own pace."

"M-Shwari is a truly mobile proposition, which leverages the power of mobile communications to provide simple and valuable access to banking services," he said, adding that the firm would "look to take this innovation to other markets."

Firms are also forging links between mobile money and traditional banking methods – for example, Safaricom and I&M Bank recently launched a visa pre-pay card, which can be topped up via mobile money transfer and then used globally as a visa card – an especially useful tool for travellers.

A low-cost revolution in smartphones and tablets

Smartphones and tablets are another area of innovation to watch in Africa. African firms currently look unlikely to rival global technology companies in terms of software (for example, in competition with the

Android system) nor in terms of manufacturing, where countries like China dominate. But African firms designing tech products are seeking to innovate in terms of price and value for money.

When it comes to smartphones, innovation in Africa is likely to be driven by the desire to find a perfect balance between quality and price – given the lower purchasing power on the continent in comparison with other regions. Global firms are already working hard to crack this conundrum. For example, Microsoft partnered with Huawei to introduce a new Windows smart phone priced at $150 in February. "We believe there has never been a better time to invest in Africa and that access to technology – particularly cloud services and smart devices – can and will serve as a great accelerator for African competitiveness," said Jean-Philippe Courtois, president of Microsoft International.

Others have also come up with their own low-cost but high-performing smartphones, like Safaricom, which launched the Yolo smartphone, the first for Africa with Intel Inside, in January, priced at Ksh 10,999 ($129). "We're redefining what cost-conscious Kenyans can expect from a smartphone," said Peter Arina, general manager, Safaricom's Consumer Business Unit. "The Intel-based Yolo smartphone strikes a unique balance between price and performance – we consider it to be a real breakthrough."

In December, for example, Republic of Congo-based company VMK launched what it claims is the first African-designed smartphone and tablet – although it is manufactured in China and powered by Android. The price is competitive – at $170 for the smartphone and $300 for the tablet. The South African firm, Wise Tablets, has also developed its own extremely competitive tablets, starting at R1500 ($163) for the Wi-Fi-only seven-inch version.

With big global branded products like the Google Nexus 7, which is also competitive at around $199 for the Wi-Fi-only seven-inch version, also attracting customers in Africa, African producers have tough com-

petition. But there is room to compete, perhaps, in the 3G market. Given that Wi-Fi is not as widespread in Africa as in Western markets, Wi-Fi-only tablets are far less attractive than 3G-enabled models. Google Nexus's 3G tablet, at around $299, is a price jump from its Wi-Fi-only version. South African Wise tablet's 3G seven-inch model is cheaper at R2,500 ($218). Competition to develop the lowest-cost 3G tablets for the African market is likely to heat up even more in the future.

Music to the ears: innovation in arts and entertainment

Start-ups in the music and TV industry operating in Africa are also pushing boundaries and coming up with a unique, colourful range of products. While many of these may be inspired by already well-established global companies, innovations to suit the African market have involved some unique quirks.

For example iROKOtv, the world's biggest online Nigerian movie distributor, is making great strides in mobile video (as opposed to focusing purely on an online video-watching service). In January, it announced that it was teaming up with Nokia to develop a mobile app allowing Nokia Lumia Windows Phone 8 users to watch Nollywood movies. Visitors to their sleek website will also notice subtle differences between iROKOtv and Western equivalents – including categorizations by actor as well as genre and the ability to watch certain films for free.

In the music industry, attention has been focused on Spinlet, a cloud-based music platform launched in Nigeria in May 2012. It enables African music artists to upload their singles and albums for sale. A point of difference between Spinlet's Africa-based model and the business models of music platforms like global giant Spotify is its greater emphasis on enabling users to access music via their mobile phones, rather than online. Spinlet's capacity to innovate in this particular area is therefore something to celebrate.

Another cutting-edge music company is Mdundo.com, a new mobile download service based on the use of scratch cards: artists sell scratch cards for Ksh 100 ($1.15) to their fans at gigs and concerts, which the buyer can then use to purchase up to five of their songs online on Mdundo's website and then download to their mobile phones. The artists take all of the profits. They are enjoying dramatic success: "They have already sealed lucrative deals with some of the world's leading corporations, including Airtel and Samsung," says Buch.

Creative e-health solutions

Innovation is proving just as important in fields that deal with more basic everyday needs. E-health is one of them. Many of the most striking entrepreneurial ideas are aimed at improving the reach of health products and services. A large number of these are leveraging M-Pesa technology to do so.

An example is the Kenyan company Changamka (meaning "Be Happy" in Kiswahili), which offers health-card smartcards in the cities of Nairobi, Nakuru and Mombasa. These allow Kenyans who are outside the private health system to save and pay for treatments via a prepaid wallet system, which can be topped up using M-Pesa.

Since becoming an incorporated company in 2008, Changamka has developed several smartcard options that are available at supermarkets, other retailers and medical centres. Even a maternity smartcard is available, which women can use to pay for antenatal maternity and post-birth care. According to the firm, the smartcard system can deliver up to a 30% saving on administration costs.

Safaricom and Britam also recently joined forces with Changamka to develop a new healthcare insurance product, Linda Jamii, which is aimed at the tens of millions of uninsured Kenyans, particularly those in the SME sector, the savings threshold to qualify for healthcare, at Ksh

6,000 ($70), is low. Payments are leveraged via M-Pesa or Airtel money.

The desire among NGOs and companies to offer health services to "out of reach" people in rural areas is also fuelling innovation. The mCBS health project, developed by eHealth Nigeria to improve maternal health interventions in rural areas is a case in point – traditional birth attendants relay important information about their patients in real time via a mobile phone system.

They can, for example, alert the nearest healthcare facility if a patient experiences complications. Grameen's MOTECH project in rural Ghana also enables community nurses to relate information about their patients using mobile technology.

E and M health consultation services are also emerging across Africa. Emboka in Ghana, for example, offers medical consultations and allows patients to order medicine via their online services.

Farming just got cutting edge

Africa is also witnessing pioneering developments in agribusiness, as companies seek out ways to cut costs and deal with risks commonly associated with agriculture. In the words of Josh Woodard of the human development organization FHI360, "there are definitely a lot of exciting things going on".

Woodard says, "Agribusinesses are seeing the value in using ICT for all of these different purposes and in many cases are making the investments into implementing them themselves.

"This trend is only going to increase, and we will start to find that agribusinesses that are still doing most of their work without using ICT will cede significant market share to those who are effectively adopting 1CT." Woodard says the use of ICT is increasing access to relevant information and farmers are using it to improve their agricultural practices, reduce their costs and find better prices for their products.

One such instrument is M-Farm, a mobile app that allows farmers to access market information in real time, the desire to prevent farmers being exploited by middlemen because of their lack of knowledge of the markets inspired M-Farm co-founders Jamila Abass and Susaneve Oguya to come up with the system.

The founders say "this product is unique because the farmer does not need to leave his farm to transact, and every transaction is done using the normal phone available to the farmers. The beauty of the product is that it costs Ksh 1 ($0.1) to the farmer. Farmers are getting access to better markets and closing deals that are improving their livelihoods." M-Farm is also evolving. "Inputs are a major cost on the farmer and using the same concept, we are exploring ways to help farmers buy in bulk all the farm inputs they need at discounted rates. This drives down the cost of production but also increases productivity per acre." There are many other applications that can be used in the agribusiness sector. As Josh Woodard says, "The possibilities include using mobile payments and vouchers to increase the speed of payments and increase transparency; using GPS to provide exact plot measurements, thus increasing accuracy of input application amounts; and providing planting reminders and tips to farmers via SMS and voice messages."

Other interesting innovations that Woodard cites include "scratch-off cards to verify the authenticity of inputs by mobile phone; geo-located traceability via bar codes; and SMS and mobile phone market price information systems and brokered trading platforms."

But big changes are necessary to further boost agribusiness innovation in Africa. Experts cite poor road networks as a big stumbling block. "Access to information is great, but if you do not have access to paved roads or reliable transportation to get your produce to market then it does not matter much," says Woodard. Government taxes and regulation can also hinder the profitability of innovations.

Encouragingly, lack of skills does not pose a big challenge. Woodard says "Farmers and agribusinesses are organically learning how to use mobile phones and other technologies on their own or with minimal support, and home-grown African application development and innovation is popping up all over the place."

MFarm is also optimistic that governments will not be able to neglect agricultural innovation for long. According to the firm, "Sixty per cent of Africa's land is yet to be put into productivity. In other words, the future of agriculture is Africa. Local innovations are working for the local communities and it is only a matter of time before some of these innovations are scaled up."

E-learning takes another step forward

Cutting edge e-learning practices and developers are coming to Africa too. E-learning conferences in Africa are becoming popular, along with a number of research programmes and organizations dedicated to e-learning. The eLearning Africa conference taking place on 29-31 May in Namibia this year is one of these highly anticipated networking events.

According to Marlon Parker, founder of RLabs, a South African social enterprise company involved in community-driven innovation, e-learning and m-learning's potential lies in the state of Africa's infrastructure and the need to roll out education.

"As a continent with majority of its population being young people, educational infrastructure still lacking, and with the fastest adoption rate for mobile phones, all the odds are favourable to Africa becoming a pioneer in the m-Learning environment," he says.

"As Africans, we understand the challenges such as expensive connectivity costs, having limited learning and human capital resources, etc. that clearly show the opportunity to drive innovation in the education space. The needs in Africa are immense and the opportunities are not

only in the formal educational sector but also the informal sector," he adds.

Some interesting e-learning products are coming to the fore in Africa. They include the range of tablets offered by the South African Wise Tablets, which include access to a range of pre-loaded content, including an Education Centre.

"We aim to make the tablet a practical tool for education and so work directly with educational institutions to develop their own content and use it on the Education Centre, which provides a standard way of viewing educational content via a removable SD card," said Wise management in a press release.

Another interesting product, which RLabs' Marlon Parker describes as "one of [his] favourites" is online training provider GetSmarter.co.za's platform, Kwiksta, which makes it easy for anyone to develop their own online courses. One Kenyan company, MPrep, also offers a similar platform, usable with mobile phones rather than computers. Parker is himself also involved in a number of learning projects, including Ukufunda, a mobile platform for a virtual classroom on Africa's biggest social network Mxit. "It is endorsed by UNICEF and it allows learners and teachers to access quality education resources, social support services, building various communities and the opportunity to have a real-time learning experience," says Parker. But companies will need intelligent business plans to succeed in the e-learning industry.

Children in Senegal are among those around Africa benefiting from e-learning projects and ICT initiatives

According to Parker, they should consider targeting the m-learning sector first. Governments also have their part to play. "African governments have the opportunity to invest in m-learning and e-learning initiatives but should look at it as part of their educational strategy and not as an isolated or "nice to have" project. Governments also have a role to assist in scaling these initiatives," says Parker.

African advertising: bold, unique and controversial

Finally, it is not just in products and services that innovation is coming to the fore in Africa. It is in how companies are communicating with potential customers, including through advertising. The bold, direct and even sometimes explicitly political quality of major advertising campaigns in Africa is a clear departure from the Western template and has established a distinctly African form and character.

One of South African food company Nando's advertising campaigns – dubbed Last Dictator Standing – which satirizes Zimbabwean President Robert Mugabe, is a case in point. Although Nando's pulled the advert because of the amount of controversy it sparked and fears for the welfare of the firm's Zimbabwean staff, its unabashed use of politics to appeal to the wider public is indicative of an approach to consumer advertising that is unusual in a global context.

Other firms have shown a similar capacity Lo develop unique advertising campaigns in a ruthless bid to tap into the African's psyche. An award-winning example is a campaign for Carling Black Label, one of South African Breweries' top beer labels – Be the Coach. In a bid to further solidify its image as the "South African man's beer", the mobile voting campaign that took place in 2011 enabled football fans to choose the team and make live substitutions in a major football game.

The attempt to get inside the mind of their customer base and empathize with them was direct: "Carling Black Label noticed that the [football] fans were getting more and more frustrated with coaches coming from foreign countries like Brazil and Serbia and they weren't connected with the local flavour of South African soccer," explains the narrator in a YouTube video about the advert uploaded by communications firm Ogilvy & Mather, which was instrumental in developing the campaign. "The fans believed they knew their soccer clips better than the coaches. All South African fans needed was a chance to prove themselves. Carling Black Label gave the power to South African fans by creating the

Black Label Cup," the narrator adds. The Cup was a success, and the firm won best mobile advertising and marketing campaign at the GSMA Global Mobile Awards 2012 as a result.

Non-commercial advertising is also becoming a space for intense creativity. A high-profile example is USAID's HIV-prevention Protect the Goal campaign launched in January. Several African nations' football federations signed up to the campaign and during the 2013 Africa Cup of Nations, team captains read out a statement appealing to players and fans to back the campaign.

Africa is demonstrating its capacity to be creative and innovative in fields ranging from e-commerce to advertising. M-Pesa was the first chapter in the region's story as a trendsetter. It is unlikely to be the last – with a robust collection of business success stories that are as interesting to London and New York as to Lagos and Cape Town.

4

TECHNOLOGICAL INNOVATION AND ETHICS

Ganesh Nathan

Contentious technologies

"Technologies can be not only contentious – overthrowing existing ways of doing things – but also morally contentious – forcing deep reflection on personal values and societal norms."[1]

This quote invites us to ponder about the consequences of technological innovations, both desirable and morally contentious. It challenges us to deeply reflect on both personal values and social norms when engaging with technological innovations. The aim of this article is to illuminate certain morally contentious links within technological innovation and to put forward some recommendations for ethical innovation.

Innovations within the technology sector range from the incremental to the radical. Such innovations include product innovation, process innovation and strategic innovation[2], and they underpin some technological innovations. Innovation management within technology may be

[1] Cole, M. B. & Banerjee, M. P. (2013). "Morally Contentious Technology-Field Intersections: The Case of Biotechnology in the United States", *J Bus Ethics*, 115:555-574.

[2] Ahmed, P.K. & Shepherd, C.D. (2010). *Innovation Management*, England: Pearson Education Limited.

understood as the management of the innovation decision-making process along certain phases that I shall refer to as the "value chain of innovation", from the search for innovative ideas to strategic selection, implementation and finally capturing the value of innovation through successful commercialization.[3] There is no doubt that technological innovations have added not only economic value to firms but also benefited the users through innovative products and services in terms of ease of use, functionality, efficiency, novelty etc.

Nevertheless, innovations can have undesirable consequences for society and/or the environment. To name just a few from among the many examples: DDT as pesticide, which was "originally hailed as a breakthrough innovation" but later found to be harmful to birds[4] and other species; the pharmaceutical thalidomide, prescribed as morning sickness treatment for pregnant women and resulting in severe birth defects of babies; and chlorofluorocarbons (CFCs) used as refrigerants and propellants, causing a deleterious effect on the ozone layer.[5]

From this perspective, we need to understand not only the organizational-level decision-making process of technological innovation but also, at the macro level, what linkages these technological innovations have and their impacts. These links can be market, knowledge, old solution versus new solution, and inclusion versus exclusion of users within the context of the economy, state, society and community, and these links are morally contentious.[6] Many innovation decision-making processes have been blind to ethical impacts and concerns, which I shall call "innovation ethical blindness", and have ultimately negated the val-

[3] Tidd, J. & Bessant, J. (2009). *Managing Innovation*, England: John Wiley & Sons, Ltd.
[4] Carson, R. (1962/2002). *Silent Spring*. NY: Mariner.
[5] Bessant, J. (2013). "Innovation in the Twenty-First Century", *Responsible Innovation*, eds. R. Owen, J. Bessant & M. Heintz, UK: John Wiley & Sons, Ltd.
[6] Hanekamp, G. (2010). "Business Ethics of Innovation. An Introduction", *Business Ethics of Innovation*, ed. G. Hanekamp. Germany: Springer.

ue capture of the innovation. For example, the Dutch government had to cancel the EPRS (Electronic Patient Record System) due to unresolved privacy issues after the investment of 300 million Euros over a 15-year period; likewise, the initiative to introduce smart electricity meters in every household within the Netherlands was rejected by the upper house of the Dutch parliament due to privacy concerns after some years of R&D efforts.[7]

Innovation value chain

Moreover, the value capturing phase of innovation value chain also poses ethical concerns along the dimensions of affordability, availability, accessibility and acceptability.[8] Ethical impacts on these dimensions can lead to an ethical dilemma between the private interest of profit maximization for shareholders on the one hand, and the public interest on the other. The value capturing phase is compounded with additional ethical concerns of product safety and efficacy.

These ethical concerns and dilemmas of technological innovations raise the fundamental question whether technological innovations have shaped society or society has shaped the innovations.[9] There are arguments to support both sides. For example, one could argue that social media such as Facebook, Twitter and LinkedIn shape how people interact within these networks. From a social constructivism point of view, it is arguable that reality is socially constructed and these technological innovations hence do shape many aspects of social reality. These aspects, however, raise many ethical concerns and dilemmas; for example,

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[7] Van den Hoven, J. (2013). "Value Sensitive Design and Responsible Innovation", *Responsible Innovation*, eds. R. Owen, J. Bessant & M. Heintz, UK: John Wiley & Sons, Ltd.

[8] Seiter, A. (2010). "Access to Medicines and the Innovation Dilemma - Can Pharmaceutical Multinationals be Good Corporate Citizens?", *Business Ethics of Innovation*, ed. G. Hanekamp. Germany: Springer.

[9] Williams, R., & Edge, D. (1996). "The social shaping of technology", *Research Policy*, 25, 865-899.

the issue of privacy and cyber bullying of vulnerable people is an ethical concern within social networks and the issue of privacy with surveillance cameras is an ethical dilemma between people's safety and privacy.

On the positive side, technological innovations have met human and social needs that are rooted in human nature and social being. These needs do not change, but the modes of meeting and satisfying these needs have changed through technological innovations. For example, communication needs have been met through technological innovations from the telegraph to telephones to mobile phones for one-to-one personal communication; radio and television for one-to-many; and Web 1.0 and 2.0 for one-to-many and many-to-many modes of communication. Moreover, technological innovations have resolved some ethical concerns; for example, technological innovations have yielded progressive improvements in the prediction of weather patterns, enabling those likely to be affected to take precautionary measures; tornado and typhoon warnings and evacuation procedures have reduced the number of human deaths and economic losses considerably[10].

The recent typhoon – cyclone Phailin – warning along with the successful and commendable evacuation procedure drastically reduced number of deaths compared to a similar typhoon in 1999 that killed more than 10,000 people in Orissa, India. Another example is vaccination against polio and other diseases, which had considerably improved human health. However, we cannot ignore or be blinded to technological innovations creating new ethical dilemmas and concerns. For example, 3-D printer technology can make reconstructive surgery more effective and efficient; at the same time, it can be used to produce operational handguns. The blueprints for making such weapons can then easily be posted on the internet, which is an ethical concern. Moreover, with the

[10] Riebsame, W. E., Diaz, H. F., Moses, T., & Price, M. (1986). "The social burden of weather and climate hazards", *Bulletin American Meteorological Society*, 67(11), 1378-1388.

advancement of 3-D printer technology, it may be plausible to "print" human organs, which has ethical implications.[11] In a similar vein, one may consider that Google Glass provides benefits to the user but may lead to an ethical concern of privacy. A 2009-11 study on the ethical implications of emerging applications within the ICT sector, as well as drawing attention to numerous significant new technologies such as artificial intelligence, robotics, neuroelectronics,[12] identified 14 ethical issues that were in turn clustered into 5 areas: privacy, autonomy, digital divide, equity and informed consent.[13]

The above examples show that a technology can have impacts on multiple fields; a field may be defined as an activity by an actor[14]. This activity can be supportive or exploitative of the focal technology. For example, in the case of 3-D printer technology, the activity of commercialization for purposes such as reconstructive surgery, creating sculptures and architectural models is supportive of the technological innovation in a positive sense. However, exploitation of this focal technology in a negative sense can lead to printing handguns. Moreover, activities can also include regulation. A field that consists of an activity by an actor can be affected by many technologies. A morally contentious field has the potential to cause human and/or ecological harm. Moreover, fields can intersect; Cole and Banerjee call this the technology-field intersection (TFI), in which technology is at the intersection between two fields; for example, the organization field, which may consist of media, specialist firms, general firms and regulators, may intersect with the technology within the scientific field, consisting of government labora-

[11] Kluger, J. (2010). "3-D Bioprinter", *Time*, Thursday, November 11.
[12] New technologies identified are: i) Affective Computing ii) Ambient Intelligence iii) Artificial Intelligence iv) Bioelectronics v) Cloud Computing vi) Future Internet vii) Human-Machine Symbiosis viii) Neuroelectronics ix) Quantum Computing x) Robotics xi) Virtual/Augmented Reality.
[13] Matter (2011), *A Report on responsible Research & Innovation*, Brussels.
[14] Cole, M. B. & Banerjee, M. P. (2013). "Morally Contentious Technology-Field Intersections: The Case of Biotechnology in the United States", *Journal of Business Ethics*, 115:555-574.

tories, university labs and academic journals. The point they make is that understanding such a TFI may allow us to consider contamination in terms of moral contestation.

Drawing from psychology literature, this may be understood as: when something offensive comes into contact with something that is not offensive, the offensiveness often contaminates the other object.[15] From this perspective, Cole and Banerjee argue that it is plausible that one component of a TFI can contaminate another in terms of moral contestation. This can lead to profound implications for all parties involved. The issue then is to make a moral or ethical judgement of a morally contentious TFI. These authors in turn show that there are micro- and macro-level factors affecting such a judgement. The micro-level factors that are deeply rooted in strongly held religious beliefs can affect individual judgement, whereas macro-level representations stem from the individual's prior experience in science, technology, engineering, mathematics and media framings. The study by Cole and Banerjee shows that "members of the Religious Right have strongly unfavourable perceptions of the biotechnology TFI, while those with exposure to physics in high school have highly favourable perceptions".[16]

Stakeholders motivations and values

As the morally contentious field can affect many parties, we have to consider all stakeholders and their motivations, interests, responsibilities and duties as well as ethical concerns and dilemmas. This kind of stakeholder mapping can provide a broader picture and enable us to apply ethical theories. We can apply deontological ethical theories – ethics of duty (Kantian three maxims) and rights and justice – in order to evaluate whether an ethical concern of motivation leading to an action is ethical

[15] Rozin, P., Haidt, J., & Fincher, K. (2009). "From oral to moral", *Scienc*e, 323(27 Feb), 1179-1180.
[16] Cole and Banerjee (2013: 569).

or unethical. Likewise, we can also apply ethical theories of consequentialism – egoism and utilitarianism – to understand whether an action has unethical consequences for society. Moreover, these kinds of analysis can also lead us to take measures such as multi-stakeholder initiatives (MSIs) and engage in stakeholder deliberation and to seek solutions through moral imagination that no stakeholder can reasonably reject, taking moral consequences into account.[17]

However, stakeholders differ in their power and influence, and power holders may dominate the engagement and deliberation. Power, structure and responsibility are interconnected and affect each other. The structure has to ensure power and responsibilities are equitable. Moreover, politics, ethics and innovation are also interconnected and affect each other. The interaction of politics and ethics – politics in terms of political institutions and regulatory bodies and ethics in terms of firms' corporate social responsibility (CSR) activities – can promote responsible governance, taking into consideration human rights issues, well-being, social justice and diversity of all stakeholders. Likewise, interaction between politics in terms of firms as political actors and innovation in terms of sustainability-driven innovations (SDI) can lead to consideration for policies on R&D, trade, patents and entrepreneurship for ecological concerns. The interaction between ethics and innovation can also lead to consideration for serving the bottom of the pyramid (BoP), social innovation to address social market failure and changing social structure and relations[18]. It is also plausible to look into similar interactions at the global or international level to address global governance gaps that can lead to ethical concerns of technological innovations.

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[17] Nathan, G. (forthcoming). "Multi-stakeholder deliberation for (global) justice: An approach from modern civic republicanism", in *Governance, Innovation and the Future of Europe*, eds. Kakabadse, A. and S. Schepers, Palgrave Macmillan, Basingstoke, UK.

[18] Moore et.al. (2012). "The Loop, the Lens, and the Lesson: Using Resilience Theory to Examine Public Policy and Social Innovation", in *Social Innovation*, eds. A. Nicholls and A. Murdock, UK: Palgrave Macmillan.

Recommendations

This shows that we have to seriously consider *innovation governance for ethical impacts* and develop an appropriate *code of ethics* and guidelines for emerging technologies such as nanotechnology.[19]The above discussion emphasizes that ethics cannot be cut out of innovation; therefore, innovation management should include analysis of the ethical impacts of innovation, both positive and negative. Moreover, innovation ethics is linked to politics, and therefore politics plays an important role. Policies have to deal with patents (laws) and the potential ethical impacts. Furthermore, innovation governance should avoid innovation ethical blindness, and therefore it should include a code of ethics for ethical innovation. We also need to introduce innovation ethics as part of the innovation management curriculum.[20]

[19] Matter (2011).
[20] The author currently teaches the innovation management course module at the University of Applied Sciences and Arts Northwestern Switzerland and has introduced innovation ethics as part of the module.

5

UNRESOLVED QUESTIONS IN INNOVATION ETHICS

Jesse N.K. Mugambi

1. Preliminary Remarks: African Innovation

In this short Paper, I wish to express some of my reflections with reference to the specific Theme of the Workshop on "Innovation Ethics" (Cotonou, Benin, 23-24 August 2013). During the Workshop the participants expressed their concern about many challenges, tensions, contradictions and paradoxes associated with the notion of "Global Ethics" in plural, and "Global Ethic" in singular. They also expressed their ambivalence regarding the verb "globalize" and the noun derived from that verb – "globalization". What does it mean to "globalize"? Who "globalizes", and who is "globalized"? Who is in control? Who sets the rules, and who is the referee? Without clarity on these conceptual questions, it is counter-productive to engage in discourse about the ethics of "globalization". Conceptual clarification about these tensions, contradictions and paradoxes is a moral challenge, which each of us must face personally with a clear conscience and without self-contradiction.

Invention and Innovation are cultural undertakings. A cultural outsider cannot make a culturally appropriate invention or innovation for that particular culture. Inventions and innovations designed for a par-

ticular culture can, and are exported for use in other cultures, but their utility in those new cultures is culture-specific and contextualized. In view of the culture-specificity of innovation and invention, the starting point in the nurturing of inventors and innovators is cultural education prior to, and integrated with technical training. Inventors and Innovators are ordinary individuals endowed with extraordinary capacity for imagination. They perceive reality like ordinary persons, but re-configure it in extraordinary combinations. With these configurations of reality inventors and innovators design new tools for solving problems and challenges that ordinary people face. Is it possible to formulate a template universally valid and universally applicable? If such a template were formulated, who would provide oversight for its implementation? International relations are riddled with "enlightened self-interest", couched in diplomatic niceties even when the interests at stake are antipodes apart.

Africa has the lowest proportion of inventions and innovations in comparison and contrast with other regions. This low percentage of inventions and innovations corresponds inversely with the high degree of imperial emasculation of Africa, especially since 1885. Under colonial administrations Africa's pre-colonial tools, invented and improved by Africans for their own use in their diverse cultural and geographical environments, were taken to the imperial metropolis, modified and improved, then patented only to be brought back as manufactured products for use in the colonies. African colonial subjects were not allowed to manufacture any products. Industrial products had to come from Europe, manufactured with raw materials mainly from the colonies. This is how empire thrived. Africa is the only region consuming what it does not produce, and producing what it does not consume. Sustainable wealth can never be created on the basis of this negative equation. Rather, sustainable wealth is created when a nation consumes what it produces and exports the surplus, while producing what it consumes and importing the deficit. The balance of trade between nations is based on this positive

equation. Thus invention and innovation, for each nation, should be geared towards facilitation for the nation to produce as much of its basic needs as possible, and consume as much of its products as possible – exporting as much as possible while importing as little as possible. This is common sense.

Africa is a dumping ground for obsolete goods in textiles, machines, weapons and other merchandise. The region is also a laboratory for testing new products. In the food industry Africa continues to be a dumping ground for excess food and food products from nations that have excess. Food Aid is incompatible with endogenous invention and innovation. Instead, Food Aid encourages dependence while discouraging creativity and innovativeness. The continent of Africa has perhaps the best soils and the best climate for food production, with its middle location that strides the Equator and the Tropics. Africa has all climate zones, and also has the largest deposits of most minerals essential for industrial production.

What, then, prevents Africa from becoming the leading region in invention and innovation? The answer is in Political Science, Economics, Anthropology and Religion – not in Science and Technology. The remaining part of this Paper will elaborate on this proposition, through an exposition of the tensions, contradictions and paradoxes that underlie the discourse about the ethics of invention and innovation.

2. Ten unresolved questions pertaining to innovation ethics

2.1 Intellectual Property and the Open Access Movement

Intellectual property, as defined, respectively, by the Berne Convention, the Paris Convention, the Madrid Protocol, the Hague System and the WIPO Copyright Treaty, refers to the creative genius of a person or group of persons as manifested in a material product such as a tool, a trademark, an industrial design, a text, a work of art, a piece of music, an artistic performance or any other achievement whose originator is identi-

fiable. The World Intellectual Property Organization (WIPO) is a Specialized Agency of the United Nations, with headquarters in Geneva. Its mandate is established for

> *"promoting creative intellectual activity and for facilitating the transfer of technology related to industrial property to the developing countries in order to accelerate economic, social and cultural development, subject to the competence and responsibilities of the United Nations and its organs, particularly the United Nations Conference on Trade and Development, the United Nations Development Programme and the United Nations Industrial Development Organization, as well as of the United Nations Educational, Scientific and Cultural Organization and of other agencies within the United Nations system."*[1]

Protection of Intellectual Property is internationally regulated under at least six legal regimes, all coordinated under the World Intellectual Property Organization, as follows:

a) the Berne Convention for copyrights[2];
b) the Paris Convention for Patents[3];
c) the Madrid Protocol for registration of *Trademarks[4];*
d) the Hague System for registration and protection of *Industrial Designs[5];*
e) the WIPO Copyright Treaty for Protection of Information Technology circulated via the Internet[6];
f) the Africa Regional Intellectual Property Organization (ARIPO)[7];

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[1] *en.wikipedia.org/wiki/World_Intellectual_Property_Organization*
[2] *jus.uio.no/lm/wipo.protection.of.literary.and.artistic.works.convention.berne.1886.1979/portrait.pdf*
[3] *wipo.int/export/sites/www/treaties/en/ip/paris/pdf/trtdocs_wo020.pdf*
[4] *inta.org/TrademarkBasics/FactSheets/Pages/MadridProtocol.aspx*
[5] *oami.europa.eu/ows/rw/pages/RCD/FAQ/RCD12.en.do*
[6] *en.wikipedia.org/wiki/WIPO_Copyright_Treaty*
[7] *aripo.org/index.php/news-events/press-room/308-launch-of-the-koica-wipo-aripo-zipo-project*

With such a complex maze of expensive technical and legal procedures, it is not surprising that Africa, with 15.5% of the world's population, has less than 1% of the world's Copyrights, Trademarks, Patents and Industrial Designs. Most of these legal instruments for protection of intellectual property are held by the industrialized nations, even when the knowledge originates in Africa. Innovative and creative Africans are often enticed to relocate, permanently or temporarily, for the purpose of generating intellectual property for their hosts. Taking these facts into consideration, how ethical is this current intellectual property regime? Below is a table showing the percentage of applications to WIPO for trademarks, patents, industrial designs and industrial models.

Region	Population[1]	Trademarks	Patents	Designs	Models	Mean
Europe	10.4%	35.6	17.4	9.1	10.5	18.15
North America	5.0%	9.0	26.6	5.1	-	10.15
Asia	60%	41.1	51.3	81.8	88.5	65.675
Latin America	30%	9.5	2.6	1.9	0.7	3.675
Oceania	0.5%	2.5	1.6	1.1	0.3	1.475
Africa	15.5%	2.3	0.6	0.7	0.02	0.095

TABLE I

PERCENTAGE OF APPLICATIONS TO WIPO BY REGION IN 2010

Source: WIPO Economics and Statistics 2012, 14[8] 1: Population in 2013

These very high percentages in Asia reflect the trendy increase of manufacturing in a few Asian countries mainly for consumers in North America and Europe, especially in the textile, automotive and computer industries. Quite clearly, Africa is the most disadvantaged among all regions. It is ridiculous to continue promoting "millennium campaigns" for "reduction of poverty" rather than increasing of wealth in Africa. Yet wealth cannot be increased without an international regime that encourages the development, registration and protection of intellectual property within Africa, as is already happening in some Asian nations including

[8]*wipo.int/export/sites/www/freepublications/en/statistics/943/wipo_pub_943_2012.pdf*

Japan, China, India, South Korea, Indonesia and Malaysia. Intellectual property, whether its originators are acknowledged and remunerated or not, arises from the creative imagination of curious individuals. Very often, the inventors and innovators are not the prime beneficiaries of their inventions and innovations. The greatest beneficiaries are the entrepreneurs that convert these ideas into business products. How, then, can creative and imaginative individuals be encouraged and motivated to diligently innovate and create original ideas and tools, without being exploited? From the statistics on Table 1 above, there is need for taking into serious consideration the necessity of creating an environment in which inventions and innovations originating in Africa remain within the continent, for the benefit of Africa's people. Such a goal should not be left to chance. This point has been emphasized by Dr. Patricia Kameri-Mbote in her paper "Intellectual Property Protection in Africa: An Assessment of the Status of Laws, Research and Policy Analysis on Intellectual Property Rights in Kenya."[9].

2.2 Local and national identity

Humans identify themselves according to their primary nurture, by the means of which they learn to become human through language, norms and acquaintances. If in childhood a person does not learn to be sociable and responsible, it is difficult for the schooling process to inculcate any norms consistent with civility.

National identity, as inculcated by the state, comes long after a person has internalized what it means to be human. The period of nurture determines a great deal of what a person becomes in childhood and later, throughout adulthood. The birth certificate, which is a government instrument for defining one's national identity, is normally issued for documenting an event about which no person can confirm. Only the mother, if alive and normal, can confirm the event, but rarely can a mother actu-

[9] www.*ielrc.org/content/w0502.pdf*

ally ascertain that the baby she first suckles after delivery is indeed from her own womb. The tension between local and national identity is especially acute in multi-ethnic nations. The more the ethnic the plurality, the more complex will be the tension.

Some European nations, though multi-ethnic, have defined majorities determining how these respective nations may be governed (such as Great Britain, Switzerland, Germany, France, Belgium, Netherlands, Italy, Spain, and Portugal). The norms of governance in such ethnic-majority European nations cannot be (and ought not to be) imposed upon most African nations with no dominant majorities that can sway political decisions. Thus European nations with dominant ethnic majorities have little to teach multi-ethnic African nations about "democracy" and cross-ethnic tolerance. Most European nations themselves have fought bloody wars in the past, and the consequences of those wars remain entrenched in European history. European national boundaries were the result of bloody tribal wars. The European Union echoes that bloody history.

African national boundaries were the result of competition between European powers for African lands, in pursuit of grandeur, greed, fame, and fortune. The consequences and repercussions of the Berlin Conference (1884-85) are still being felt throughout Africa, while European nations still continue to exercise oversight over the territories they carved for themselves. How then, can we discuss Applied Ethics in this historical context where some are "born-to-rule", and others are "born-to-be-ruled"? History cannot be re-written and even if it were re-written, the revision of history would not alter the actual events. With regard to Africa's history, the old treaties are still operative, even after national sovereignty has been internationally confirmed. Imperial interests still linger on, and African nations have to reckon with this fact!

Turning to ethnic homogeneity, only a few European ethnically homogeneous nations (Denmark, Finland, Greece, Norway, and Sweden)

can be directly compared with a few ethnically homogeneous African nations (Botswana, Lesotho, and Swaziland). Even these small African nations with definite ethnic majorities have other factors of differentiation that are not comparable with mono-ethnic European nations. Given this tension between the "local" and the "national" identity, which of these two identities should take precedence? Multi-ethnic nations require multi-ethnic sensitivity with which mono-ethnic nations cannot empathize. The geographical size of a nation does not determine its ethnic mixture. Even small nations (such as Benin, Burundi, Gambia, Rwanda and Togo), have ethnic diversity, which makes the practice of "democracy" immensely complex. Switzerland, for example, with four official languages and cultures (French, German, Italian, Roman) plus English, which cultural identity is more important for an individual citizen: Swiss nationality or such ethnic identity as "German", "French", "Italian", "Roman" or "immigrant"? The "local" and the "national" identities are continually in tension, and it is not easy to resolve the tension without a process of education that runs from infancy to adulthood.

Applied ethics presupposes these tensions and may not resolve them, since humans are more part of the problem than part of the solution. The most pragmatic approach is to cultivate awareness, so that in dealing with one another we always keep in mind our parochial idiosyncrasies while appreciating the human worth of those different from ourselves. But education is not enough. National consciousness is much more than the programmed curriculum inculcated in school and college. It includes the cross-generational legacies, which are passed on orally and ritually. In view of the foregoing observations, how can innovation, inventiveness and creativity be encouraged locally and nationally, while protectionism reigns supreme among the powerful nations? During the days of empire it was illegal for colonial subjects to invent and manufacture anything; they were expected to consume manufactured products from the imperial metropolis. This regime has hardly changed. Its abandon-

ment is long overdue. In this era of the Internet, instantaneous communication renders centralized thinking obsolete.

2.3 National and Global Identity

To what extent can any human individual (from any nation, culture, religion, race, region, continent or status) define oneself as a "global citizen" when there is no such reality as a "global nation"? The word "citizen", if it is qualified with the adjective "global", is "meaning-less" when contrasted with the word "citizen" as it is normally used alongside the adjective "national". The reality in our present world is that "national identity" is becoming increasingly prescribed. Rules of inclusion and exclusion are being made more, not less, restrictive. This is the reality in which we live, move and have our being. It is wishful thinking to imagine that the situation is different. What then, is the meaning of the phrase "global ethics" or "global ethic" under these circumstances?

Hans Kung has proposed that a "global ethic" can be formulated from a synthesis of the moral precepts of what he calls "world religions" – Judaism, Christianity, Islam, Hinduism and Buddhism. Yet, it is factually incorrect to use the adjective "world" to qualify any of these religions. Statistically, none of them has adherents in all cultures. None of them has a demographic majority. None of them has doctrinal unanimity. None of them is "democratic" in governance. None of them practises the principle of equity. None of them practises the principle of tolerance in nations where adherents are the majority. In view of these facts, how can these religions provide the basis for a "global ethic"? Even if a moral common denominator were formulated among these religions, what would be the ethical justification imposing that denominator upon non-adherents of those religions?

Secularism has become normative among most European nations, which used Christianity for as means to define their national identity. Is secularism adequate as an ideology for definition of national identity? If it is not adequate, what, precisely and concisely, is the role of religion in

the definition of identity in the European Union? In the past, innovation and invention were celebrated as achievements of the nation state. The inventors and innovators were celebrated and honoured nationally for their achievements. If the global ethic were to become normative, on whose behalf would the inventors and innovators be working so diligently – on their own personal behalf, or on behalf of an anonymous entity called "global society"?

2.4 Religious identity and cultural identity

Religious identity complicates a person's self-understanding and self-appreciation, especially in nations where religious plurality is taken for granted. The modern Christian missionary enterprise in Africa has been a "mixed blessing" with regard to religious identity. While individuals have the freedom to choose a Christian (or Muslim) denomination or sect in which to belong, at the same time religion then becomes an indicator for external social identification (like the choice of clothes that one prefers to wear!) rather than an internal set of values through which to view the world. Under these circumstances, cultural heritage becomes more significant than denominational membership. This fact explains why Christianity and Islam have been largely impotent in the brokering of sustainable peace in many African nations. Instead, they are often factors of differentiation and tension! European history (including Calvin's Switzerland, Luther's Germany and Henry's England!) has its share of this tension between religious and cultural identity. It is interesting to observe that every great civilization throughout history has had a religion to bless its kings, queens and nobility. Is secularism as an ideology cohesive enough to prop a "global society"? If not, what is the role of religion and culture in this era of "globalization"? How should inventors and innovators conduct themselves when torn between secularism and religiosity?

2.5 Professional training and human interests

The academic and professional specialization of the elite often tends to take precedence over the primary needs of the general population for whose service professional experts are trained and employed. What should take precedence: professional standards, or human needs? Jesus had to deal with this tension., when challenged by the rabbinical elite about his violation of the sabbatical rules and the regulations about ritual purity he placed human need above religious legalism. Should professional etiquette of the elite override provision of basic needs of communities? Jesus violated these rabbinical norms and gave priority in helping the needy. Yet the rabbinical elite vilified him for his sense of vocation. This tension is real for us, even today! Invention and innovation should not be for self-gratification and self-aggrandisement. Rather it should be for tools and systems to solve the most basic problems and challenges. Thus innovation and invention are culturally grounded and contextually conditioned. After prototyping, testing and launching an invention or innovation may become normative in the society for which it was designed. Only thereafter does it become adopted or adapted for other societies and contexts. There can be no tool that is universally (or globally) applicable. Local problems require local solutions.

2.6 Aid and trade

For five centuries Africa has continued to be portrayed as a continent of "poor" people, in one of the most richly-resourced continents on Planet Earth. The natural and human resources from Africa have been extracted and exploited to enrich the people of other continents. Who defines Africa, and for what interests? I have been travelling across Africa for forty years, and I cannot reconcile the contradictions and the paradoxes in the rhetoric of those "do-gooders" and "well-wishers" who have made it their pastime to define what is "good" for Africa and Africans. The mission of many an external agency to fashion Africa and Africans into its own image, is one of the most dehumanizing enterpris-

es that Africa has suffered, especially throughout the twentieth century! The Millennium Development Goals, for example, were intended to "reduce poverty", but not to "create wealth". The goal of "reducing poverty" is NOT synonymous with that of "creating wealth". So why were these agencies interested more in making Africans "less poor" than "more rich"? The design of the Millennium Development Goals, from the outset, was to ensure that the rich would get richer, while the poor would get poorer, as the gap between them widened – by design, not by accident. How then, can inventors and innovators change the situation, when the template is already defined and entrenched?

2.7 Virtual and actual discourse

The points I have raised above lead me to another contradiction and paradox, which the Internet has introduced. Certainly, the Internet has facilitated instantaneous transmission of data with efficiency and precision unimagined even two decades ago. However, information is not knowledge, and communication is not conversation. Virtual discourse can be no substitute for actual discourse. While online full text librariesare an important innovation in library management and outreach,, university libraries are not merely repositories of documents. They are facilities for communities of scholars to interact under the guidance of their older and more experienced colleagues. The older European universities of Europe have this tradition of the Master and his apprentices. Virtual libraries may be available for online reference, but actual discourse must be conducted through person-to-person discussion, complemented by oral expression and gestures with physical presence. An online discussion between scholars across cultures and nations lacks cultural specificity contextual relevance and situational particularity.

Discourses on ethics presuppose multi-disciplinary referencing across academic and professional specializations. Ethics (as a branch of philosophy) has always to refer to the other related philosophical specializations including logic, metaphysics, phenomenology, and episte-

mology. Similarly, as a critique of culture, Ethics has to make reference to anthropology, sociology, history and political science. Moral norms are the stock-in-trade for any discourse on Ethics. At the same time, moral norms are integral to religious and theological studies. Thus a specialized collection of monographs on Ethics, isolated from a multi-disciplinary library as found in a university, has the shortcoming of being too narrowly focused, irrespective of the number of collections in the online catalogue. Taking these observations into consideration, perhaps the most practical approach would be to integrate the Globethics.net Ethics Library with the Main Library of an existing university, then provide online access to that library across disciplines, with the possibility of enrolling users across nations continents and regions. If such a university library with other university libraries were linked for online access across national and regional borders, the objective of using the Internet for promotion of "global" discourse would be met much more effectively.

Questia is an online multi-disciplinary library (including a huge collection in Ethics) accessible through subscription (*questia.com*). Perhaps the Globethics.net Library could explore this option to broaden its academic and professional frame of reference. Conversation is a cultural engagement, requiring the discussants to get acquainted with one another. So, while quantitative statistics indicate that the number visitors to the Globethics.net Library is increasing, the qualitative cultural impact of those online visits is impossible to determine! Since the African input into the Globethics.net Ethics Library is insignificant, the sharing of knowledge across that online platform remains skewed, with hardly any significant contribution from Africa into the global knowledge pool. This imbalance will not be corrected any time soon. The solution to this problem is in the development of Ethics collections in African libraries. This approach may turn out to be much cheaper, and much more effec-

tive, than the central depository. Below is Table 2**,** showing the dramatic inequity of Internet Access across the world.

Region	Population	Users 2000	Users 2012	Penetration% of population	Growth 2000-2012	Users as %
Africa	1,073,380,925	4,514,400	167,335,676	15.6	3,606	7.0
Asia	3,922,066,987	114,304,000	1,076,681,059	27.5	841.9	44.8
Europe	820,918,446	105,096,093	518,512,109	63.2	393.4	21.5
Middle East	223,608,203	3,284,800	90,000,455	40.2	2,639.9	3.7
North America Pop: 5.0%	348,280,154	108,096,800	273,785,413	78.6	153.3	11.4
Latin America	593,688,638	18,068,919	254,915,745	42.9	1,310.8	10.6
Oceania	35,903,569	7,620,480	24,287,919	67.6	218.7	1.0
W-Total	7,017,846,922	360,985,492	2,405,518,376	34.3	566.4	100.0

TABLE II

WORLD INTERNET USAGE AND POPULATION STATISTICS, JUNE 2012

Source: *internetworldstats.com/stats.htm*

To conclude this section, the following is an actual illustration of the concerns articulated above. For several months prior to the Globethics conference at Lukenya, Kenya in January 2009, about ten African scholars met once a month, hosted by the programme for ethics in Eastern Africa. When these scholars met during the conference, they were already ahead of the others in terms of acquaintance, even though most of them had not known one another before this preparatory discourse was launched. The sessions during the conference were used to further the earlier discussions, and this interaction yielded a book now used for teaching applied ethics in our region, *Applied Ethics in Religion and Culture: Local and Global Challenges* (Nairobi: Acton, 2012). Such local initiatives are not only innovative; they are also culturally enriching. How, then can innovation and invention be tuned to actual cultural contexts, at a time when virtual communication is normative?

2.8 Academic research and community involvement

In the current context of "global competitiveness" universities worldwide have become ends in themselves, rather than means to achieve end of making communities more resilient and more humane. When the monks walked across the country-sides of Europe to teach villagers about the Christian faith, they did so as a vocation, without expecting salaries in return. The hood of the University gown was both to keep the body warm, and to keep the gifts received. These monks were the forerunners of the university professors of today. But the University of Bologna bears little semblance to the universities of today, even though there is now a Bologna process to standardize university education in Europe. To whom are university professors and researchers accountable? This is primarily an ethical question before it becomes a contractual one. I spend more of my time out of my university, doing what I believe is my duty to society, applying what I was academically and trained for. Certainly I have to work at the university to earn my upkeep, but I consider my employment as means to an end, rather than an end in itself. Just as I make a distinction between schooling and education, I also make a distinction between career and vocation.

2.9 Models of globalization

Several models of globalization are possible. The preference of one model above others is a moral, rather than a professional choice. The centre-periphery model presupposes that the centre is preferable to the periphery. Those at the centre try to keep the others out, while those outside struggle to come in. The failure of this model is that if everybody moved to the centre, there would be neither centre nor "periphery. If on the other hand those at the centre decided to move out of the centre into the periphery, the centre would become sacred space for all. But the power relations would have to change completely, so that everybody would be on the periphery, making it possible for all to see each other face-to-face. The UN system is based on a centre-periphery model, en-

cumbered with serious problems of both credibility and authority. Other models are possible, which I need not discuss here. It seems to me that Globethics.net, if it wishes to be innovative, will have to explore models other than this centre-periphery platform.

2.10 Returns on investment

There is a cost to every undertaking. Too often costs are calculated only in monetary terms. But there are other costs – (emotional, cultural, social, etc.) which cannot be reduced to financial balances. For example, the costs of a mother in suckling her baby cannot be tabulated on a financial balance sheet. The impact of my teaching since 1966 cannot be fully tabulated in terms of financial returns. There is much more to costing than financial balance sheets! The same observation can be confirmed for all of us, when cultural contexts are taken into consideration beyond the actual moneys expended. Thus the current preoccupation to calculate all investment in financial terms dehumanizes the sense of vocation, particularly for those who want to serve because it is virtuous to do so, rather than because there is a financial reward for delivery of a product under a specified contract. This remark is not intended to trivialize written contracts. Rather it is intended to emphasize the limitation of written contracts in contrast with shared covenants. So, what is the actual cost of an invention or an innovation? How can in inventor or innovator be rewarded for all the time and effort spent in bringing forth a particular invention or innovation? Who will do the costing, and who will pay? These are ethical questions, before they are taken to the lawyers for argument and then to the judges for arbitration.

3. Concluding remarks: Ethical innovation and equality

Ethics has to do with the principles that promote or undermine fairness. Owing to the inequity in power relations between nations, conceptualizing is difficult for any arrangement through which individuals can

fairly disclose their inventions and innovations within the public domain before the Intellectual Property Protection regimes are firmly established especially in Africa. Just laws presuppose ethical propriety. A society in which inequity is entrenched will enact laws reflecting and legitimizing that inequity. This insight is illustrated by the history of the slave trade, imperial rule and Apartheid. The twenty-first century does not seem closer to the ideal of equity across nations and peoples than the twentieth. The powerful still dominate, while the weak still suffer, despite the declarations that sound morally laudable.

The new jargon labelled "globalization" does not adequately deal with the problem of equity, as illustrated in the two abortive international negotiations within the UN system, namely a) the World Trade Organization[10] and b) the Kyoto Protocol[11]. In both of these instruments, the less powerful nations expected fairness on the basis of the ethical principle of equity, but the more powerful nations invoked their power to override this principle of equity. The same challenge prevails in the discourse about invention and innovation ethics: the inventors and innovators, as individuals, cannot prevail against the might of transnational corporations, which, with or without compensation, will exploit at any cost any invention and innovation that is likely to maximize profits, irrespective of whether or not the inventor or the innovator has granted consent. Examples abound in Africa confirming this observation.

[10] *en.wikipedia.org/wiki/World_Trade_Organization*
[11] *en.wikipedia.org/wiki/Kyoto_Protocol*

6

INNOVATION ETHICS FOR VALUE-BASED INNOVATION

Christoph Stückelberger

Innovation is a result of creativity, vision, hard research and many other factors. Innovation is also to a great extent influenced by values and virtues, disvalues and vices. Innovation can be purely power-driven, money-driven or game-driven. Innovation ethics looks for innovation that is value-driven.

But which values are then relevant? What then is an ethical innovator? Which ethical values support innovation or hinder it? What are the specific challenges of ethical innovation? Let us look at these questions.

1. Definitions of innovation and development of the term

Innovation is the combination of creativity (invention, etc.) and its implementation for new solutions for problems and requirements in technical or social issues. It is different from improvement as the gradual modification of an existing solution.

Ethical innovation is innovation based on ethical values. Innovation ethics is the theory of ethical innovation and ethical innovators.

Innovation of ethics looks for new values enhancing human lives.

Fields of innovation: The term innovation is mainly used for technological innovation. But there are also innovations in management, in politi-

cal decision-making, in writing styles, in marketing, in religious beliefs and values, in culture, in music, etc. Value-based innovation can and must be applied to all kinds of innovation, not only the technical. The term innovation currently is hyped for market-driven entrepreneurial solutions in a competitive world, replacing older terms such as research and development (R&D). For many periods of human history, innovation was mainly a term for cultural renewal compared to cultural tradition, for modernity versus conservatism.[1]

Other terms in political, cultural and religious contexts: In order to understand innovation, it may help to look at other terms that refer to similar attitudes and activities and outcomes but from a different perspective. In politics, terms often used are transformation, reformation, renewal, revolution and development. Not every transformation or revolution is innovation, but some political transformations have as far-reaching effects as some technical innovations.

Religions have their own terms for innovation, often describing inner transformative processes that lead those transformed to see what religions describe as the "world beyond", the "real world behind the visible world" and are seen as the real innovation, whereas technological innovation is seen as just "more of the same", as innovation within the material world, but not really a transformation. In Abrahamic religions (Judaism, Christianity, Islam) the central term is to redirect life to God. In Christian faith it is called *metanoia* and metamorphosis (cf. Romans 12:2: re-direct your mind to God and be transformed,), new creation, eschatology (orientation from the last, absolute, eternal world). In Asian

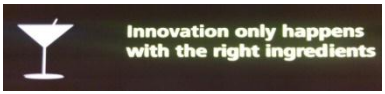
[1] After World War II, innovation was meant to renew the culture of peace and of humanism. UNESCO in 1955-1956 launched a broad research into the contemporary role of classical and humanist culture (*Rôle actuel de la culture classique et humaniste*). Tradition and innovation dealt with the fight between the old and the modern cultural worlds (see Rencontres Internationales de Genève, *Tradition et Innovation. La querelle des Anciens et des Modernes dans le monde actuel,* Neuchâtel 1956, especially Babel, Anthony, "Tradition and Innovation", ibid, 199-207).

religions (Buddhism, Hinduism, Jainism, Sikhism, Taoism) the real innovation is seen in the spiritual way from the ego to the self, from greed and materialism to inner freedom, from violent possession of the other to nonviolent unity with the other and the universe.

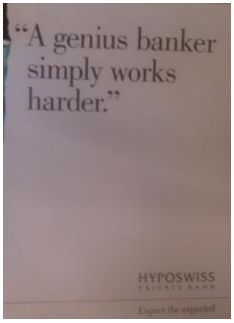
2. Descriptive approach: values in existing innovation concepts

Descriptive ethics means empirical description of existing values. *Descriptive innovation ethics* describes the values that are inherent in current or past innovation concepts and practices. This can be shown by advertisements that refer to innovation. A few examples:

University of Vienna: New since 1365. Combining innovation and tradition



Balanced innovation



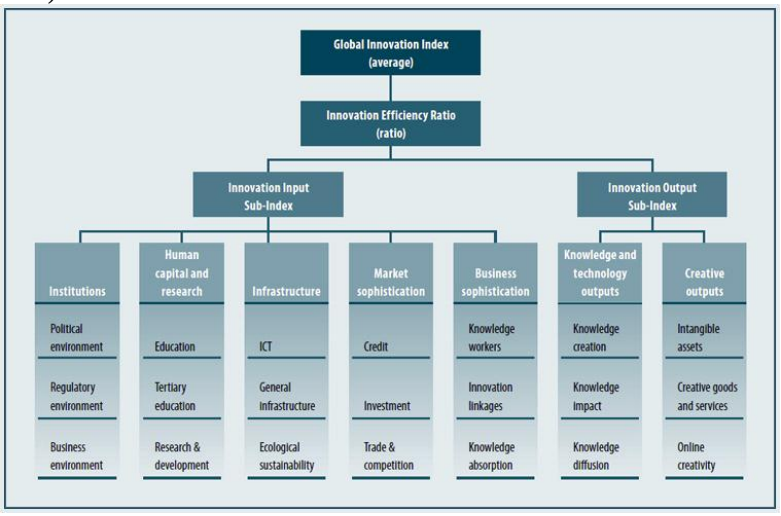
Innovation ethics as work ethics. Creativity by normality: "Expect the expected"

Social innovation by language transformation: from "handicapped" to "physically challenged" passengers

2.1 The Global Innovation Index: Innovation indicators in ethical perspective

The annual Global Innovation Index is a very important global indicator for measuring the innovative potential of countries and economies. It evaluates and integrates 80-90 indicators (89 in 2013, 81 in 2014, 64 of them identical and 17 new compared to 2013).[2]

The Global Innovation Index 2014 (see graph below) relies on two sub-indices, the innovation input sub-index and the innovation output sub-index, each built around key pillars. Five input pillars capture elements of the national economy that enable innovative activities: (1) institutions, (2) human capital and research, (3) infrastructure, (4) market sophistication, and (5) business sophistication. Two output pillars capture actual evidence of innovation outputs: (6) knowledge and technology outputs and (7) creative outputs. Each pillar is divided into sub-pillars and each sub-pillar is composed of individual indicators (81 in total).



[2] Cornell University, INSEAD, and WIPO (2014): *The Global Innovation Index 2014: The Human Factor in Innovation*, Fontainebleau, Ithaca, and Geneva, 46.

The index is sophisticated, international, broad in its data basis and transparent in its methodology. The 2014 index lays a special emphasis on "the human factor in innovation", as the subtitle says. In "human-centric innovation, inspired talent is the engine of innovation", the report underlines.[3] Individuals and teams, their thinking and working conditions are essential. "Creative and critical thinking, and the appetite for taking risks and thinking entrepreneurially, often matter at least as much as technical qualifications. In addition, innovation is spurred by having favourable conditions in which actors and society are open to new approaches."[4] For developing countries, a key factor is to retain top innovators in a favourable economic and political environment and also to attract the diaspora of a country to work for innovation in the country.[5] The report also shows the improvement of innovation capacities and rating of sub-Saharan Africa.

Nevertheless, from an ethical perspective, some indicators are questionable and some are missing. For example, under knowledge output, the knowledge creation indicator is based on the number of published articles with H citation,[6] which is based on Google and Elsevier page rankings. This is fair enough, but it does not reflect the economic, language and cultural factors that lead to questionable figures, as the hot debates about current ratings of peer review journals show. Input and output of cultural and religious factors for innovation are in general heavily underweighted and almost inexistent. This is because innovation is primarily seen as technological innovation and its contribution to economic growth. As we will see later, many "soft" factors of values stimulate or hinder innovation and have to be taken into account – even if they are more qualitative than quantitative indicators, making them more difficult to measure.

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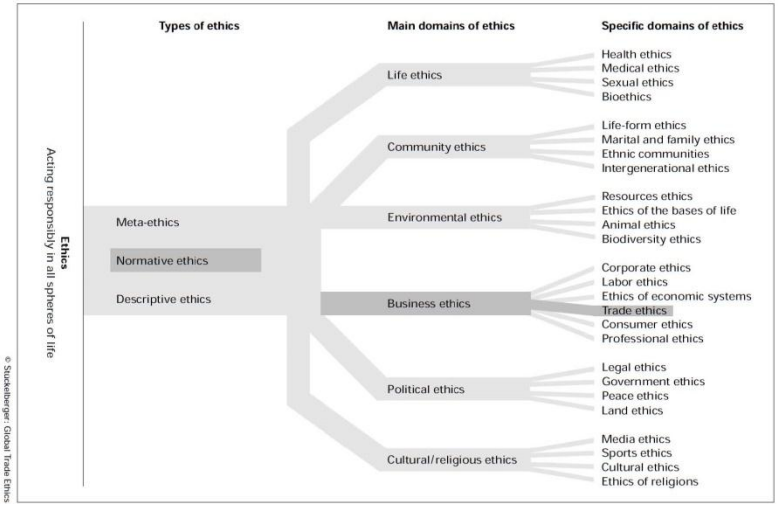
[3] Ibid, xi.
[4] Ibid, v, preface.
[5] Ibid, chapters 7 and 8, 113-134.
[6] Ibid, 381, point 6.1.5.

Additional indicators that should be integrated in future are e.g. the number of spoken languages in a country, cultural predispositions to take or avoid risks, the existence or nonexistence of insurances as an indicator of capacity to take innovation and entrepreneurial risks, etc.

2.2 Innovation ethics in many domains

Even though it is often seen as a technological and scientific process, innovation depends on almost all factors in society, from the legal framework up to culture. Therefore, innovation ethics can be described and discovered and is relevant in all sectors of life and society, from life to death, from family to politics, from economy to culture.



More specifically, innovation ethics is often part of research ethics, but also business ethics and corporate responsibility.[7]

3. Normative approach: the values of value-based innovations

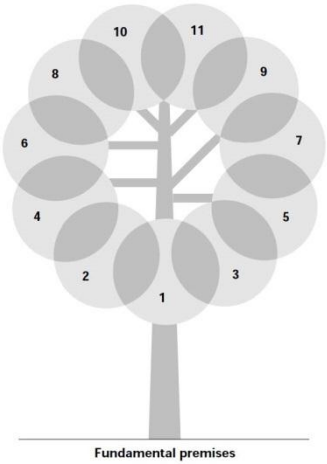
3.1 Key values

The key question for innovation is: what are the goals an innovator wants to reach in life and for society? Does innovation support these

[7] See e.g. Gerd Hanekamp (ed.), *Business Ethics of Innovation*, Berlin 2007.

goals or hinder or weaken them? "Goals" or "interest" can also be replaced by values: Which innovation is value-driven and strengthens the values or hinders them? Fundamental values together build a value tree. Eleven values are listed as globally relevant across cultures, even though their importance is weighted very differently in the different cultures.

1. Freedom
2. Fairness/Justice
3. Responsibility
4. Stability/Security
5. Sustainability
6. Care and Compassion
7. Community
8. Participation
9. Peace
10. Reconciliation
11. Trust



3.2 Ethical and unethical innovation

This value tree leads to a definition of ethical and unethical innovation.

Innovation is ethical if it strengthens human dignity, meets basic human needs, and improves participation, freedom, equality, justice, sustainability, integrity, peace and reconciliation.

Innovation is unethical, if it weakens these values, violates human dignity, strengthens human greed, increases exclusion, dependency, inequality, injustice, ecological destruction, war, corruption, and destroys lives.

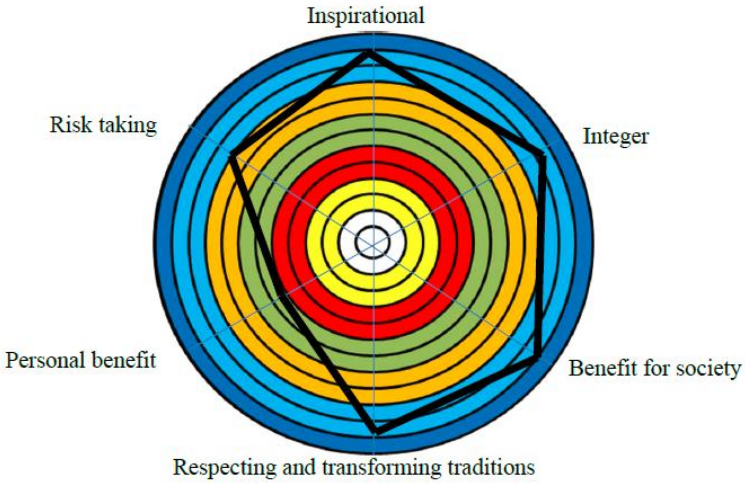
4. The ethical innovator

4.1 The ethical innovator: twelve 'I's'

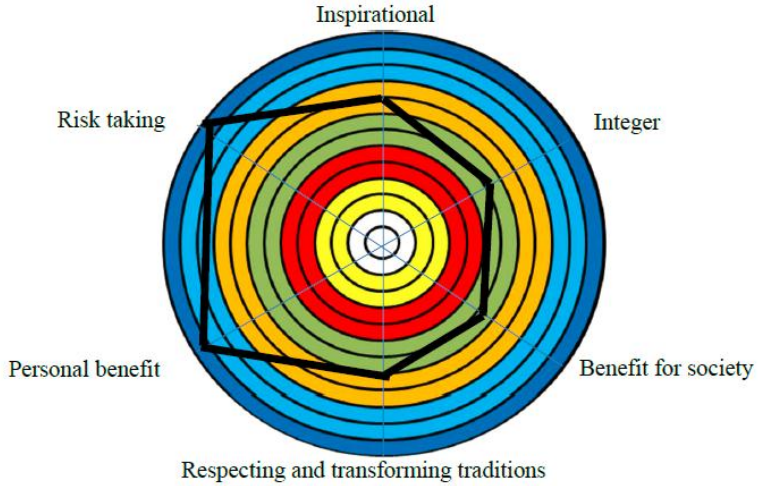
What are the characteristics of an ethical innovator, based on the fundamental values described? Twelve aspects, all beginning with "i" like innovator, can be listed:

1. Income	generating not jobless growth, but creating jobs
2. Indefatigable	hope and energy to overcome obstacles
3. Ingenious	thinking outside the box
4. Intuitive	holistic rational, emotional, social
5. Inspirational	inspired by the spirit, visions and simplicity
6. Integrity	honest, transparent, not plagiarizing
7. Independent	from authorities and mainstream trends
8. Inclusive	for the benefit of deprived and needy
9. Improving	improvement of living conditions
10. International	innovation not only for protected beneficiaries
11. Indigenous	respecting and integrating indigenous cultures
12. Influential	ambitious in becoming mainstream

4.2 Profile of an ethical innovator



4.3 Profile of an unethical innovator



4.4 Types of innovation and their ethical value

The ethical value of an innovation depends also on the circumstances, the original motivation and especially the type of innovation, which is often linked to its goals. We distinguish nine types of innovation – without ambition to be complete – and indicate their ethical value:

Scarcity innovation comes out of scarcity, e.g. of energy or material. But it can also be scarcity of time, of human resources, of relations, of emotions etc. Scarcity often leads to more efficient use of raw material and other goods and services. In an ethical perspective, efficiency is very positive. Efficiency means a careful use of limited entrusted resources and therefore is a key element of good stewardship and entrusted power (in using entrusted resources).

Simplicity innovation comes from the ability to combine complexity with simplicity: Having profound scientific knowledge while asking the simple questions. Being able to observe and ask like a child and answer like a genius: water is always flowing down, but how does it come that water in the tree can climb up, without oil or electricity of a water

pump? This simple question may lead to develop innovative sustainable energy sources.

Basic needs innovation stems from the urgent need to satisfy basic human needs like food, water, shelter. African creativity e.g. out of slum scarcity, or small technologies or survival strategies in building communities, can lead to innovative solutions. But they are often not innovative enough since they are based on quick short-term solutions.

Sated innovation is a result of sated markets: "What shall we produce and sell in a market that seems to have everything? How to create needs?" This often leads to fashionable consumer goods and services that are not really serving the objectives mentioned but serve (often jobless) growth in sated markets. But they can also lead to ethically justified innovation.

Fashion innovation: The fashion-oriented differentiation of existing products (e.g. clothing) keeps products and services attractive and is part of their lifecycle. It may not be called innovation in the proper sense, because fashion innovation is in principle "more of the same" product, with a different marketing and wrapping.

Luxury innovation: innovation of products and services in the luxury segment can be fashion innovation, but also real new products/services/lifestyles. The ethical evaluation is linked to the whole question of luxury ethics: Which luxury is ethical and which is unethical? (Puritans would say: luxury is by definition unethical. I would say: some luxury products can be ethically justified, e.g. something expressing a precious relationship or symbolizing a precious value.)

Shock/trauma innovation: a shock or trauma can lame and immobilize people, but can also mobilize them and lead to innovative restructuring of life and society to protect against future shocks (e.g. tsunami, diseases etc.). The innovative capability after shocks and traumata depends on the pre-disposition and type of trauma (as trauma healing shows). Ethically, an innovation based on shock and trauma can be very

positive. The question is how to be prepared and how to integrate trauma healing for innovative transformation.

Gaming innovation (joy of diversity): A strong motivation and energy for innovation is gaming, entertainment and joy of diversity. The primary goal of a game is to be a game. The joy of diversity (e.g. to prepare food in a very imaginative way) is just to create happiness. Fashion innovation can be seen as part of this. Ethically speaking, innovation as joy of diversity is positive since diversity (cultural diversity, language diversity, biodiversity) is a wealth of nature and – in religious terms – a gift of the creator. Creation, creativity and innovation are interconnected (this leads not only to ethics of innovation, but also theology of innovation).

Spiritual innovation is innovation based on inner transformation processes through meditation, prayer, spiritual exercises, mystical experiences etc. It is one of the most powerful sources of innovation because it can be radical, visionary and far reaching. But it also can remain a pure inner process, without becoming fruitful for social transformation. *Metanoia*, the Greek New Testament Christian term for transformation to become a "new human being", is a profound process of transformative innovation not only in a person, but for the transformation of society. Spirituality, especially in Asian religions, is also the ability to see behind the complexity of the world its simplicity (see above on *simplicity innovation*) because the true character of the world is simple in its harmonious structure. That is why great innovators often are also philosophical and spiritual personalities, seeing behind the obvious world the "true" world.

5. Innovation in ethics: values supporting and hindering innovation

The opposite to the question, Which values should be supported by innovation, is the equally relevant question, Which values, virtues and

attitudes support innovation and which hinder it? Which ethical environment is needed to build a culture of innovation?

Different innovation cultures in history could be analysed. As an example: the *Reformation* (16th century), the *Enlightenment* (18th-19th centuries) and their sequels have been very innovative times. Reasons are among others a) the courage to break with tradition, b) the replacement of monolithic by semi-open or pluralistic societies, c) cooperation between dissenters and reformers among the political elites who have defended or promoted them, d) the inner independent thinking of the dissenters and their courage to take the risk of isolation and sanctions up to death, etc.

The following table summarizes values that promote or hinder innovation.

Values/virtues that promote innovation	**Values/virtues that hinder innovation**
Freedom of thoughts and expression	Totalitarian oppression of expression
Secular/religious vision of a better future	Fatalism, resignation
Culture of forgiveness supports risk taking	Culture of fear hinders risk taking
Tradition/culture as constant process	Culture as static entity/natural law
Adaptive interpretation of holy texts	Fundamentalist text interpretation
Participatory cultures	Hierarchical or dictatorial cultures
Care and compassion for human needs	*Incurvatus in se*, blindness, narcissism
Culture of sharing	Culture of Greed
Education and access to knowledge	Restriction of access to knowledge
Open, permeable societies	Feudalist, hierarchical, elitist societies
Convenience (search for easier solutions)	Laziness (no motivation for change)
Courage and critical thinking	Fear of authorities, subordination
Individual creativity with networking	Only individual creativity or networking
Static value system of one main value	Dynamic value system balancing different values

6. Specific challenges of ethical innovation

6.1. Innovation and economic systems

The legal and economic framework of a society plays a crucial role in supporting or hindering (ethical) innovation. This is true for the legal framework in the economy as well as in education, culture, environment, the social and religious sectors. Let's take the economic sector:

Little regulated/wild capitalism economies: They can stimulate creativity and entrepreneurial attitude, but also hinder innovation through the lack of a state of law, planning security and political stability. They are likely to violate values of social justice and environmental sustainability.

Highly regulated/planned economies: They hinder entrepreneurial innovative initiatives. They can create innovation in specific niches of state interest. They are likely to violate the values of freedom and participation.

Inefficient and wasteful economies: They do not give incentives for innovation because scarcity (e.g. of raw material) is more favourable for innovation than abundant access to resources. That is one reason why small countries like Switzerland without natural resources are more under pressure to be innovative than large countries with abundant resources like DR Congo. Inefficient economies are likely to violate the value of good stewardship of limited resources.

Monopolistic sectors in economies: They are normally less innovative because there is no market to promote innovation. They are likely to violate the value of a participatory culture and of convenience.

Informal economies: they are constantly forced into small innovations in the form of survival strategies, e.g. in recycling and reusing scarce material and resources. But they do not have the managerial and financial capacities to scale up and professionalize such small innovations.

Totalitarian economies: They do not offer an environment for innovation through the total control, lack of freedom of action. They can lead

to "forced innovation", which is in most cases unethical, such as medical research under Hitler.

Failing-states economies: They do not have the environment for innovation except for "innovative" criminal activities. But the absence of the rule of law is a form of political "scarcity", which needs innovative approaches to act ethically in such an environment, e.g. humanitarian ethics.

Social/environmental market economies: They offer in my view the best environment for ethical innovation since they offer space for research and creativity, combined with a discourse in society and subsequent regulations in the social, environmental, cultural and religious framework in favour of ethical innovation.

Open, feudal or elitist societies: open, permeable societies that enable persons to move between layers of society and to ascend from lower layers have more potential for innovation than feudal or elitist societies.[8]

6.2 Innovation and tradition

The clash between innovation and tradition exists in all societies and often leads to severe conflicts.[9] Innovators can only be successful in the long term if they have a profound understanding of tradition(s) und transformation processes from old to new. The slogan "To break the rules, you must first master them" (advertisement for Audemars Piguet watches) can also be translated to "To make innovation, you must first master tradition." An example: all four reformers – Luther, Zwingli,

[8] An example is Switzerland, which rates as the most innovative country (*Global Innovation Index 2014*) with relatively flat layers and a permeable society. A new study shows that three of five Swiss technical pioneers and innovators are from wealthy and higher-class families, one of ten from poor families, the rest from the middle class. See Joseph Jung: *Pioniere, Unternehmen, Innovationen: 17 neue Thesen zur Schweizer Efolgsgeschichte*, Reihe Schweizer Pioniere der Wirtschaft und Technik, Bd 100, Zurich 2013.

[9] See the profound compilation of articles in Chackalackal, Saju (ed.), *Tradition and Innovation. Philosophy of Rootedness and Openness*, Bangalore, India, 2011. See also the article of Chandrankunnel, "Tradition-innovation in science and religion encounter" from this book, reprinted in this volume.

Calvin and Knox – have deeply studied catholic theology and have been priests before becoming reforming innovators. Many revolutionary innovations that are not sensitive to tradition provoke counter-revolutions and unnecessary resistance. Other innovations have to lead to a break with tradition. Many technological innovations find social acceptance only after a period of resistance and "market introduction"; others lead to deep gaps and severe splits in societies.

Fundamentalisms in their political, religious and social forms are often a reaction to insensitive, too fast innovations. The pendulum from open markets to protectionism, from tolerance to closed societies, from freedom to fascism, from revolution to restoration, from new identities to old nationalism is sometimes provoked by innovations that are one-sidedly technological or economic, without being embedded in social, political, cultural and religious processes and transformations.

Innovation is ethical and sustainable if it embraces inclusiveness and sensitivity for the integration of cultural, social, political and religious traditions.

6.3 Innovation, risks and inner independency

Innovators have to be ready to take risks: risks of failure, risks of resistance from competitors or from traditions, risks of not having the physical, mental, financial or organizational endurance, and the risk that the result of the innovation can be used and abused for the opposite goals to those envisaged (e.g. new communication technologies for war rather than peace, for control and surveillance rather than freedom). Ethical innovators need even more ability to take risks since they may need to abandon a creative idea for ethical reasons.

Innovators need somehow to be rebels and to accept – even to some extent enjoy – opposing mainstream thinking and behaviour. They need the social and material freedom to act and experiment. They need the inner certitude that what they do is right, important and ahead of their time. They need the inner voice – some call it conscience, others voca-

tion, calling, mission, desire, instinct – that their effort is meaningful and necessary.

6.4 Innovation, failure and forgiveness

But they also need to deal with potential failures. The secular answer is "no success without risks and potential failure". The religious answer is – at least in the Abrahamic religions (Judaism, Christianity and Islam), most explicitly in Christianity – that human beings can take actions with the risk of failure and of doing harm because there is forgiveness and the option of a new beginning after failure. The culture of forgiveness seems to be obvious in a Christian context, but it is not. Hard economic competition and political power struggle is the daily lesson of a culture of immediate punishment and of non-forgivingness. The one who fails is out of business or loses the political mandate. This does not encourage taking innovative risks.

A culture that encourages or at least accepts rebellion (as in societies where prophets and messengers have their place)[10] and a culture of forgiveness is an environment that enables and encourages innovation.

6.5 From research partnerships to innovation partnerships and networks

Innovation in most cases results from a collaborative effort of people, research groups, institutions, or even very large consortia such as CERN in Geneva with the participation of countries and researchers from the whole world. Especially in research partnerships between more advanced and less advanced partners from developing and developed countries, fairness in research leads to research partnership principles. Ethical innovation respects such ethical standards of research partnerships, which then lead to *ethical research partnerships.*[11]

[10] See the article of Nicodème Alagbada on the prophet Micah in this volume.
[11] See the article of Christoph Stückelberger, "Innovation ethics as research ethics", in this volume.

In today's interconnected world, innovation capacities are greatly influenced by networking capacities. Tell me with whom you network, and I shall tell you how successful you will be.[12]

6.6 Innovative access to innovative sources

Innovation needs sufficient access to resources of knowledge, communication in teams, organizational and financial means. A criminal, *mafiosi* environment can be very stimulating for criminal innovation. But ethical innovation needs access to resources based on the values and virtues of the ethical innovator. Therefore, for ethical innovation the question is to create not just innovation hubs and parks, but ethical innovation hubs and parks where debate and confrontation with value-driven innovators is part of everyday life.

I remember when I was a guest lecturer at the Christian Duta Wacana University in Yogyakarta, it had the best faculty of computer science in Indonesia but also produced the best and most famous destructive hackers in the country. They called me to give lectures on computer ethics. That is the challenge of innovation ethics. That is why Globethics.net offers the world's largest online library on ethics,[13] with free download of 1.4 million documents. Over 15,000 Indonesians are registered for free in the network of Globethics.net, half of them students and university teachers.

Access to innovative resources needs also access to value-driven orientation and ethics.

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[12] See C.K. Prahalad/M.S. Krishnan, *The new age of innovation. Driving co-created value through global networks*, New York/Delhi, 2008. The authors distinguish six innovative ways consumers relate to firms and to one another (244f): Social networks, business collaboration, telecom connectivity, internet connectivity, do-it-yourself-applications, architecture computing.

[13] See *globethics.net/libraries*

7

THE ROLE OF GOVERNMENTAL INSTITUTIONS IN PROMOTING ETHICS AND INNOVATION

Aida Opoku-Mensah

1. Background

Though the concept is in its nascent stage on the continent, innovation has become synonymous with Africa's rise in the world, propelled mainly by the catalytic role of information and communication technologies ICTs and intensified by the mobile revolution. However, this meaning goes far beyond the mobile technology revolution and signifies Africa's ability to innovate in agriculture, business/commerce, education, environment, natural resource management, and governance, manufacturing and industrial development, to mention a few important sectors. Innovation has an important role in Africa's productive capacity for ensuring the continent's economic transformation.

What kinds of innovation systems exist in Africa to support the crucial role of *innovation for development*? How can the current burst of innovation on the continent be supported or sustained to make a meaningful impact on people's lives and ultimately on African development? The answers lie in how key economic and social stakeholders respond to strengthening the growing innovation revolution in Africa. Innovation

for Africa's development has to generate new products and services (manufacturing), support new processes (agriculture and natural resource/land management), as well as better ways of accessing and creating new markets. As an agrarian continent, Africa needs to embrace technological innovation to produce more to be self-sufficient in food production. This paper focuses on the evolving innovation environment, and how ethics can play an important role in nurturing innovation in Africa. Key to this argument is the *role of governmental institutions in promoting the ethics of innovation*.

2. What is innovation?

From the 1930s on, there were tremendous efforts to measure the impact of research and development (R&D), especially in the industrialized world, based on the assumption that R&D brought about innovation and technological change. It became clear that there were parts of the innovation process that did not emanate from R&D. According to Beyhan et al. (2002), the R&D assumption was a "linear conceptualization of innovation", but "the rise of evolutionary and nonlinear conception of innovation in the last three decades had widely changed the premises of measuring technological change".[1]

Between the 1980s and 1990s strong efforts were put into developing a framework to study the concept of innovation, leading to the first version of the Oslo Manual launched in 1992 and the second in 1997. However, with limitations in the measurement of innovation in services sectors, a third version of the manual was launched in 2005 to address issues of non-technological innovation, with marketing and organizational innovation categories as well as a systemic approach to innovation.

[1] Beyhan, B et al. (2002): "Comments and Critics on the Discrepancies between the Oslo Manual and the Community Innovation Surveys in Developed and Developing Countries", *stps.metu.edu.tr/sites/stps.metu.edu.tr/files/0902_0.pdf*

The Oslo Manual[2] offered a new paradigm to measure technological change and innovation, encapsulating the new theories on innovation and presenting a more global approach to the measurement of innovation (Carvalho, 2006).[3] This allowed direct measurement of innovation not possible before.

Unsurprisingly, there have been a *variety of definitions of innovation*. However, the Oslo Manual definition of innovation became globally accepted: "an *innovation* is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations."[4] This definition is akin to that of Kimberly (1981) whose definition embraces different forms of innovation: "*There are three stages of innovation: innovation as a process, innovation as a discrete item including, products, programmes or services; and innovation as an attribute of organizations*."[5] Furthermore, the definition of "innovation" is used to largely refer to the application of knowledge in product, process, design, market and organizational improvements that are new, not necessarily to the world but to a region, country, centre, firm and/or individual. Unless otherwise stated, it may not include "policy innovations" or entrepreneurship in general. It is also associated with the perception of "doing things in new or newer ways" to generate new products and services. However, innovation can also mean the creation of new things – namely inventions of devices, appli-

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[2] Oslo Manual (2005): Guidelines for Collecting and Interpreting Innovation Data, 2005 Edition, OECD, *oecd.org/science/inno/2367580.pdf*

[3] Carvalho, F. (2006), "The measurement of innovation in developing countries: An overview of the main criticisms and suggestions regarding the adoption of the Oslo Manual approach", *ocw.unu.edu/maastrichteconomic-and-social-research-and-training-centre-on-innovation-and-technology/economic-development-and-innovationstudies/Flavia_Carvalho_Paper_Verspagen_2006.pdf*

[4] Go to *global-innovation.net/innovation/Innovation_Definitions.pdf*

[5] Kimberly, J.R. (1981), "Managerial innovation", in Nystrom, P.C. and Starbuck, W.H. (eds.), *Handbook of Organization Design*, Oxford University Press, Oxford, 108.

cations or tools. According to the online business dictionary innovation is "*the process of translating an idea or invention into a good or service that creates value or for which customers will pay*".[6]

3. Measuring innovation: Challenges in Africa

Measuring innovation is akin to measuring a moving target. According to Adams et al. (2006), innovation is "notoriously ambiguous and lacks either a single definition or measure." [7] In recent years and with the advent of the information technology revolution, there have been radical technological shifts that, even with the Oslo Manual, are still not factored in productivity and output growth rates. In addition, there is a lack of reliable and systematic data on the impact of innovation. *The Changing Face of Innovation*, the World Intellectual Property Organization (WIPO) Report 2011[8], also pinpoints the difficulties on measuring innovation: "In the absence of innovation metrics, science and technology (S&T) indicators or IP statistics have been used in the past as an approximate measure of innovation. These most commonly include data on R&D expenditure, R&D personnel, scientific and technical journal articles, patent-related data, and data on high-technology exports". Even the afore-mentioned data may not be available in all countries.

With the intensification of ICT and technology, we are witnessing a great deal of technological product and process innovation, which has been described as *"*a *technological product innovation is the implementation/commercialization of a product with improved performance characteristics such as to deliver objectively new or improved services to the consumer. A technological process innovation is the implementa-*

[6] See *businessdictionary.com/definition/innovation.html*
[7] Adams, R., Bessant, J. and Phelps, R. (2006), "Innovation management measurement: a review", International Journal of Management Reviews, 8.1, 21-47 (22).
[8] *wipo.int/export/sites/www/econ_stat/en/economics/wipr/pdf/wipr_2011_chapter 1.pdf*

tion/adoption of new or significantly improved production or delivery methods. It may involve changes in equipment, human resources, working methods or a combination of these"[9].

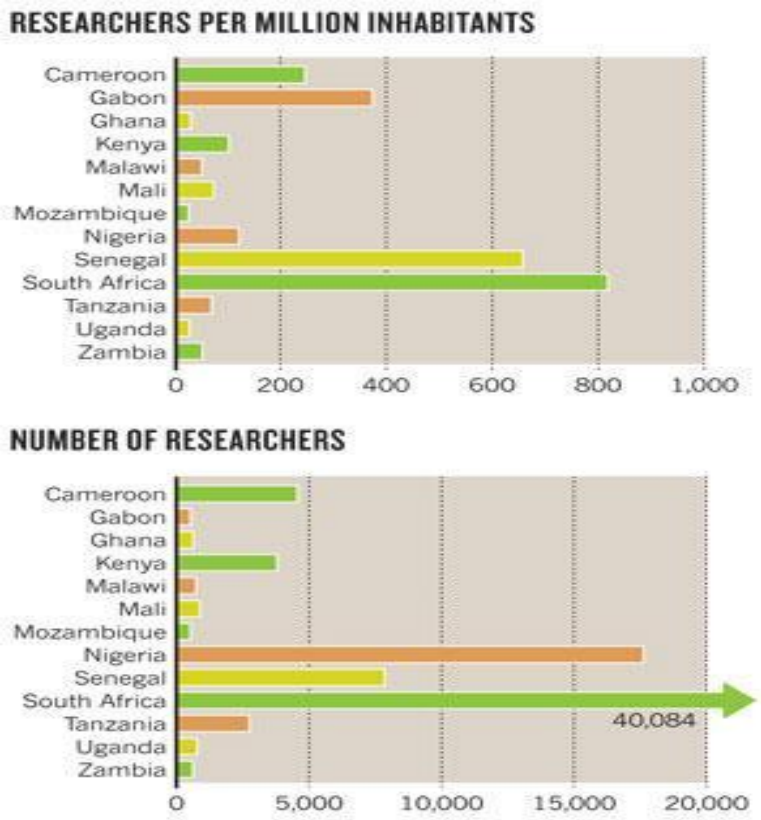
Innovation measurements are meant to provide evidence on the factors that facilitate or hinder innovation; the relationship between economic growth and innovation; and for gauging the innovation performance of a country against other nations as well as emerging innovation trends, among others. Yet the indicators used for measurements to date are R&D-centred and based on the Frascati[10] and the Oslo manuals initially developed for use by member states of the Organization for Economic Cooperation and Development (OECD) and the UNESCO Institute of International Statistics. They have served as global standards in interpreting innovation surveys up till now.

Most recently, Africa has also made some progress on this front. *The African Science, Technology and Innovation Indicators* (ASTII), an initiative of NEPAD launched in 2006, and the *Africa Observatory on Science, Technology and Innovation* (AOSTI), endorsed by African Heads of State in 2013, are worth noting. The two initiatives represent the most comprehensive effort intended to measure and benchmark innovation in African countries. The ASTII's African Innovation Outlook[11] was a comprehensive survey of 13 African countries' performance on R&D-based innovation inputs/outputs following the European Union's Community Innovation Survey (CIS) based on the Frascati and Oslo manuals.

[9] Oslo Manual (2005): Guidelines for Collecting and Interpreting Innovation Data, 2005 Edition, OECD, *oecd.org/science/inno/2367580.pdf*

[10] Frascati Manual (2012): Proposed Standard Practice for Surveys on Research and Experimental Development, 6th edition. (In 2012, An annex was added on measuring R&D in developing countries

[11] AU-NEPAD (2010) *African Innovation Outlook 2010*, AU-NEPAD, Pretoria.



Source: NN

However, much more needs to be done in measuring innovation from an African standpoint. Current innovation metrics are largely manufacturing-centred and likely to grossly misrepresent Africa's innovation performance, because African economies and societies are highly agrarian and natural resource/extractive industries-centred. In 2010, approximately 63.5% of the population of sub-Saharan Africa lived in rural areas and over 50% of the working population was employed in agriculture. In comparison, only 20.3% of the population in the OECD member states lived in rural areas and only 5% of the population worked in agri-

culture.[12] An industrial output-based metrics does not work well in measuring innovation in Africa. Efforts are underway by UN FAO, CGIAR and the World Bank to develop innovation indicators that are better suited for the agricultural sector.

Moreover, very few firms and companies account for a big share of the global private R&D expenditure and are concentrated in sectors that are not well developed in Africa. For instance, the top 1500 R&D performing firms, accounted for about 90% of the global private R&D expenditure, concentrated in pharmaceuticals and biotechnology; technology hardware and equipment, and automobiles and auto-parts. As shown below, sub-Saharan Africa's share of global trade in high technology products (from the three sectors above)[13] is 0.1%.

	2000	**2004**	**2007**	**2008**
Latin America & Caribbean	3.5	2.9	2.7	2.7
OECD members	74.3	67.8	62.0	61.8
Sub-Saharan Africa	0.1	0.1	0.1	0.1
East Asia & Pacific		44.8		

Table 1: High Technology exports (as percentage of total exports)
Source: UNECA analysis based on WDI, 2012.

Nevertheless, Africa has increased its knowledge- and technology-intensive industry output as a share of GDP by 19%.[14]

4. Innovation Trends in Africa

Despite the challenges, African technology-based companies are emerging branded as innovative firms! African is quickly becoming

[12] UNECA analysis based on World Development Indicators 2012.
[13] The World Bank defines high-technology exports as "products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery".
[14] *wipo.int/export/sites/www/econ_stat/en/economics/wipr/pdf/wipr_2011_chapter1.pdf*

linked with innovation in many ways and it is actually the home of non-R&D innovation, mainly enabled by ICTs and specifically the mobile revolution. Additionally, the climate is encouraging more innovators to come out and show their ideas and inventions. Consequently, there have been several innovation prizes and awards launched to support African innovation, most notable of which is the *Innovation Prize for Africa (IPA)* awarded by the African Innovation Foundation, and the *Etilsalat Pan African Prize for Innovation*. It has also been suggested that non-technological innovation is occurring throughout the African continent and for instance, a focus on innovation is emerging as a key theme in the Africa Union's long-term strategy, Agenda 2063. According WIPO, "innovation not based on R&D, including non-technological innovation, is increasingly perceived as an important contributor to economic growth and development."[15]

According to *Fast Company*[16], the top 10 most innovative companies in Africa in 2014 are:

Top 10 Most Innovative Companies in Africa (2014) [17]
1. iHub (Kenya): innovation includes connecting, amplifying, and accelerating Africa's tech community. The not-for-profit is a hybrid co-working space and university commons has grown to more than 10,000 members in just three years and has led to the launching of 150 companies – many of which are dedicated to finding technological solutions to Africa-specific problems. 2. Sanergy (Kenya): has brought sustainable sanitation to sub-Saharan Africa. More than 12,000 people living in Kenya's slums are now receiving daily portable toilets containing toilet paper, sawdust, soap, and water thanks to

[15] Ibid.

[16] *Fast Company* is a full-colour business magazine that releases 10 issues per year and focuses on technology, business, and design. *Fast Company* currently operates three different franchises: Most Innovative Companies, Most Creative People in Business, and Masters of Design. For their Most Innovative Companies feature, *Fast Company* assesses thousands of businesses based on creativity, real-world impact, risk-taking, and execution to create a list of just 50 companies. The Most Creative People in Business is a list of 100 people from a wide range of industries.

[17] See *fastcompany.com/3026686/most-innovative-companies-2014/the-top-10-most-innovative-companies-in-africa*

Sanergy's sustainability model – local residents purchase and manage the sanitation facilities, allowing them to become micro-entrepreneurs.
3. One Acre Fund (Kenya): innovative in fostering a new generation of farmers in Africa. The model is simple, but the impact is huge. The company provides farmers seed and fertilizer on credit, delivers the materials nearby for pickup, trains the farmers to use them, and helps them sell the harvests. Since launching in Kenya in 2006, One Acre Fund has expanded to surrounding Rwanda, Burundi, and Tanzania, reaching more than 180,000 farmers and aiming to hit 200,000 by the end of 2014.
4. Rocket Internet (Out of Africa): innovative for betting on U.S.-style commerce in Africa. This venture firm has launched more than 100 companies in Africa since its founding in 2007. Among its efforts: online food delivery with FoodPanda, real estate with Lamundi, hotel booking with Javogo, and Amazon-like shopping with Jumia – which is the most popular online shopping site on the continent. While the company runs much of the business from its Berlin headquarters and many are very similar, its work to bring new opportunities to Africa is vital to the continent's growth.
5. Konga (Nigeria): innovation in making the online shopping experience more secure. On Konga's recently launched Marketplace, electronics to clothing to home appliances and beyond are available for secure online purchase – with more than 200,000 products on offer. And the sellers include merchants from small Nigerian villages as well as large, international companies.
6. Sterio.me (Nigeria): innovation for taking the infrastructure out of education. The young startup is rolling out a trial of its mobile e-learning service to 75 schools in Nigeria. The service uses SMS messages that give students access to material and lessons they listen to outside the classroom. The lessons are pre-recorded by the educators and sent as a free voice call when triggered by a specific SMS code. Educators can be immediately notified of which students finished the lessons and how they performed, saving them grading time and helping them prepare for the next class session.
7. UpEnergy (Uganda): innovation in making it safer to cook in rural Africa. Millions of people in rural Uganda are still using inefficient and dangerous means of cooking, like three-stone fires and kerosene. UpEnergy has set out to both protect the environment and people by supporting distribution channels that benefit both large businesses (through carbon credits) and local retailers (through direct sales support and guidance) to make available safer, greener, and more efficient cookstoves, water purification technologies, and solar lights.
8. Daptio (international): innovation in championing the new wave in education: adaptive learning. With online education becoming more prevalent, the next step for many platforms is to shirk the typical lecture format in favour of an adaptive learning one. The goal has become finding a model that allows students to receive the right content at the right time, ultimately

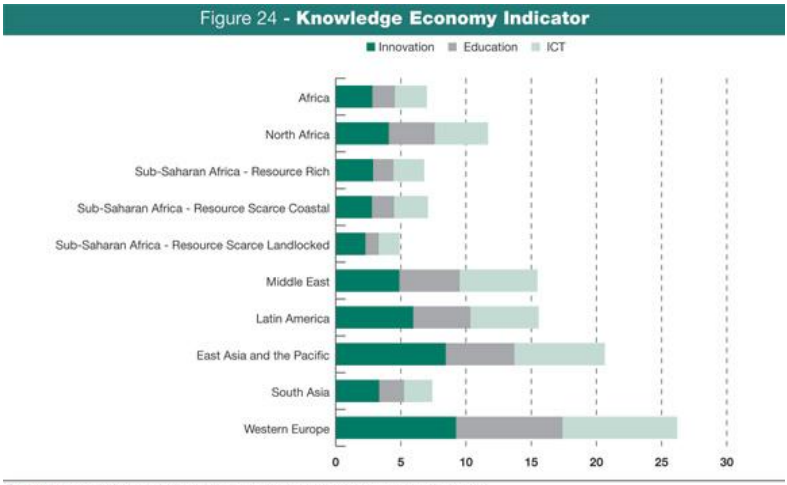
leading to higher understanding and better grades. With Africa seen as the next frontier for online learning's expansion – growth of the mobile learning market in Africa over the next five years is 39% and expected to make e-learning a $530 million market by 2017 – Daptio's presence is making it a reality.
9. PrepClass (Nigeria): innovation in preparing the next generation. Another education-oriented company on the list, PrepClass is an online portal for students preparing for standardized tests in Nigeria such as the JAMB, WAEC, GCE, or NECO. Students pay to take practice tests that prepare them for online or paper tests and receive personalized feedback to improve for test day. To be as available as possible, PrepClass has partnered with more than 1,000 cybercafes across Nigeria to give students places with the necessary resources to use the platform.
10. Aweza (South Africa): innovation in connecting a scattered society. With more than 11 official languages in South Africa, Aweza is looking to bridge the gap between the segmented communities in the country and lessen the language barrier. Its app allows users to translate words and phrases for others all in a slick little package. By crowd-sourcing translations to weed out inaccuracies, the company aims to leverage the growing mobile arena and encourage cultures to interact across their defined lines.
Source: Fast Company *fastcompany.com*

What is encouraging is that more and more entities are beginning to take note of the emerging innovative companies on the continent and this is set to grow. Fast Company, named Safaricom the 9th most innovative company in the world in 2013, finishing ahead of global brands like Apple, Google, Facebook, Coca-Cola and Samsung[18]. The more such companies emerge, the closer Africa moves towards the digital economy, which is what most countries would like to achieve. According to Peter Kelly[19], Managing Director of Virgin Media Business, "the digital economy already contributes a hefty 8% to UK GDP, more than any other G20 nation. It's one of our biggest competitive advantages as a country, and a powerful fertilizer for the green shoots that are finally starting to appear in the economy. But it's going to get tougher to stay

[18] "Safaricom is 9th most innovative company in the world", Fast Company, *investmentkenya.com/latest-news/441-safaricom-is-9th-most-innovative-company-in-the-world-fast-company*
[19] *The Guardian* (2014). "Tech entrepreneurs are key to UK recovery". See *theguardian.com/small-business-network/2014/apr/15/tech-entrepreneurs-uk-recovery*

ahead. The digital economy is not predicated on more of the same – it thrives on innovation. So what can we do as a country to stay in pole position? And what can tech innovators do to succeed?" African countries need to start asking themselves these questions as innovation is a key determinant of competitiveness of firms and economies. As shown in the graph below, Africa lags behind the rest of the world with respect to the knowledge economy for instance.

Furthermore, the importance of innovation in national development is increasingly being recognized within African countries, however, mechanisms to assess and track the performance of measures for an "innovation climate" and "innovation culture" is still lacking. In addition, Governments do not monitor and evaluate the impact of their innovation policy/measures and there is poor enabling environment, namely lack of venture capital, lack of protection of IPR, among others.



5. Intellectual property rights & innovation in Africa

The protection of Intellectual Property Rights (IPR) has become critical with the advent of the digital, knowledge and innovation economy. This is because IPR is that area of law that provides governance over knowledge, information and innovation, which includes how benefits or rights accrue to generators of idea and how those ideas are exploited. Africa's advancement in protecting IPR has not been successful and the TRIPS agreement of the 1990s mandated member states of the World Trade Organization (WTO), "which included virtually all African countries, to extend IP protection to pharmaceuticals, agricultural innovations, life forms and literarily any human-made device without regard to cultural sensitivities."[20] Furthermore, a country's ability to participate in global trade has always been linked to how IPR is protected and what Africa needs is economic transformation based on an IP environment that "reflects and responds to the continent's experiences and its extant marginalization in global IP law and policy."[21]

The existence of a functioning and beneficial digital and knowledge economy as a result of innovation will be dependent of the enabling environment. There are two broad categories of IP: a) industrial rights and b) copyrights. Industrial rights refer to inventions in all fields and may include industrial design, patents, trademarks, service marks, commercial names and designations and protect the means of transmitting the invention (e.g. the blueprints of the designs, processes, techniques, products, services) and not the knowledge itself. With the innovation revolution, the importance of intellectual property (IP) rights has heightened. Whilst IP drives change in the innovation field it also impacted by the changing innovation system. "In the new innovation landscape, IP is

[20] Oguamanam, Chidi (2014): "Charting a course for intellectual property rights", *University World News* 313 (28 March). See *universityworldnews.com/article.php?story=20140326133911278.*
[21] Ibid.

a vehicle for knowledge transfer and protection, facilitating vertical disintegration of knowledge-based industries", says the 2011 WIPO Report. What is more, the report affirms that "new types of firms – and in particular new types of intermediaries – thrive as a result of their intangible IP assets". Currently the East African Community (EAC) is strategizing on ways to implement the TRIPs agreement and developed a regional framework entitled, "*The Regional Intellectual Property Policy on the Utilization of Public Health Related WTO-Trips Flexibilities and the Approximation of National Intellectual Property Legislation*[22]". This framework will ensure that "*IP-embedded products and services concerning health are available and accessible at an affordable cost to the whole EAC partner states' population."*[23]

Furthermore, the last two decades has seen an unprecedented levels of use of the IP system with demand for patents increasing across the world from 800,000 patent applications in the early 1980s to 1.8 million by 2009 and growth in countries such as China and India has picked up dramatically. The upswing has been seen in both patents and trademarks. However, Africa' share of global patents and trademarks is low and negligible. Furthermore, IP awareness seems very low in most African countries. Jeremy Philips[24], writing in the Journal of Intellectual Property Law & Practice, stated that one of the key problems in low IP awareness is the lack of information on IP law and its workings as well as the lack of IP experts, meaning "*there is little or no economic incentive for any publisher to assume the financial burden of launching and selling specialist law journals, law reports, and practitioners' reference works*". Philips summarizes the IP situation in Africa as "*bleak and two*

[22] Muheebwa, Hillary (2014), "East African Community Moves to Harmonise IP Rights Regulation", Intellectual Property Watch (11 April). See *ip-watch.org/2014/04/11/east-african-community-moves-to-harmonise-ip-rights-regulation*.
[23] Ibid.
[24] See Philips, J (2008), "Editorial: Intellectual property and Africa. The agony and entropy"", *Journal of Intellectual Property Law & Practice*, 3.4.

of the braver attempts to remedy it—the OAPI regional patent in Francophone Africa and the ARIPO system mainly English-speaking parts—have remained underutilized as IP owners display their indifference to the need to obtain protection or their lack of confidence that protection is what they will receive."[25] Therefore, the role of governments is imperative for fostering favourable IP environment and in particular supporting ethical frameworks for innovation in Africa.

6. Ethical frameworks for innovation

Many inventors and innovators in Africa claim that their ideas and inventions are often "stolen" from them simply because they don't have the means to harness these ideas and turn them into viable businesses. They further claim that the lack of value for intangible assets such as knowledge, ideas and inventions harms Africa's ability to do things for itself. Further, the absence of Government protection on IP makes matters worse. With the intensification of innovation, the world is witnessing growing IP-based knowledge markets, where knowledge-based products and services are exchanged. Much of Africa's medicinal plants and their usefulness have been patented by people living outside of the continent. For instance, a scientist from Jackson State University in Mississippi got a US patent on the African indigenous medicinal plant, commonly known as bitter leaf from West Africa (used extensively in Nigeria and Sierra Leone)[26]. The patent claims that the extracts from the plant can fight cancer. In this case who owns the traditional knowledge of the bitter leaf? Similarly, a mycobacteria obtained in Uganda in the 1970s is said to have been patented at least 5 times in the US, which can be used to fight serious viral infections, including HIV. According to one of the patents, it "*was originally isolated from mud samples from*

[25] Ibid.
[26] McGown, Jay (2006): "Out of Africa: Mysteries of Access and Benefit Sharing", Edmonds Institute, 30.

the Lango district of Central Uganda. The owner is SR Pharma, plc (formerly Stanford Rook, Ltd.), a British company."[27] In this case who owns the traditional knowledge of the mycobacteria and surely the source should be considered an issue?

The fact that ideas and knowledge when shared can be exploited by someone else without compensation for the generator of the idea or knowledge is why IP is increasingly becoming a central mechanism for protecting such businesses. It is a way of ensuring that knowledge products and services are not appropriated illegally and ultimately unethically.

Dictionaries define ethics as a set of principles of right conduct, the study of the general nature of morals and of the specific moral choices to be made by a person, and the rules or standards governing the conduct of a person or the members of a profession. The debate on ethics of innovation and/or innovation ethics is still ongoing; however, the key questions in moving towards ethical frameworks for innovation should include:

- Who does the innovation serve and is the innovation based on sound principles?
- Does the innovation solve real problems?
- How ethical considerations play into innovation and can they be a limiting factor?

The answer is that almost always ethical considerations have to be determined entirely by the innovator, which places tremendous personal responsibilities on many kinds of innovation. Such questions and answers provoke society into thinking about the *ethics of innovation* and whatever the case may be, it takes on different connotations depending on the context.

There are other ways in which ethics comes into play in the innovation process, including ethics on research and innovation, medicine,

[27] Ibid.

business and much more. For instance, there are clear ethical rules for innovation in medical care, based on the regulatory ethics paradigm. According to George J. Agloh in his paper *Ethics and Innovation in Medicine*, "*this paradigm states that deviations from standard care involve a degree of experimentation that requires a set of procedures to assure the protection of the rights and welfare of research subjects.*" [28] Agloh explains further "any innovative research or new medical procedure must be reviewed and approved by an Institutional Review Board". Ethics in government circles often refers to specific legal rules of conduct for government employees that emphasize conflicts of interest. However, in the case of innovation, it can also mean that governments have to provide the legal rules of conduct for that particular sector and ensure that such rules are enforceable for the greater good.

Overall, several ethical frameworks have been suggested to guide the development and implementation of an innovation and to ensure that it will not be harmful. Some frameworks often cited are: utilitarianism and human rights. The utilitarianism framework refers to ensuring that the innovation serves a great number of people, whereby encouraging efficiency and productivity, whilst encouraging looking beyond an individual. The Rights framework implies that an individual's rights should not be violated in the process of innovation.

Ethics frameworks are also referred to as either rules-oriented or values-oriented. The rules-based ethics framework, as the name suggest is meant to prevent, detect, and punish violations of law by emphasizing legal compliance by communicating minimal legal standards, monitoring behaviour to assess compliance with standards, instituting procedures for those who fail to comply and disciplining offenders. However, value-based approaches to innovation recognize that ethics means much more than mere compliance with legal duties. A value-based framework would require creation of an ethical environment and culture.

[28] Agloh George J (2001), Med Ethics 27**:**295-296 doi:10.1136/jme.5.295

7. What role for government institutions in promoting ethics and innovation?

7.1 When government institutions have a vested interest in innovation for society and development whereby they invest in ideas and inventions, as well as building an innovation infrastructure and ecosystem they will be compelled to promote ethics. Therefore, *national institutions should have the prime role of nurturing local and national innovation*, especially for creating the much needed companies and businesses that will spur industrial development.

7.2 *Government institutions are required to maintain the culture of ethics in the innovation sector whether it is in finance, health or governance, as well as maintain standards*. This should be embedded in a value-based framework that is promoted across the board. This would be to avoid and prevent individualistic, selfish behaviour that interferes with the growth of innovation for the greater good.

7.3 Once the second point is in place, *there should be policies to nurture and promote local/national innovation*. Thus far, not many African countries have agencies or governmental institutions devoted to strengthening and supporting innovation. There has been a general assumption that this falls under Ministries of Science and Technology. However, sooner or later, such agencies should be established charged with managing the national innovation system as defined as "the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies."[29] However, within many African countries there is little evidence of activities to promote innovation. According to the United Nations Economic Commission for Africa survey of Ghana, Kenya and Zambia on assessing African Innovation Policy Envi-

[29] Freeman, (1987), cited in *Assessing African Innovation Policy Environment - A survey of Ghana, Kenya & Zambia*, United Nations Economic Commission for Africa ECA, 2012, 13.

ronment, "Kenya performs relatively well in terms of policy objectives to increase awareness of innovation (50%) and sponsorship of events to profile innovative start-up (40%). On the other end, less than 30% of all the respondents think that Ghana and Zambia have put in place adequate initiatives and measures to promote innovation in the six broad areas addressed here."[30] Clearly there is room for improvement in this particular area.

7.4 In promoting innovation, *governmental agencies need to provide the right counselling and information to citizens and innovations alike*. For instance, "innovation and entrepreneurship support information can be provided to a broader number of the target population through one-stop shops and other centralized (e.g. government electronic portals) or distributed systems (e.g. electronic social networks of inventor)."[31] Such networks could support the development of entrepreneurial culture and attitudes, and serve as sources of new ideas and business opportunities, and facilitate the mentoring of emerging firms. Therefore, the existence of policies that seek to promote such activities could stimulate innovation and change attitudes towards entrepreneurs."

7.5 Governmental agencies need to clarify their roles in providing oversight for innovation in their respective environments to ensure that whilst national initiatives are being nurtured by one agency, international projects and programmes are not brought in by another agency that undermines what is being done inside the country. The main questions are *what kinds of ethical laws and frameworks guide internationally-led innovation initiatives taking place within African countries?* How is accountability defined for various actors and their roles? There are complexities in defining ethical guidelines that span the role of the private sector, academia and the public at large and

[30] Ibid, 27.
[31] Ibid, 28.

countries will need to define these according to their national context. Should there be ethical guidelines for academia in their research agenda and what about guidelines on ownership, protection and commercialization of publicly funded research products and processes?

8. Conclusion

It can be concluded that Intellectual Property IP and ethics is at the heart of an innovation system and/or process. This article has attempted to draw attention to the role of government agencies in promoting ethics in innovation by examining the nature and status of innovation in general and how the process is unfolding in Africa, coupled with the challenges. One can conclude that despite the continent enjoying an innovation revolution due in part to the mobile revolution, issues of ethics and IP are still not emerging as priority in much of Africa. Consequently the major question at hand is what needs to be done by governments and respective institutions to ensure an effective IP regime within African countries? In the section before the conclusion, some suggestions are provided.

What is clear is that Africa can take advantage of the absence of an IP culture and learn from countries such as India, Brazil and China, for instance, who have successfully inverted IP to promote national development. However, this can only be done by a concerted effort within countries to build a strong cadre of IP expertise. This is perhaps one of the surest ways of maintaining an IP culture across Africa and developing the sector. This can be done by the *introduction of ethics & innovation courses in Universities* taught alongside economics and science, technology and health subjects, as well as taught in faculties of law. This would also spur concern and interest in IP protection of African indigenous knowledge, as well as protecting the African creative industries, which holds great promise for the continent.

In the area of health biomedical research, countries can start by creating competent in-country ethical innovation review systems to support activities in these areas, which will reinforce the culture of ethics in innovation. Above all, there must be a culture of understanding the economics and the economic benefits of IP and innovation within African economies and societies, and this requires consistent investments, including financing and infrastructure in creating innovation. Governments can encourage and foster partnerships with international organization in offering training capacity building activities for government officials, in particular in all areas of IP, from biopiracy to inventions.

8

VALUES AND INSTITUTIONS FOR POLITICAL INNOVATION FOR AFRICA

Walter Fust

1. History is part of the present

Africa is not only an old continent but has an immensely diversified cultural history. Unfortunately a big part is blended by colonial history and because of imposed borderlines not taking into account the existing history of groups and tribes. Those periods are part of Africa's history. They however do not predict solutions for the future, heavy as that inheritance might be, especially not when it comes to political systems and public administration. *African countries are entitled to rethink their history in their own value systems* and not those imposed or designed by others. Their own solutions based on their values designed and newly created offer potentials of innovation for African-led African solutions.

There is a great wealth of resources in different African regions regarding how to govern their local common goods. There is an *amazing indigenous knowledge* that good common sense developed over time, influencing power systems and traditions and serving as a reference for generations and leaders. The answers of learning from those times can be found and the findings might constitute a basis for future solutions.

Village and tribal life functioned well over centuries, based on rules (ethics) set and given by the leaders and/or the elders or citizens groups enabling people to live in peace and security. The values chosen included how to deal with their living, their education, their immediate and wider environment, their relations between families and generations. There were functioning systems tried and tested over long periods. *What lessons and knowledge can be learnt and further used or re-innovated for the future?*

The answers to such questions obviously lie in knowing African history and laws (written and especially customary laws as well as governance rules and systems of public administration) and rediscovering the values underlying and creating the then applied rules and value systems. *A lot could be gained by mobilizing this indigenous knowledge and rediscovering those African values*. Knowing that the future is not just a rewrite of the past, Africa has nonetheless an immense potential to see what systems of governments and politics do work on the continent, as well as abroad, and under what local conditions. Africa has the right to make choices and apply African values.

2. Overcoming the past for African-led African solutions

Overcoming the past and disconnecting from present solutions that divide people into those who benefit and who do not is not easy. It requires very strong leadership and responsible action by a significant part of African societies. Making changes not only presents a big challenge in overcoming entrenched structures and vested interests but can lead politicians and their parties into defeat in next elections.

Are nations and societies hostage to immobility? I think many are, and probably that immobility is wanted by those seeking rents and those in the past who did not show interest in development progress or in letting people find their own solutions. Redesigning and innovating African-led solutions by Africans is a gigantic task and yet feasible. By de-

signing their societies of the future, their value systems for local and national governance, by creating a movement to make elites and economic actors accountable as well as public administration, a sound basis can be set. Re-innovating the people/citizen-focused approach to government and governance is a solution in which African communities are very practised!

In a time of globalizing the world economic system to open frontiers and overcome obstacles in the free flow of services and goods, there is a reverse trend to strengthen local and regional governance and cultural diversities and values. Some call this double tendency glocalization. This does not necessarily lead to confrontation but calls for working solutions at different levels. The concept of the nation state had and has its big merits, yet it has to be adapted. How much sovereignty are nations ready to delegate to international institutions? How much agreement is needed to find a global system that functions and how much to strengthen local solutions responding to the proximate concerns of citizens and their villages?

3. Africa's voice in managing its own interests

Africa has its African Union and regional organizations where common concerns and opinions can be brought to the attention of others. Yet Africa is to a large extent part of a grouping called the 88 plus China. In my experience at those meetings, you hardly heard really African opinions. The speakers were mainly the newly industrialized countries (Brazil, India) and China. Most of the African countries had no voice at all or did not make it heard. This can and must be changed. *What are the African-lead African solutions for raising real African voices and for being treated in international affairs at the same level as others?* Africa has amazing capacities to examine that and create adequate solutions, assessing how the other partners function.

Representing national interests is the key to the foreign policy of the nation state. Yet defending one's own interest without respecting the interest of others is somewhat short-sighted and needs a shift of paradigm. I think *defending one's own interests can best be done after one knows what are the particular issues and concerns of others and to what degree solutions must be win-win partnerships to be implemented successfully and last*.

Whatever is decided in those international fora, it should be applicable nationally through the creation of national ownership in parliaments and governments. Solutions agreed upon internationally have to cope with existing national or local rules. Differences must be sorted out and solved. *A well-functioning public administration is key for governments, parliaments and citizens in getting all public services delivered with good quality and in good time*. We seem to be very good in adding tasks and complexity but pretty weak in reducing administration to a communicable and understandable level. There too there is room for innovative solutions, as there is for e- and m-government.

4. Public services citizens want and need

Information and communication technologies offer technical tools and new solutions for service deliveries of public administrations. While the use of computers by citizens may develop more slowly than expected, phone-based m-applications will rise exponentially. That availability must be used for appropriate and quick service delivery. Citizens want to see the benefits of those technologies. Unfortunately for some actors in government and public administration, e- or m-solutions are a nightmare because they lead to more transparency and accountability. The reduction of individual power and the change of procedural laws or record management are often not desired. Technical solutions are out there and can be applied innovatively, providing governments really want transparency and accountability. ICTs even offer second-life solu-

tions for virtual embassies as a window to the world for those countries who cannot afford to be present in many partner countries, on the continent or elsewhere. Another example is the access of people to their own laws. That subject has been taken up by the African Innovation Foundation with their flagship programme on an e-library of African laws and governance. ICT solutions once well introduced should lead to lowering cost. That is not yet considered an incentive. So African countries are well at the end of the rankings in UN surveys of e- or m-applications.

Changes in public administration or the use of ICTs need finance and capacities. More innovation seems to be needed in convincing political leaders to opt for transparency, accountability and service delivery. Citizens in all countries know how to raise their voices through social media when they are not adequately listened too or where the barriers to participating in finding local solutions are kept artificially high.

Civic education in countries is basic and lastly a proof that governments have confidence in their peoples. The call for more democratization is heard in statements, but on a global level the essentials of inclusion of peoples are rather on a downwards trend. This development is risky as is the old concept of the winner-take-all elections. On the contrary: the winners of elections have to care for all of society and especially for minorities. How to do that best is another field where innovation is needed and highly desirable.

The media play an important role in any system and society and for innovation. The basic question, beside the freedom of the press, is how independent those media are and how to set rules so that they are not misused by wealthy politicians to keep or get their share. The diversity of opinions is important as well, as is the code of ethics for journalists to search for objectivity and truth, not blaming and shaming public figures without proven evidence. Here to, the social media will play an increasing role, often not feeling editorially responsible for what they do. There

is a big need of ethical rules for using social media, as there is for teaching and learning media competence.

5. Trust in politics and politicians

I once asked in Benin a traditional Chief how he is elected and whether he can be dismissed. Regarding the latter, he answered that the elderly do meet with him every Friday for a morning breakfast. If they did not appear anymore, this would mean that he is dismissed from his functions! It means voting, electing and dismissing "with the feet". What a difference to modern times where politicians not re-elected try to stay in power, disregarding the election results. Checks and balances in political systems and political life have to be addressed and greatly rethought to avoid the misuse of power and to reset or enhance trust in governments.

Trusting elected people, parliaments, parties, judiciary and public administration is key in determining whether citizens believe in chosen systems or they air their frustrations in street rallies or violent opposition. The degree of tolerance and mutual respect are indicators whether people follow their leaders. There is a saying I often heard in Africa: *Good leaders are good listeners and good followers* (because they have understood the way people are thinking). This is, in my experience, very true.

Are people always right? History has proven that this is not the case, but when a majority of people agree to a solution then it is carried by a majority and desired as such. Even if people, especially when led by populist politicians, do need a reflection from time to time to assess whether what they opted and voted for is the right thing for them, their children and for future generations.

6. The future Africa innovates

Africa has the capacity, the brains and knowledge to innovate its own future. There must be the will to do so and mechanisms to be reinvigorated to listen to each other, to believe in dialogue and diversity, to practise it and to overcome the past in their own ways.

There is no one-size-fits-all solution for 54 countries in Africa! But there is *room and space for creative solutions, for competing in better governance and for achieving a positive impact for change* where change is needed and wanted. There is always a question of the right time. Lasting solutions need well-orchestrated processes and a truly multi-stakeholder approach. Inclusion is key, as is the participation of well-informed citizens.

No solution lasts for ever. There are moments when we need to ask whether existing solutions in present contexts are still timely or whether there is need for change. *Common sense is a very African way to behave and to innovate for change.* It is still very widely in existence for those who want to see and experience it!

9

INNOVATION SOCIALE DANS LA MOBILISATION DES POPULATIONS RURALES : CAS DES BANQUES COMMUNAUTAIRES AU BENIN

Aurélien C. Atidegla

1. Introduction

Cet article part de la clarification des concepts et du rapprochement entre les notions de créativité et d'innovation sociales pour étudier deux cas pratiques qui ont été vécus dans le cadre du projet de Banques Communautaires mis en œuvre à partir de 1995 par le Groupe de Recherche et d'Action pour la Promotion de l'Agriculture et du Développement (GRAPAD) au Bénin.

Après la présentation et l'analyse de ces cas qui portent respectivement sur *une innovation dans les modes d'organisation pour offrir une caution solidaire efficace* et *l'utilisation de la pression sociale pour obliger les débiteurs indélicats à honorer leurs engagements*, l'article propose quelques repères pour promouvoir l'éthique dans les innovations sociales.

2. Créativité et innovation sociales : définition et processus

2.1 La créativité sociale

La créativité sociale et l'innovation sociale sont deux notions très proches l'une de l'autre qui se réfèrent à des processus sociaux dans lesquels plusieurs similarités peuvent être analysées.

Bien qu'il n'existe pas une définition consensuelle de la créativité, beaucoup d'auteurs s'accordent à reconnaître qu'il s'agit de la capacité d'un individu ou d'un groupe à imaginer ou construire et mettre en œuvre un concept neuf, un objet nouveau, ou à découvrir une solution originale à un problème.

En d'autres termes, c'est un processus psychologique ou psychosociologique par lequel un individu ou un groupe d'individus témoigne d'originalité dans la manière d'associer des choses, des idées, des situations et, par la publication du résultat concret de ce processus, change, modifie ou transforme la perception, l'usage ou la matérialité auprès d'un public donné[1]. Elle croise notamment la créativité individuelle avec la sérendipité[2], c'est-à-dire l'aptitude à utiliser des éléments trouvés alors qu'on cherchait autre chose.

Ainsi, la créativité d'un individu ou d'un groupe est sa capacité à imaginer et produire (dans des délais donnés), une grande quantité de solutions, d'idées ou de concepts permettant de réaliser de façon efficace puis efficiente et plus ou moins inattendue un effet ou une action donnée. La créativité s'évalue donc par les délais de réponse, la rapidité de production, la quantité de solutions, l'efficacité, puis l'efficience et l'originalité.

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[1] Cette définition est tirée de http://fr.wikipedia.org/wiki/Innovation (accès 12/08/14).

[2] La sérendipité est originellement le fait de réaliser une découverte scientifique ou une invention technique de façon inattendue, accidentelle, à la suite d'un concours de circonstances fortuit et très souvent dans le cadre d'une recherche concernant un autre sujet.

Le concept de créativité peut donc prendre trois sens distincts et complémentaires, tant dans le champ individuel que social :

- acte de créer quelque chose de nouveau ;
- capacité à trouver des solutions originales ;
- volonté de modifier ou de transformer le monde.

2.2 L'innovation sociale

Une innovation sociale[3] est une nouvelle idée, approche ou intervention, un nouveau service, un nouveau produit ou une nouvelle loi, un nouveau type d'organisation qui répond plus adéquatement et plus durablement que les solutions existantes à un besoin social bien défini, une solution qui a trouvé preneur au sein d'une institution, d'une organisation ou d'une communauté et qui produit un bénéfice mesurable pour la collectivité et non seulement pour certains individus. La portée d'une innovation sociale est transformatrice et systémique. *L'innovation sociale constitue, dans sa créativité inhérente, une rupture avec l'existant.*

L'innovation sociale repose donc sur la créativité sociale qu'elle utilise de manière optimale. *Mais dans une économie d'offre, où ce que nous créons ne correspond pas forcément à une demande explicite d'amélioration des conditions humaines d'existence, alors le pire comme le meilleur peuvent être envisagés.*

Ainsi, la socialisation de l'innovation ou de la créativité permet d'éviter d'envisager le pire et de réduire l'impertinence dans la quête du marché car, on s'intéressera de plus en plus à ce qui est pertinent, utile, à ce qui est bien et dans une large mesure, on investit le champ de l'éthique.

Aussi l'innovation sociale se distingue-t-elle par *quatre aspects*[4] :

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[3] Cette définition, inspirée par celles de Camil Bouchard, du CRISES, du Stanford Center for Social Innovation et de Young Foundation a été adoptée par le réseau québécois de l'innovation sociale (RQIS). RQIS: Favoriser L'émergence et La pérennisation des innovations sociales au Québec : Synthèse des travaux de la communauté d'intérêt sur l'innovation sociale, Québec 2011.

[4] Ibid.

1. *Émerge d'un désir de sortir des pratiques courantes*

Sortir des pratiques courantes ne signifie pas obligatoirement tout réinventer. Cela peut se concrétiser par :

- la modification d'une pratique déjà existante;
- l'application de connaissances provenant d'un autre milieu (ex.: transfert de résultats de recherche sur le terrain).

2. *Fait appel à la mobilisation d'une diversité de connaissances et de compétences*

L'exercice de la mobilisation des connaissances et des compétences s'effectue dans le but de multiplier les angles de vues d'une problématique par le regroupement et l'interaction d'acteurs provenant de divers secteurs et domaines d'intervention. Cet exercice est favorable à l'émergence de processus d'innovation sociale puisqu'il permet de construire de nouvelles connaissances qui amènent les individus à élargir leur cadre de réflexion habituel à l'égard de la problématique abordée.

3. *Implique une rétroaction*

La rétroaction signifie la collaboration avec des preneurs potentiels (pour le terme voir page suivante) durant l'expérimentation d'une nouvelle pratique. En effet, les preneurs de l'innovation sociale ne se contentent pas de recevoir et d'utiliser la nouveauté créée pour eux. Ils sont des acteurs à part entière de la mise en œuvre d'une nouvelle pratique (en particulier durant la phase pilote) puisqu'ils participent activement à son élaboration et à son évaluation afin d'assurer une juste adaptation de celle-ci aux besoins identifiés.

4. *Exige une appropriation*

La notion d'appropriation signifie que la nouveauté créée suscite un intérêt, une volonté d'utilisation de la part des preneurs (soit par son intégration dans leurs pratiques courantes, soit, les bénéficiaires, par son utilisation directe).

2.3 Quatre catégories d'acteurs dans l'innovation sociale

1. *Les porteurs* : Ils sont en quelque sorte des locomotives qui tirent un train. Ils sont à l'origine de l'innovation, du projet novateur. Seuls ou en groupe, ils jouent le rôle de créateurs, de promoteurs et de propulseurs. Ils partagent aussi certaines caractéristiques : leadership, créativité, volonté de se prendre en main. Ils sont en général des visionnaires et ils doivent être en mesure de prendre des risques souvent élevés.
2. *Les bailleurs de fonds :* Ils reconnaissent, valorisent et financent les processus d'innovation sociale.
3. *Les partenaires de soutien :* Leur rôle est de supporter des projets novateurs. En d'autres mots, ils ont comme fonction d'accompagner un projet ou encore de lui apporter une certaine crédibilité, de le diffuser, d'en faire la promotion. Les partenaires de soutien apportent de nouvelles idées, encouragent et soutiennent les porteurs de l'innovation sociale dans leur démarche. Ils peuvent aussi documenter une démarche novatrice ou encore participer au partage et à l'échange de connaissances.
4. *Les preneurs* : Le terme « preneurs » fait ici référence à deux types d'acteurs :
   - *Les utilisateurs* : des professionnels qui s'approprient une nouvelle façon de faire et la mettent en pratique dans leur organisation (agents de développement, intervenants, gestionnaires, décideurs, etc.).
   - *Les bénéficiaires* : les usagers ou les prestataires d'un nouveau service ou d'un nouveau produit mis au point pour eux.

Bien sûr, leur rôle premier est de bénéficier d'un nouveau service, d'utiliser une nouvelle approche, de s'approprier un lieu, une entreprise ou une nouvelle façon de faire. Mais plus encore, les preneurs de l'innovation sociale mettent en œuvre les pratiques innovantes, ils sont appelés à participer aux discussions, voire aux décisions, et ils sont en bonne position pour trouver, développer et ajuster de nouvelles façons de faire. Enfin, il serait même possible de croire que certains acteurs preneurs de

l'innovation sociale puissent être à la source d'un processus d'innovation sociale ; de facto, ne sont-ils pas en bonne position pour évaluer leurs propres besoins ?

En somme, les innovations sociales sont, dans la plupart des cas, le résultat d'une expérimentation sociale à la base de la société et c'est dans la mesure où elles sont un produit de la base, du peuple, qu'elles peuvent se diffuser au moins dans un contexte culturel homogène. Généralement ces innovations ne sont connues que par l'intermédiaire d'ONG ou de projets qui cherchent à les identifier pour les modéliser afin de les appliquer à des contextes divers. A titre d'exemple, on peut citer la mode des groupements, des conseils villageois de développement, des comités de gestion et de groupes de caution solidaire dont nous reprenons ci-après la description.

3. Le processus de l'innovation sociale : études de cas des banques communautaires promues par le GRAPAD au Bénin

3.1 Contexte

Dans le cadre des efforts de lutte contre la pauvreté, la nécessité du renforcement du pouvoir économique des femmes dans un contexte d'extrême pauvreté a amené le Groupe de Recherche et d'Action pour la Promotion de l'Agriculture et du Développement (GRAPAD) au Bénin à initier des programmes de microcrédit (épargne et crédit au niveau communautaire) au milieu des années 90.

L'approche qui a sous-tendu l'action repose essentiellement sur celle de la Grameen Bank, adaptée suivant la méthodologie FINCA (Foundation for International Community Assistance). Cette méthodologie repose sur sept principes fondamentaux qui sont :

- le ciblage des plus pauvres avec un accent sur les femmes ;
- le démarrage des activités avec de petits prêts pour développer la confiance et minimiser les risques de non-remboursement ;

- l'évolution du client en fonction de l'épargne qu'il réalise d'un cycle à l'autre ;
- l'autosuffisance financière du système ;
- l'autogestion des banques ;
- la création et l'accroissement de la solidarité au niveau des bénéficiaires ;
- la pérennisation du système.

Il faut souligner que cette action se déroule dans un contexte marqué par des expériences d'épargne et de crédit peu concluantes en raison des faibles taux de remboursement et des impacts peu significatifs dans les communautés rurales. Mais deux ans après les premières vagues de banques communautaires créées à Adjohoun dans le département de l'Ouémé, l'initiative a eu des résultats spectaculaires et a été étendue à d'autres communes du département ainsi que dans la région Nord du pays (et plus précisément à Boukombé) où la faible densité de population et les conditions de précarité étaient plus prononcées. Pour accroître les performances du système, quelques adaptations ont été faites. Elles portent surtout sur la procédure de mise en place des banques ainsi que les outils et supports de gestion.

3.2 Cas 1 : L'innovation dans les « tatouanta »

Description du cas : Les *tatouanta* sont des formes d'organisation traditionnelle d'entraide en milieu *ditammari* (nord-ouest du Bénin) regroupant trois à cinq femmes qui s'associent pour mener des activités communautaires et socioculturelles. Le principal ciment qui relie les membres de ce groupe est la confiance mutuelle et la solidarité. Prenant en compte ces valeurs endogènes qui sous-tendent les *tatouanta*, le processus de mise en place des banques communautaires dans cette région a reposé sur la mise en relation de six à dix *tatouanta*, ce qui permettait d'obtenir les effectifs de vingt à cinquante bénéficiaires par banque communautaire. Cette stratégie a permis de renforcer la caution solidaire, car les femmes pauvres ne peuvent pas offrir de garantie ou de

dépôt préalable sans lequel l'accès au crédit est impossible. Ainsi, les banques communautaires dans cette région ne sont rien d'autre que des *tatouanta* à une plus grande échelle, et l'innovation a porté sur la compréhension du mode d'organisation et de fonctionnement des *tatouanta* pour proposer un système d'épargne et de crédit adapté aux réalités socioculturelles des bénéficiaires.

Certaines femmes n'appartenant à aucun *tatouanta* n'ont cependant pas pu bénéficier du système, malgré leurs relations de parenté avec les membres des *tatouanta*, car les programmes d'information et de sensibilisation de la population mis en oeuvre par des principes et la rigueur qui caractérisent le système politique ont évités d'avoir des bénéficiaires qui à la base se font vraiment confiance.

Quelques caractéristiques du système : La banque communautaire octroie aux femmes, à travers les *tatouanta*, du crédit pour financer le petit commerce et autres activités de cycle court. Le montant du crédit varie entre 4 et 6 dollars pour un groupe de trois à cinq femmes, qui bénéficient par ailleurs de services non financiers (éducation nutritionnelle, alphabétisation et gestion des microentreprises).

Résultats obtenus : Transformation des *tatouanta* en groupes d'épargne et de crédit dont les membres, après cinq ans, ont amélioré leur capacité de gestion et se sont reliés au système bancaire formel.

3.3 Cas 2 : L'innovation dans les efforts de réduction des taux de défaillance par l'activation de la pression sociale

Description du cas : Comme dans tout système d'épargne et de crédit, des retards de remboursement des prêts ont commencé à être observés au niveau de quelques banques dans la commune d'Adjohoun. La mise en œuvre de la méthodologie sur laquelle repose le système et des mesures coercitives par l'équipe de la banque communautaire n'ont pas suffi pour amener les clients défaillants à se mettre en règle. Certains d'entre eux étant réputés gardiens de la tradition, ils ne pouvaient pas être inquiétés en raison du respect dû à leur statut. L'analyse de cette

situation et les réflexions menées entre les élus locaux de la banque communautaire et l'équipe technique du GRAPAD ont permis de développer le concept d'activateur de la pression sociale (APS) et de l'opérationnaliser à travers des stratégies basées sur l'identification et le renforcement des capacités des personnes répondant à des critères bien précis pour être retenues comme APS.

L'activation de la pression sociale repose en effet sur le recours aux moyens endogènes de pression sociale qui s'exerce sur une personne ayant commis un acte incestueux ou contraire aux normes socioculturelles en vigueur dans la communauté. Ainsi, dans la commune d'Adjohoun, tout comme dans la plupart des localités du département de l'Ouémé, la divinité « Zangbéto », reconnue comme gardien de la nuit et force occulte pouvant interpeller et mettre en demeure toute personne ayant commis un délit, a été choisie pour intervenir auprès des débiteurs indélicats. Quelques jeunes de la localité, reconnus pour leur crédibilité et leur compétence sociale, ont été formés pour jouer le rôle de déclencheur ou d'activateur de la pression sociale dans la plus grande discrétion.

C'est ainsi que le Zangbéto était sorti particulièrement tôt le matin, à un moment où personne ne s'y attendait, et a réussi à mobiliser les adeptes et une bonne partie de la population pour se diriger vers les emprunteurs ayant des retards de paiement et exiger d'eux qu'ils se mettent en règle dans la journée. Cette opération a produit des résultats impressionnants, ce qui a permis à la banque de rentrer dans ses fonds en collectant tous les arriérés.

Quelques caractéristiques du cas

- Des signes inquiétants de défaillance sont apparus dans la gestion du système : certains bénéficiaires utilisent leurs statuts, leur influence dans le milieu, pour déroger aux obligations de remboursement des prêts à bonne date. Ce sont des personnes qu'on n'approche pas facilement.

- L'innovation a porté sur la façon de mettre ces personnalités débitrices en demeure de rembourser leurs prêts dans les délais. Elle a consisté à mettre en œuvre un mécanisme d'activation de la pression sociale qui se crée et s'exerce sur les personnes quels que soient leurs statuts.
- Le moyen utilisé est le Zangbéto (une divinité bien respectée dans l'Ouémé et considérée comme le gardien) qui sort la nuit et de façon exceptionnelle le jour, pour menacer le débiteur insolvable.
- Pour des raisons socioculturelles, toute la population, sans distinction d'âge, de sexe et de statut, respecte le Zangbéto, mais personne ne peut savoir comment la plainte est portée à sa connaissance. Quelques jeunes se sont bien organisés pour collaborer avec l'équipe du projet pour réussir l'opération.

En somme, l'évolution connue dans la promotion des banques communautaires résulte pour une grande part de la recherche-action et des innovations sociales qui ont été introduites dans le système initial au fur et à mesure que des difficultés s'annoncent ou apparaissent. Le recours constant à ces innovations sociales a positivement impacté les résultats obtenus. En effet, à l'échelle nationale, le système qui avait commencé avec environ trois cents bénéficiaires et un encours de crédit de 10 000 000 FCFA en 1995, s'est institutionnalisé progressivement pour devenir l'Association des Caisses de Financement à la Base (ACFB) qui fait partie des premières institutions de microfinance reconnues au Bénin. Aujourd'hui, elle est agréée conformément à la nouvelle loi sur la microfinance et son encours de crédit[5] au 31 décembre 2013 est de 2 780 123 637 FCFA avec un dépôt de 2 426 941 876 CFA pour une clientèle de 72 595.

[5] Cet encours de crédit et le dépôt correspondent respectivement à USD 5 560 247 et USD 4 853 884.

4. Conclusion : quelques repères pour une innovation éthique

Dans chacun des deux cas, il y a eu innovation sociale dans une initiative de développement rural centrée sur la promotion des banques communautaires. On identifie aisément les quatre catégories d'acteurs définis plus haut, à savoir :

- Les porteurs : les *tatouanta* dans le premier cas, et l'équipe technique du GRAPAD en charge de la gestion technique et financière des banques communautaires dans le second cas ;
- Les bailleurs de fonds : la Direction du GRAPAD ainsi que les partenaires financiers qui appuient le projet de banques communautaires ;
- Les partenaires de soutien : il s'agit des notables, des personnes-ressources locales et des représentants d'autres organisations ;
- Les preneurs : il s'agit notamment des élus et des autres personnes membres (sociétaires ou clients) des banques communautaires qui sont bénéficiaires et/ou utilisateurs des innovations sociales.

Néanmoins, ces différents acteurs ne se sont pas donné les moyens d'analyser, de capitaliser et de récompenser ce genre d'innovations sociales qui ont joué un rôle crucial dans l'accompagnement efficace des banques communautaires. En effet, les innovations sociales peuvent être mises à contribution pour combattre les inégalités économiques et sociales et mettre en place un développement socioéconomique au service des individus et collectivités. Ce "pouvoir" qui caractérise les innovations sociales résulte du fait qu'elles mobilisent une diversité de connaissances et de compétences, impliquent une rétroaction et exigent une appropriation par les acteurs. Toute chose qui montre que par défaut, les innovations sociales sont empreintes d'éthique et peuvent partir du niveau local pour se généraliser à plus grande échelle et provoquer ainsi une véritable transformation sociale.

Le défi consiste alors à veiller à ce que la dimension éthique de l'innovation sociale puisse être prise en compte de manière systématique

et transversale. Les questionnements suivants permettent de porter une attention particulière à l'éthique de l'innovation sociale.

- Quels sont les facteurs de succès de l'innovation sociale et quel consensus les acteurs en présence réalisent-ils sur le choix de ces facteurs ainsi que leur mesure ?
- Quelles sont les conséquences négatives et positives de l'innovation sociale ? Est-elle pertinente ?
- Comment faire face aux conséquences négatives de l'innovation sociale ?
- Quelle valeur ajoutée l'éthique peut-elle apporter pour améliorer l'innovation sociale en mitigeant les risques et les conséquences négatives ?

Il importe donc de bien gérer les innovations sociales pour plus d'éthique, en mettant l'accent sur leur pertinence, l'engagement, le questionnement permanent, le dialogue multi-acteurs, l'appropriation, la socialisation, la reconnaissance et la récompense des parties prenantes.

10

YOUNG AFRICAN WOMEN INNOVATING TO SUCCEED

Kolouchè Angèle Biao Akokponhoue

1. Introduction

Young women in Africa have recently shown lots of innovation, in business or other sectors of life, to adjust to being a woman in Africa and a career woman. This essay will first show cases where women have shown innovation. We will then present a few challenges to the lasting and sustainability of these innovations. And finally we will suggest approaches to encouraging women in their innovation.

Innovation generally refers to renewing, changing or creating more effective processes, products or ways of doing things. Innovation is the application of better solutions, the translation of an idea or invention that meet new requirements, in-articulated needs, or existing market needs. This is accomplished through more effective products, processes, services, technologies, or ideas that are readily available to markets, governments and society. It can also be defined as "something original, new, and important in whatever field that breaks in to a market or society"[1] To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves delib-

[1] See *en.wikipedia.org/wiki/Innovation*

erate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. In business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers. In a social context, innovation helps create new methods for alliance creation, joint venturing, flexible work hours, and creation of buyers' purchasing power.[2]

2. Situations of women

2.1 Innovation is synonymous with risk-taking

Often when wanting to bring in a new product or change, there is an uncertainty of whether this product will be patronized by the population. But the conviction in the good this new innovation will bring, one takes the risk. Because women, have for a long time taken the back seat, often, we find that when discussing innovation in Africa, such discussions normally don't include young African voices, particularly that of women and girls. But their voice matters and without the inclusion of African women and girls in such discussions, whether of that involving technology, sustainable development, or innovation – change cannot happen. The added value of women in innovation is their contribution to the development of their area, to shifting the pre-conceived idea that women are not at the forefront. It will also have an impact on education, for as is usually said, educating a woman is to educate a nation because they always share their knowledge as widely as possible. Research conducted by the African Development Bank (AfDB) shows an increase ranging from 10 to 30 percent in the number of women-led enterprises over the last decade. African women and girls have a significant role to play in Africa's economic and innovative transformation. Since ever African women have shown innovation (for example: *Nkem Uwaje*, Managing

[2] See *businessdictionary.com/definition/innovation.html*

Director of FutureSoft Nigeria and winner of the 2012 Etisalat Nigeria Prize for Innovation; Entrepreneur and innovator, *Bilikiss Adebiyi-Abiola*, CEO at WeCyclers – a company determined to fix the urban waste management system and focused on giving low-income communities in developing countries a chance to capture value from waste and clean up their neighbourhoods through an incentive-based recycling programme[3]) but, may or have not really been noticed due to them not recognizing it and also because of cultural boundaries. Cases we can cite are:

2.2 African widows struggling to make a living and upbringing their children

Generally knowing the income status of an African widow, and considering the burden and challenges a lot of them face after the dismay of their husband, one can imagine how difficult it is to overcome this situation and ensure a better living for their children. But a lot of women do not let this situation beat them down. Many win this battle through innovative ways of making money. In Benin, there is a common breakfast meal porridge made with maize or sorghum dough, which is generally taken with sugar or peanuts or beans' cake and is usually sold by the road side. More and more women have taken this food to the doorstep of workers in public and private service/offices. They package it in a more portable and nicer container and deliver it to workers in their offices at a reasonable price. This has helped a bunch of women raise their income level and ensure financial security for their children.

2.3 Young African graduate women as innovators

The high rate of unemployment and the increasing number of university graduates every year have made a lot of young women look for more innovative ways of selling a product and giving a new face to add more value. An example of innovation is the following: Women decorat-

[3] *huffingtonpost.com/mary-olushoga/innovation-in-africa_b_3787651.html*

ing ready-made shoes, handbags and purses with African materials and match with colours of the dress worn, the ribbon they put on their hair, their bracelets etc. More and more of these shops offer services where either you go there to buy already designed items or you bring your own material and items and the manager works at covering them with material for you to have a really matching outfit from head to toe.

2.4 Women using information technologies to advertise themselves

More and more sites exist today that are designed to promote women in certain fields such as science, technology, engineering and mathematics (STEM)[4] Other examples are sites that of WIE, which stands for Women, Inspiration and Enterprise.[5]

2.5 Innovation in women-led organizations to attract and sustain members

The Young Women's Christian Association, YWCA of Benin is established in the country since 1999. She has run several projects in a few towns of Benin. But it came to a point where the organization was losing its activeness and there was a need to give more life and visibility to the activities of the organization. Myself being the President of YWCA Benin, together with other engaged members, then thought of offering programmes that concentrate more on the young adolescent girl and teenagers in overall. To use challenges as opportunities, we introduced a free English class programme for all students in the vicinity of the headquarters of YWCA Benin. English is the most spoken language in the world and has become an important asset for every intellectual in the world today, but a lot of francophone student struggle with it as a topic in class. This really helped to attract a whole lot of young people and also indirectly contributed to uplift the level of these young people in English language. We also use the channel to educate on rights, sexual reproduc-

[4] See further *thenuclei.com/why-women-stem/*
[5] See *https://www.wienetwork.org/*

tive health, to teach little income generating activities such as beads making, decoration, liquid soap making, pineapple and baobab juice making, etc. In recent years the YWCA has set young girls and women leadership and intergenerational leadership as a priority in her four-year strategic framework.[6] This has been done through several means: convening young women at international high level meetings, build their capacity in public speaking and advocacy then push them to the front to fight for their own causes among high level officials. Young women are also usually gathered to meet with their elders in the movement to discuss together the way forward. This programme has been tremendously helpful to the young people of Benin. They represented the association several times at the African Union, at Commission on the Status of Women (CSW), AIDS Conference, Conference on Sexual and Reproductive Health and Rights, Envisioning 2035 etc. The World YWCA has developed a lot of resources[7] and partnerships[8] to accompany the young women in the movement to achieve their potential in the battle to promote young women leadership. All of the African YWCAs have also been involved in this procedure and this explains the meetings held in Namibia, Tanzania, Cameroun, Ethiopia, etc.

3. Challenges: Sustainability and increase in income

Considering all the cases given above, we can notice that the young African woman is impacting the world through innovation by doing things somehow differently from usually to add value or make some little more money, but this innovation brought by these women has not been backed by legal means to make sure that the innovator benefits from his/her products without being copied by others and the profit being taken over by others. Several aspects cause this situation:

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[6] *worldywca.org/About-us/Strategic-Framework-2012-2015*

[7] *worldywca.org/Resources/YWCA-Publications* A lot of resources can be found here.

[8] See *worldywca.org/About-us/Our-partners.*

3.1 Challenge of patents

A patent is a set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention. An invention is a solution to a specific technological problem and is a product or a process. Patents are a form of intellectual property.

The procedure for granting patents, requirements placed on the patentee, and the extent of the exclusive rights vary widely between countries according to national laws and international agreements. Typically, however, a granted patent application must include one or more claims that define the invention. A patent may include many claims, each of which defines a specific property right. These claims must meet relevant patentability requirements, such as novelty and non-obviousness. The exclusive right granted to a patentee in most countries is the right to prevent others from making, using, selling, importing, or distributing a patented invention without permission.

Under the World Trade Organization (WTO) agreement on trade-related aspects of intellectual property rights, patents should be available in WTO member states for any invention, in all fields of technology, and the term of protection available should be a minimum of twenty years. Nevertheless, there are variations on what is patentable subject matter from country to country.[9]

Most African young women do not have any information on issues of protection of their invention in other to prevent others from copying it and take it over. So when someone else starts doing the same thing, they are not able to complain and claim their rights. This causes ideas to fade out from some people a few times after they have brought out their product. This brings about the need for anybody who desires to bring a new product out to get informed on what regulations protect him/her in other any issue with preparedness.

[9] *en.wikipedia.org/wiki/patent*

3.2 Challenge of financing

We are in a world where being is still full of challenges, especially for women. We are in a world where women suffer worse the consequences of certain flaws in society. Upon that, faced with our economic situations in our countries, women need to be supported when they come up with new measures to make a better living. One of the reasons why innovations do not last in Africa is that they are not accompanied by adequate financial measures.

3.3 Challenge of international statistics

Research conducted by the African Development Bank (AfDB) shows an increase ranging from 10 to 30 percent in the number of women-led enterprises over the last decade. In Uganda alone, women account for 40 percent of businesses (EIU, 2010). As the number of women entrepreneurs and innovators increase, their voices can no longer be ignored. African women and girls have a significant role to play in Africa's economic and innovative transformation.[10]

The executive summary of African Innovation Outlook 2010 is an example of a survey to measure the state of innovation in Africa.[11] The Global Innovation Index is also a tool to measure to evaluate innovation.[12]

4. Approaches to encouraging women in their innovation

4.1 Access to information and communication

This is the most empowering action we can take to support innovation. It opens doors for greater innovation in farming, education, health, financial services, and supporting entrepreneurs. Access for free to online libraries, such as the online library on ethics (including ethical innovation) of Globethics.net (*www.globethics.net*) where I work, and

[10] See *huffingtonpost.com/mary-olushoga/innovation-in-africa_b_3787651.html*
[11] See *nepad.org/system/files/NEPAD_AIO_Executive_Summary_web.pdf*
[12] See *globalinnovationindex.org/content.aspx?page=GII-Home*

the African Law Library (*www.africanlibrary.net*) of the African Innovation Foundation for legislation and court decisions, are key instruments for women's empowerment and innovation. Approaches to encouraging young women innovators can include:

4.2 Support by the government and financial institutions

The feasibility of an innovation should be assessed with the help of governments through existing funds and also with the help of financial institutions. In Benin, for example we have the national microfinance funds, but they are insufficient to satisfy all needs and certain criteria of grants do not permits young women to apply.

4.2 Non-governmental organizations can sensitize

Globethics.net is the global leading online library on ethics. Of the over 100,000 participants from over 200 countries registered in 2014, almost 50% are students and 38% are women. Access to information for free through such an online library is an innovative tool for the empowerment of women and girls. More and more young women from Africa are using this innovative way of acquiring knowledge.

5. Conclusion

As we think about innovation in Africa, let us listen to the voices of young innovators because their voice matters. Young Africans are the future of the continent and their efforts should be supported innovation needs an enabling environment.[13] This means creating hubs where innovators can meet, share ideas, and collaborate. Young people need a space where ideas can be incubated and where prototypes can be developed. To improve innovation in Africa, we need to invest more in education and girls' empowerment.

[13] See *huffingtonpost.com/mary-olushoga/innovation-in-africa_b_3787651.html*

11

LES PROPHETES DE L'ANCIEN TESTAMENT COMME INNOVATEURS ET TRANSFORMATEURS DE SOCIETE. LE CAS DU PROPHETE MICHEE

Ibiladè Nicodème Alagbada

1. Introduction

S'il est facile de stigmatiser le mal que fait l'autre, de critiquer, de moraliser et condamner les classes dirigeantes civiles et religieuses, politiques et administratives à cause du mal qu'ils commettent, c'est un art de les amener à prendre conscience de ce mal dans lequel elles vivent en vue d'une véritable conversion, surtout quand ce qui est mal devient bien et que ce qui est bien est appelé mal, ou comme le dit le prophète Amos, quand « le droit est changé en absinthe, et la justice est jetée à terre »[1]. Cette invective prophétique permet de constater que là où le législateur ou le juriste montre ses limites devant le détournement du droit, le prophète surgit et interpelle la société sur les déviances comportementales. Il est évident que le « droit ne surgit pas ex nihilo mais de la nécessité imposée par la réalité de pacifier les conflits et de suggérer une

[1] Amos 5:7.

voie d'harmonisation des intérêts. »[2] Cette évidence est connue des prophètes bibliques qui soutiennent avec force que le droit doit être ajusté, afin de pouvoir remédier à ses principales carences, qui sont parfois sources d'injustices.

A la suite des prophètes Amos et Esaïe surgit le prophète Michée pour stigmatiser, entre les VIII et VII siècles avant Jésus-Christ, la violation du droit et la perversion de la justice. Lorsque le droit et la justice sont bafoués par les garants, les responsables ou dirigeants, il est inévitable que la société bascule dans la déchéance et la destruction. La relecture des oracles de Michée nous permet de relever le rôle inaugurateur et critique des prophètes qui interrogent notre société contemporaine et de voir en ce prophète l'un des innovateurs et transformateurs de la société de son époque. Il ne fait aucun doute que la prédication de Michée n'a pas au premier chef un but éthique. Sa mission concerne les liens entre Dieu et son peuple ; cependant, son message prophétique ne peut ne pas être considéré comme un stimulant nécessaire à la communauté croyante pour repenser sa foi et sa présence dans la société et une contribution à la restauration des valeurs éthiques, morales et spirituelles, sans lesquelles aucun développement durable n'est possible ou envisageable.

C'est justement dans cette perspective de resituer des communautés croyantes, ou de la société en tant que telle, en contexte de violation du droit et de perversion de la justice face à l'avenir de certains pays s'impose. Ma communication est axée sur trois points : une brève présentation du prophète Michée, sa vocation et sa mission, et les valeurs qu'il prône comme moyens de faire la différence dans une société corrompue.

[2] P. GIBERT, *L'injustice, le prophète et le droit*. ***Revue Projet*** 6/ 2005 (n° 289), 76-81.

2. Michée, un prophète pour notre temps

2.1 Personne et nom de Michée

Le Livre de Michée doit être lu et relu comme le livre de la *théophanie* ou le livre de la *transmission du regard de Dieu sur son peuple, voire sur tous les êtres humains.* D'un genre classique, le livre de Michée apparaît aux yeux de certains chercheurs comme étant l'un *des plus agressifs, des plus contestataires, des plus sociaux et des plus prophétiques*.

Le nom Michée (Micah ou Micha) vient de l'hébreu Mikayehou (qui est semblable ou qui est comme Yhwh. Il a pour dérivé Mickaël (Michael), rendu en français par Michel (qui est Dieu ou qui est semblable à Dieu. Etymologiquement, Michée est à la fois l'abréviation d'une question (cf. Mi 7: 18) et une exclamation cultuelle (cf. Ps 113: 5 ; 35: 10 ; 89: 7-9 ; Es 44: 6s). En tant qu'exclamation, elle peut être prise pour une confession de foi. Dans ce cas, il nous semble possible de considérer Michée de Morécheth comme une construction de figure prophétique rappelant l'idéal de la mission prophétique dans un contexte de détournement de la nature et de la vocation divine du droit. Mais cette hypothèse n'est pas soutenable lorsque l'on se rend compte qu'en relation avec le règne d'Ezéchias, le prophète Jérémie mentionne le nom de Michée, le moréchethite. Il n'est donc pas un prophète fictif, bien que le livre qui porte son nom souffre d'un manque d'informations au sujet de sa biographie complète.

En dehors de Mi 1:1 et 3:8[3], aucun indice biographique ou autobiographique dans les textes bibliques ne permet aux exégètes ou aux historiens d'établir avec certitude l'identité complète ou la biographie de Michée, notamment sa situation familiale, matrimoniale, et la manière dont

[3] Selon F. Bailet, ces deux versets révèlent la valeur de la consécration de Michée et la profondeur de sa foi : F. BAILET, *Connaissez-vous les petits prophètes ?* Nice: La Rencontre, 1990.

il est devenu prophète[4]. Cependant, d'après les indications de Mi 1: 1 ; Es. 1: 1 et Os 1: 1; Am 1:1, Michée est un Judéen dont la ville natale au sud-ouest de Jérusalem (ou à l'ouest d'Hébron) est frontalière avec une ville philistine appelée Gath, distante de quelques kilomètres de Jérusalem. Il est contemporain d'Osée, Esaïe et Amos.

S'il n'y a pas eu de précision sur sa généalogie et sa profession, il se pourrait, avant sa vocation et sa mission prophétique, qu'il ne fût pas considéré comme une figure importante dans le royaume. Il est un homme de la campagne désignée sous le nom de Morécheth.

Dans les textes de l'Ancien Testament et surtout dans les livres des Juges, Rois et Chroniques, le nom de Michée est mentionné à plusieurs reprises. Et parmi les personnages bibliques que ce nom désigne, nous relevons une dizaine[5].

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[4] Le seul élément autobiographique disponible au sujet de ce prophète originaire de Morésheth est ce qu'il dit de lui-même par rapport aux prophètes qu'il accuse de cupidité et de mensonge. « *Mais moi, je suis rempli de force, de l'Esprit de Yhwh, de justice et de courage pour faire connaître à Jacob son crime, à Israël son péché.* » (cf. Mi 3 : 8) On pourrait aussi ajouter Mi 7 : 7 dont certains exégètes lui refusent l'authenticité : « pour *moi, je regarderai vers Yhwh, je mettrai mon espérance dans le Dieu de mon salut ; mon Dieu m'exaucera ».* Dans ces deux versets, Michée se présente comme un prophète dont l'autorité vient d'Yhwh, Dieu de son salut, en qui il a placé son espérance et de qui il attend son exaucement. Evidemment, le texte de Michée 3 : 8 dans sa profondeur, - nous y reviendrons - présente Michée comme étant un « prophète indépendant » qui se distingue de la corporation de ces « prophètes fonctionnaires » qui se font payer soit par les rois, soit par les riches qui cherchent à entendre ce qu'ils veulent que les prophètes leur annoncent. (cf. 1R 22 : 10-12). Michée se distingue aussi de ces prophètes qui « titubent sous l'effet de la boisson, ils sont victimes du vin, les boissons fortes les égarent, ils titubent en ayant les visions, ils trébuchent en rendant leurs sentences … » (cf. Es 28: 7-8) N'est-ce pas là une apologie de sa vocation et de sa mission ?

[5] 1R 22 : 8 - 28// 2 Ch. 18 : 6 - 27 : Michée fils de Yimla ; 1 ch. 8 : 34, 35 ; 9 : 40, 41 : fils de Mérib-Baal ; 1 Ch. 5 : 5 : Le rubénite ; 2 Ch. 34 : 20 // 2R 22 : 12 ; Père de Akbor (Abdon) ; 1 Ch. 23 : 20 ; 24 : 24 - 25 : Michée le Lévite de la famille de Qehath ; 2 Ch. 17 : l'un des chefs de Josaphat ; Jr 36 : 11 - 13 : fils de Guemaria ; Ne 12 : 41 : l'un des sacrificateurs qui sonna la trompette. Mi 1 : 1 : Prophète du livre de Michée.

2.2 Vocation et mission de Michée

Quand Michée est-il devenu prophète ? La réponse à cette question fait l'objet de deux hypothèses au moins. La troisième que l'on pourrait évoquer donne une réponse plus ou moins générale englobant les deux autres hypothèses. Néanmoins, les trois sont fondées sur des textes bibliques quant à ce qui concerne la période au cours de laquelle Michée a exercé son ministère prophétique (cf. Mi 1: 1, Jr. 26: 16-19).

Pour la première réponse que nous attribuons à la troisième hypothèse, Michée a prêché sous les règnes de *Yotam*, *d'Achaz* et *d'Ezéchias*. Nous trouvons cette réponse dans ce que nous pouvons considérer comme introduction générale au livre de Michée : *« Parole de Yhwh qui fut adressée à Michée de Morésheth, au temps de Yotam, d'Achaz et d'Ezéchias, rois de Juda. Ses visions sur Samarie et Jérusalem »* (Mi 1: 1). Cette introduction s'appuie certainement sur les textes de 2R 15 à 20.

Historiquement et sur le plan politique, cette précision concernant le ministère de Michée correspond aux événements du milieu du VIII siècle av. J.-C., marqué par la menace assyrienne, la prise de Samarie, le siège de Jérusalem, ainsi que l'époque du prophète Esaïe.

Mais la difficulté de déterminer la date exacte de ce ministère de Michée apparaît au niveau de la chronologie des rois cités par les textes bibliques. En effet, dans l'exercice du pouvoir royal, il y avait en Juda le système de la corégence. Le fils successeur, proclamé roi, règne en même temps que son père comme corégent jusqu'à la mort de ce dernier. Par exemple, Ezéchias devient roi, corégent avec Achaz, son père en 729 av. J.-C, pendant qu'Osée, roi d'Israël, était dans sa troisième année de règne.

Cette corégence a duré environ treize ou quatorze ans, car ce n'est qu'en 716 (ou 715) av. J.-C. qu'Ezéchias a commencé à régner, et ce, après la mort de son père (cf. 2R 18: 1, 3-8). Il en est de même pour le règne de Yotam. Proclamé roi de Judée, il régna en qualité de régent du vivant de son père, Ozias (ou Azaria) dont il est le successeur (cf. 2R 15,

5). Sa régence a commencé pendant que Jéroboam II était encore roi d'Israël (cf. 1Ch 5:17)[6].

Lorsqu'on sait, toute réserve gardée, qu'Ozias régna de 781 à 740 av. J.-C. et que Yotam son fils devint roi de Juda entre 740 et 736 av. J.-C., la première hypothèse, à partir de ces données chronologiques, situe le début du ministère de Michée entre 740 et 736 av. J.-C. Cette hypothèse semble avoir l'avis de P. Benoît qui situe ce ministère de Michée de 750 à 732 av. J.-C. Il affirme que l'hypothèse que Michée *aurait encore* « prophétisé sous le règne de Manassé nous paraît difficile à soutenir »[7]. Cette affirmation de P. Benoît tombe devant l'hypothèse qui place le ministère de Michée de 750 à 686 av. J.-C., marquant la fin du règne d'Ezéchias en 695 av. J.-C.[8]

Il y a cependant une certitude par rapport au témoignage de Jérémie concernant l'oracle de Michée 3: 9–12 contre le temple de Jérusalem. Cet oracle, selon Jérémie prononcé sous Ezéchias, « doit avoir amené ce prince à craindre Yahvé, à l'implorer et à le fléchir. » (Jr. 26, 18-19)[9]

Et, puisque Michée a proféré des menaces contre Samarie (Mi 1: 5s) qui fut prise en réalité par les Assyriens en 722 ou 721 av. J.-C., on admet que ces menaces auraient été proférées avant 722 av. J.-C.

Par conséquent, selon la deuxième hypothèse, il est probable que Michée ait prophétisé entre l'époque précédant la prise de Samarie et celle du règne d'Ezéchias soit sous les règnes d'Achaz (ou Ahaz) et d'Ezéchias (entre 736 av. J.-C., début du règne d'Achaz) et 687 av. J.-C. (la fin du règne d'Ezéchias).[10]

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[6] Nouveau Dictionnaire Biblique, *Yotam*. Emmaüs, 1992, 1352.
[7] Dr P. BENOIT, *Les douze petits prophètes, Guides pratiques pour l'Etude de la Bible*. Viennes sur Lausanne, Suisse: Emmaüs, 1937, 4.
[8] Nouveau Dictionnaire Biblique, *op.cit.*, 476.
[9] A. LODS, *Des prophètes à Jésus. Les prophètes d'Israël et les débuts du Judaïsme. Evolution de l'humanité*. Paris: La renaissance du livre, 1935, 127.
[10] Selon cette deuxième hypothèse, la vocation de Michée se situe dans la deuxième moitié du VIII[e] siècle av. J.-C. et principalement durant les règnes d'Achaz et de son fils Ezéchias. Cf. E. DHORME, *La Bible, Ancien Testament II*. Paris: Gallimard, 1959, CIII.

De toutes ces hypothèses, une chose demeure : Michée a prophétisé au milieu du VIII siècle av. J.-C, comme Esaïe. Il aurait connu le règne de Yotam à l'époque où Achaz, son fils successeur, était en corégence avec lui. Il ne fait aucun doute, selon le contenu de sa prédication, que non seulement son ministère date d'avant la prise de Samarie, mais aussi qu'il s'est étendu jusqu'à l'époque ou Ezéchias devint roi de Juda.

En admettant que la vocation de Michée peut être datée entre 740 et 680 avant Jésus-Christ, nous retenons aussi que sa mission a pour destinataire toute la maison d'Israël, et principalement les riches et les classes dirigeantes du royaume du Nord, dont la capitale est Samarie, et du royaume du Sud (Juda), ayant pour capitale Jérusalem (cf. Mi. 1: 5ss). Cette mission consiste à faire connaître à Jacob son crime et à Israël son péché[11]. Samarie et Jérusalem constituent la personnalisation ou l'incarnation du « crime de Jacob » et du « péché d'Israël ». Pour l'accomplissement de cette mission qui n'est pas du tout facile, Michée est conscient d'être rempli de force, de jugement (justice) et de vaillance par le souffle ou l'Esprit (rûah) de Yhwh (cf. Mi. 3: 8). Il est appelé à affronter la corruption de ces riches et classes dirigeantes (chefs, magistrats, prêtres et prophètes), qui ont pour mission de conduire le peuple et de l'éclairer par la crainte de la parole de Dieu et le respect du droit.

3. Des valeurs pour l'innovation et la transformation de la société

L'individualité, l'intégrité et la personnalité du prophète Michée apparaissent dans l'emploi des termes dont il s'est servi pour marquer son identité par rapport à ses contemporains. Il s'agit des valeurs théologiques et éthiques que représentent koaḥ, mišpâṭ et g^{h}eb^{h}ûrâh, dont il se

[11] Cf. Mi 3 : 8. Michée n'a pas manqué de présenter sous forme de reproches ou d'accusation ce qu'il appelle « Crime de Jacob » et « Péché d'Israël ». Il s'agit de l'idolâtrie Mi 1 : 7 ; 5 : 13 ; l'injustice, l'oppression, l'abus d'un pouvoir, la cupidité et la convoitise. (Mi 2, 1-2) ; l'avidité des princes, des prophètes et des prêtres (ou sacrificateurs) Cf. Mi 3 : 2-11. La magie et la sorcellerie (Mi 5 : 11), la malhonnêteté (Mi 6 : 10-12) ; la corruption et la criminalité généralisée (Mi 3 : 2-11 ; 7 : 2-4), la trahison (Mi 7 : 5-6).

dit être rempli par l'Esprit de Dieu. La question se pose de savoir dans quelle mesure la lutte actuelle, déclenchée dans la plupart des pays africains contre la corruption et les infractions assimilées, se retrouve dans la déclaration courageuse faite par Michée, porte-parole de Dieu dans une société pourrie où les autorités politiques, judiciaires et religieuses de son temps, se laissent acheter et corrompre, tordent le droit et la justice au lieu de s'en faire les dépositaires.

3.1 Koaḥ (Force)

Personnellement, Michée paraît être un homme seul avec son angoisse devant la menace qui pèse, mais l'Esprit du Seigneur le remplit de force, d'équité, et de courage. D'après A. Millot et A. Lelièvre, Mi 3: 8 est l'expression de *« l'assurance que Dieu n'abandonne pas son peuple et qu'il se garde des hommes fidèles pour transmettre quand même la vraie parole, celle qui fait mal, mais qui sauve »*[12]. Il faut peut-être ajouter que ces hommes fidèles, ou hommes de foi, sont des charismatiques qui ne s'appuient pas sur leurs propres forces, mais sur Yhwh de qui tout leur vient[13]. Le mot koaḥ, en dehors de son premier sens qu'est force ou puissance, a aussi le sens d'effort, capacité, faculté, vigueur, richesse, fortune, bien, pouvoir. Il apparaît 126 fois dans l'Ancien Testament et signifie la capacité d'agir comprise à la fois dans le sens physique et figuratif du terme[14]. Sur les 126 fois que ce mot koaḥ apparaît sous la forme d'un substantif dans l'AT, on le retrouve 20 fois dans Job, 12 fois dans Esaïe et Daniel, et 11 fois dans le livre des Psaumes.[15] Défini

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A. MAILLOT et A. LELIEVRE, *Actualité de Michée. Un grand « petit Prophète »*. Genève/ Paris: Labor et Fides, Librairie Protestante, 1976.

[13] R. VUILLEUMIER, « Michée », in: Commentaire de l'Ancien Testament XIb. Sous la direction de R. MARTIN-ACHARD, S. AMSLER, A. CAQUOT, E. JACOB, (al.), Paris: Delachaux et Niestlé, 1971, 41.

[14] J. N. OSWALT, *'x:ko* in: *Theological Wordbook of the Old Testament*., Vol. 1, Keyed to Strong's Concordance, Chicago: Moody Press, 1980, 436-437; cf. E. JENNI et C. WESTERMANN, *Theologisches Handbuch zum Alten Testament.* (THAT), 1, 823-824.

[15] *Op.cit.*, 436.

comme capacité d'agir ou comme pouvoir de persévérer en face d'opposition et de découragement (Is 40: 29, 31; 49: 4; Ps 31: 11)[16], k^{h}ôaḥ est attribué à Dieu qui le donne soit à son peuple, soit à un individu dans une situation de crise ou de combat (Cf. Ps 81: 1 ; 1Chr 29: 12).

Selon B. Renaud «kh s'emploie de préférence pour exprimer la force vitale et pourrait aussi bien se traduire par 'énergie, vigueur'. Il exprime ici le dynamisme de l'action prophétique ».[17]

Evidemment, à travers ses différents emplois dans l'AT, le terme koaḥ, signifie tantôt « énergie » dans le sens de la force physique ou force vitale (cf. Juges 6: 14 ; Juges 16: 30). Aussi parle-t-on de la vigueur, de la vitalité ou de la capacité de persévérer, d'endurer ou de supporter comme un roc ou une pierre dans le sens statique du terme (Job 6: 12).

Appliqué à Dieu, koaḥ connote l'omnipotence ou la Toute-Puissance à la fois libératrice et créatrice de Yhwh (Cf. Ex 32: 11; Nb 14: 13; Dt 4: 37; 2R 17: 36; Es 63: 1; Jr. 10: 12; 32: 17; 27: 5; 51: 15). Ainsi donc, la force dont Michée se dit être rempli et qui est attribuée au rûaḥ de Yhwh ou qui vient de l'Esprit ou du souffle de Yhwh, ne peut être qu'une force libératrice devant conduire Jacob à la confrontation à son crime, et Israël à son péché. Il s'agit ici effectivement de la force qui confère à Michée le pouvoir, la capacité et l'autorité de parler. Son message, contrairement à ses collègues prophètes incriminés, n'a pas l'argent pour motivation.

Le message de libération dont Michée est porteur et qui consiste à faire prendre conscience aux dirigeants de Juda de la gravité de leur crime et de leur péché l'oblige aussi à s'affirmer courageusement et vigoureusement. Mais alors, ce courage ou cette vaillance qui apparaît dans la déclaration de Michée comme troisième valeur de son charisme

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[16] J. L. MAYS, *op.cit*., 85.

[17] B. RENAUD, *La Formation du livre de Michée, Tradition et Actualisation*. Paris: Etudes Bibliques, J. Gabalda et Cie, (éd.), 1977, 136. Il cite aussi A.S. VAN DER WOUDE, art kh, THAT, 823-825.

ne fait-il pas double emploi avec k^{h}ôaḥ ? Cette question nous oblige à aborder le terme g^{he}b^{h}ûrâh avant celui de mišpâṭ.

3.2 G^{he}b^{h}ûrâh (courage, vaillance)

Rempli de g^{he}b^{h}ûrâh, Michée devient ainsi un homme non seulement fort, mais aussi puissant, vaillant et courageux. Par rapport aux prophètes qui transforment en monnaie d'échange la parole de Dieu, Michée se présente comme le messager de Dieu, mieux l'homme d'Yhwh qui l'emporte sur eux. C'est la g^{he}b^{h}ûrâh dont il est rempli qui le rend capable de faire maintenant ce que les autres prophètes auraient dû faire : dénoncer le crime et le péché de Jacob et d'Israël. Selon R. Vuilleumier le mot koaḥ ne fait pas double emploi avec g^{h}eb^{h}ûrâh. Le premier terme désigne la force en général, le second celle qui est nécessaire à un homme qui doit affronter un terrible combat.[18]

Effectivement dans Ez 39: 20; Joël 2: 7 et 4: 9, le terme g^{he}b^{h}ûrâh est mis en parallèle avec la guerre, mil^{e}hâmâh[19]. Dès lors pourrait-on comprendre que les oracles de Michée seraient une déclaration de guerre ou de combat ouvert contre les oppresseurs du peuple de Dieu et ses dirigeants corrompus ? Sans doute, la lutte contre la corruption est une bonne guerre, un véritable combat qui nécessite non seulement la force, mais aussi le courage, la vaillance. Elles sont aussi intéressantes, les deux nuances que présente l'emploi de ce terme g^{he}b^{h}ûrâh et que relève B. Renaud dans son analyse : « Outre le sens général de force, de puissance gbwrh présente deux nuances particulières : l'une que l'on pourrait rendre par « vaillance » provient du langage de la guerre et ferait du prophète un brave capable d'affronter des adversaires redoutables. L'ambiance de controverse acerbe où s'exprime Michée justifierait un tel emploi du mot. L'autre nuance particulièrement fréquente dans les

[18] R. VUILLEUMIER, *op.cit*., 41.
[19] *Ibid*., note 4.

éléments-cadres de l'histoire deutéronomiste connote les idées de capacité, de qualification, de valeur (Tüchtigkeit). »[20]

Animé ainsi de la force morale et physique venant de Dieu, Michée, devient pour ainsi dire la figure emblématique des hommes et des femmes qui, au nom de leur foi, acceptent vigoureusement et courageusement de nager à contre-courant dans un pays où la corruption est institutionnalisée et où la dépravation des mœurs et l'injustice ont atteint un degré intolérable et indescriptible. Malheureusement, ils ne sont pas légion, ces femmes et ces hommes, dont la plupart des pays africains, pris dans l'étau de la corruption, ont besoin. Ces 'fous de Dieu', forts et courageux, inspirés de Dieu et capables de jouer le rôle de la conscience du peuple en interpellant les classes dirigeantes face aux crimes et péchés qu'elles font subir aux peuples sans force et sans défense, réduits au silence - l'Afrique sinon le monde entier en a besoin aujourd'hui plus qu'hier.

Toutefois, k^{h}ôaḥ et g^{he}b^{h}ûrâh ne sauraient constituer des valeurs suffisantes dans le combat contre la corruption sans la connaissance du mišpâṭ, qui est aussi attribué à Dieu.

3.3 Mišpâṭ (droit, jugement, équité, justice)

Pour Michée, connaître le mišpâṭ ou cultiver le mišpâṭ, c'est être capable de pratiquer la justice sociale qui est le signe d'une véritable foi en Yhwh, celui de la vraie religion. D'après la loi deutéronomique, le mišpâṭ (droit, jugement ou justice rendue), ou la justice sociale, consiste à rechercher le bien en rendant un jugement juste et à prendre soin des pauvres ou des faibles parmi lesquels sont les veuves, les orphelins et les étrangers, constituant ainsi ce que l'on appelle « la trilogie prophétique ».

Le terme mišpâṭ apparaît 400 fois environ[21] dans la Bible hébraïque et est employé cinq fois dans le livre de Michée dont trois dans Mi 3:1;

[20] B.RENAUD, *op.cit*., 136. Il cite P. BIARD, *La puissance de Dieu*. Paris: Bloud And Gray, 1960, 19, et J. KÜHLEWEIN, art gbr, THATI, 399.

8, 9; 6:8; 7:9.) Sa racine verbale šâp^{h}aṭ (špṭ) qui signifie diriger, commander, gouverner, se référant ainsi à toutes les fonctions du gouvernement, apparaît au verset 3:11. Il est souvent rendu par jugement, droit et justice. D'après Ph. REYMOND, le mišpâṭ est d'un champ sémantique vaste et varié. Il en recense neuf différents sens dans la Bible hébraïque[22].

Dans ce panel de sens, il est à noter que le mišpâṭ ne se limite pas au seul domaine légal. C'est un terme mis à la fois en rapport avec la loi, la justice sociale et la politique. Il est l'un des dérivés de l'hébreu šâp^{h}aṭ qui signifiait à l'origine : juger, décider, rendre justice, faire droit condamner, punir, commander, gouverner. De son sens premier dérive le sens secondaire traduit par rendre justice lorsqu'il s'agit d'une tâche assignée aux dirigeants et aux chefs de la communauté. Dans ce cas, le mišpâṭ a le sens de l'action de jugement, le jugement rendu, le procès ou la sentence prononcée. Lorsqu'il est associé à la cour selon Dt 25:1, il prend le sens de procès judiciaire. Les sentences prononcées au cours de ce procès ont pour but de maintenir l'ordre et l'équilibre dans les relations entre les individus. Dans ce sens, la nécessité du mišpâṭ est justifiée par la présence de deux parties en conflit dont l'une est à punir parce qu'elle est coupable, et l'autre à disculper (réhabiliter dans ses droits) parce qu'elle est innocente. Introduit dans le vocabulaire gréco-romain, šâp^{h}aṭ prend un sens différent de celui de la Bible et il semble aujourd'hui que le sens secondaire ait pris le dessus et soit devenu le sens ordinaire en hébreu. D'où le sens de juger, décider d'un cas, porter une sentence, rendre justice à quelqu'un dans le sens de le secourir, de le tirer d'une situation d'exploitation, d'oppression ou d'injustice. A ce niveau, šâp^{h}aṭ a le sens de prendre une position rigoureuse en faveur de celui qui subit une oppression ou une violence. Aussi le mišpâṭ devient-

[21] R. D. CULVER, « שפט(šâph^{a}ṭ) » in: R. Harris, *Theological Wordbook of the Old Testament*. Vol.1,Chicago 1981, 948.
[22] Ph. REYMOND, *Dictionnaire d'Hébreu et d'Araméen Bibliques*. Paris: CERF/SBF, 2004, 233.

il un acte du droit objectif et impersonnel désignant une décision, une intervention d'un responsable visant à sauver, assister une personne en situation difficile et délicate au sein de la communauté. Ainsi compris, le mišpâṭ n'est pas un acte de justice rétributive. Michée l'emploie certainement dans le sens d'une justice positive en faveur du pauvre, du faible, de l'opprimé et de l'exploité (cf. Ex 22,20-23; Dt 4,17; 27, 19). En Mi 3:1c, nous avons la première accusation que Michée soulève contre les responsables et les magistrats d'Israël : *«N'est-ce pas à vous de connaître le mišpâṭ ?»* Dans ce verset, le mišpâṭ a le sens général du droit comme au verset 9. Michée fait constater à ces chefs du peuple, comment, dans leurs sentences et leurs arrêts, ils ignorent le mišpâṭ. Au verset 8, le mišpâṭ mis en parallèle synonymique avec g^{h}e^{b}hûrâh pour certainement signifier l'importance de la vaillance ou du courage dans la pratique de mišpâṭ. Mieux, l'association de ces deux valeurs peut signifier que sans la bravoure et le courage, le mišpâṭ peut être tordu, détourné et dévié.

A. Maillot et A. Lelièvre ont compris ici mišpâṭ dans le sens de la justice de Dieu et son rayonnement dans la vie quotidienne du peuple. Quant à R. Vuilleumier, mišpâṭ peut être compris tant dans le sens des exigences de justice et d'amour de Yhwh que dans le sens de la coutume et de ce qui se fait ou ne se fait point en Israël. De ces deux auteurs cités ci-dessus, nous pouvons retenir que le mišpâṭ est basé sur la relation qui lie Yhwh au peuple d'Israël ; cette relation n'est autre que l'alliance que Dieu a établie avec ce peuple et devant inspirer l'éthique sociale, économique, politique, culturelle et religieuse en son sein. Selon H. W. Wolff, « Suivant les circonstances du VIII siècle, on recommande aux Juges de façon générale mišpâṭ tsèdèq, c'est-à-dire une décision juridique équitable et ils sont mis en garde en particulier contre la corruption du droit (mišpâṭ) par favoritisme ou vénalité. Dans ce contexte il ne

faut pas tenir pour négligeable la marque suivante : 'les présents aveuglent les yeux des sages' (Dt 16: 19) »[23]

Bien que les autres peuples de l'ancien Orient aient dans leur vocabulaire la racine verbale d'où le mišpâṭ est dérivé, pour Israël, Yhwh, son Dieu, en est la source. Les prophètes tels que Amos, Osée, Esaïe du VIII siècle av. J.-C. et même le prophète Jérémie, n'ont pas manqué de rappeler à Israël l'origine et la portée divines du mišpâṭ et sa valeur dans les rapports sociaux, politiques, économiques et religieux.

Quand le mišpâṭ n'est pas observé ou pratiqué, la relation est rompue sur le plan cultuel entre l'adorateur et Dieu.

Les prophètes Amos et Esaïe n'ont pas manqué d'attirer l'attention du peuple sur la pertinence et les exigences du mišpâṭ dans le culte. Quand le droit, dont Dieu est garant et qui assure l'harmonie au sein de l'univers et dans la société, est transformé en poison, le culte offert à Dieu perd sa raison d'être et met Dieu mal à l'aise. Dieu rejette le culte que les dirigeants corrompus, ennemis du droit et de la justice lui offrent, il attend plutôt d'eux la justice et le droit. Ainsi, comme l'explique R. Martin-Achard, le prophète Amos, au chap. 5:21-24[24], « exprime le dégoût de Dieu devant les cérémonies que son peuple organise en son honneur et exige par contre qu'au sein d'Israël la justice déborde comme un fleuve intarissable et que le droit s'impose comme des eaux qui apportent la vie. »[25]

Ce dégoût de Dieu devant le culte que lui rend son peuple dans la violation du droit et la perversion de la justice est également exprimé par

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[23] H. W. WOLFF, *L'Enracinement spirituel d'Amos*. Genève/Paris: Labor et Fides/Librairie Protestante, 1974, 86.

[24] « [21]Je déteste, je méprise vos pèlerinages, je ne puis sentir vos rassemblements, [22]quand vous faites monter vers moi des holocaustes; et dans vos offrandes, rien qui me plaise; votre sacrifice de bêtes grasses, j'en détourne les yeux; [23]éloigne de moi le brouhaha de tes cantiques, le jeu de tes harpes, je ne peux pas l'entendre. [24]Mais que le droit jaillisse comme les eaux et la justice comme un torrent intarissable. »

[25] R. MARTIN ACHARD, *L'homme de Teqoa. Message et commentaire du livre d'Amos*. Aubonne: Moulin, 1990, 71.

le prophète Esaïe au chap. 1:10-17[26]. Mais Esaïe sera beaucoup plus explicite qu'Amos en donnant la précision au sujet de la pratique du droit et de la justice que Dieu attend de son peuple. Il s'agit de rendre heureux l'opprimé, de faire droit à l'orphelin et de plaider la cause de la veuve. En un mot, le véritable culte à rendre à Dieu est la recherche de la justice et le respect du droit qui favorise l'harmonie et l'équilibre social.

Le prophète Osée n'a pas manqué de rappeler aux prêtres, à la maison d'Israël et à la cour royale que le droit est leur affaire (Os 5,1). Evidemment, hammišpâṭ rendu par le droit ou la justice signifie aussi action de juger, jugement, la chose à juger, cause, procès, la sentence, arrêt, punition, justice, équité, ordonnance de justice, droit, loi, coutume, manière.

La sagesse biblique affirme que la pratique du droit et de la justice est plus agréable à Yhwh que les sacrifices (Pr 21: 3). Les prophètes tels que Amos et Esaïe ne manqueront pas aussi d'attirer l'attention du peuple d'Israël sur l'ultime possibilité du salut que représente la pratique de la justice sociale, plutôt que la multiplication des sacrifices religieux dans le crime (Cf. Am 5:21-24 et Es 1:10-20).

Evidemment, lorsque les cérémonies religieuses sont en contradiction avec le vécu quotidien, elles sont vides de sens.

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[26] « [1] Écoutez la parole du SEIGNEUR, grands de Sodome, prêtez l'oreille à l'instruction de notre Dieu, peuple de Gomorrhe. [11] Que me fait la multitude de vos sacrifices, dit le SEIGNEUR? Les holocaustes de béliers, la graisse des veaux, j'en suis rassasié. Le sang des taureaux, des agneaux et des boucs, je n'en veux plus. [12] Quand vous venez vous présenter devant moi, qui vous demande de fouler mes parvis? [13] Cessez d'apporter de vaines offrandes: la fumée, je l'ai en horreur! Néoménie, sabbat, convocation d'assemblée... je n'en puis plus des forfaits et des fêtes. [14] Vos néoménies et vos solennités, je les déteste, elles me sont un fardeau, je suis las de les supporter. [15] Quand vous étendez les mains, je me voile les yeux, vous avez beau multiplier les prières, je n'écoute pas: vos mains sont pleines de sang. [16] Lavez-vous, purifiez-vous. Ôtez de ma vue vos actions mauvaises, cessez de faire le mal. [17] Apprenez à faire le bien, recherchez la justice, mettez au pas l'exacteur, faites droit à l'orphelin, prenez la défense de la veuve. »

Pour le prophète Esaïe, l'exercice du droit est « Le lieu par excellence où un homme montre quelles sont ses dispositions envers Dieu. L'image d'une Jérusalem où les juges seront irréprochables et celle d'un oint qui sera le garant du droit sont au centre des oracles de ce prophète (Es. 1: 26; 11: 35s). Le droit divin est pour lui le plus grand des biens du salut. »[27]

Et comme le souligne une note de la Bible TOB : « Aux prophètes de mensonge qui délivrent des oracles à la mesure des pots-de-vin qu'ils reçoivent, Michée oppose la figure du prophète fidèle qui ne craint pas de proclamer la vérité fut-elle onéreuse et humiliante pour ses auditeurs et dangereuse pour lui. »[28]

4. Conclusion

Au moment où les armées assyriennes pillaient les campagnes de Juda, Michée, ce paysan, venu avec d'autres chercher refuge à Jérusalem, est indigné de voir la façon dont les habitants de la ville exploitent les réfugiés. Il dénonce avec violence toutes les formes d'oppression dont sont victimes les petits et les pauvres. Il annonce la ruine inévitable d'un peuple corrompu, enfermé dans de fausses sécurités religieuses : prophètes officiels et prêtres se montrent les véritables ennemis du peuple, et le culte n'est plus qu'une façon de se donner bonne conscience en se dispensant de la justice et de l'amour. Il se dit être rempli par le souffle de Dieu, de force, de courage (vaillance) et d'équité pour faire connaître à ses compatriotes leurs péchés et leurs crimes. Et s'il est admis de traduire dans Mi 3: 1d, 9c, mišpâṭ par « droit » ou « justice » ou encore par « jugement » et que sa forme verbale soit rendue par « juger » ou « gouverner » dans Mi 3: 11a, la compréhension du verset 8 exige que mišpâṭ soit traduit par « jugement » ou peut-être par « conscience » et même par « équité ». Dès lors, Michée apparaît comme « un messager de ju-

[27] R. VUILLEUMIER, *op.cit.*, 83. Cf. Es. 5: 7 et 28:17.
[28] La Bible (TOB), *op.cit.*, p. 1187, note p sur Mi 3: 8.

gement »[29] dont la force, la vaillance ou le courage, et la capacité de discernement que lui procure le mišpâṭ ne proviennent que de Yhwh ou de l'Esprit de Yhwh. Animé de ce souci du droit ou de la justice rendue au nom de Dieu libérateur et juge, Michée se retrouve ici dans la tradition des prophètes après Amos pour dénoncer avec force et au nom de l'alliance, les injustices de son temps, parmi lesquelles figure la grande corruption. Mieux, à travers sa disposition ou son ouverture au rûaḥ Yhwh, Michée s'inscrit ainsi dans la tradition des « prophètes qui sont les grands éducateurs de la conscience morale, se dressent comme les voix les plus persistantes pour crier les exigences de la justice sociale et la revendication absolue de la droiture dans les mœurs et dans les institutions. »[30]

Avec les prophètes bibliques, il est admis que l'innovation et la transformation de la société exigent que le droit soit respecté avec force et courage dans la crainte de Dieu, source de discernement. Et c'est à juste titre qu'on l'habitude de dire : Dis-moi en quel Dieu tu crois et je te dirai quel type d'homme tu es et quel type de société tu veux bâtir.

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[29] Ibid.

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12

MINDFUL INNOVATION PROGRAMME: A VIEW ON SUSTAINABLE GROWTH THROUGH MINDFULNESS

Anindo Bhattacharjee

Introduction[1]

In this article, we shall try to understand how mindfulness can play a significant role in creating sustainable innovations. We shall discuss how organizations like Google, P&G, Tatas, etc. have shown more resilience in this turbulent business environment when many established companies have failed. The reason for their sustainability we argue are mindful innovations where they have not just implemented the right kind of innovation that have changed the rules of the game but also have timed it right. Finally, we shall propose a mindful innovation programme (MIP) that will integrate concepts of mindfulness into the way innovations are managed in organizations. This will require a new narrative on mindfulness based on the perspective of the "circle of trinity", i.e., what is to be created, what is to be preserved and what is to be destroyed or eliminated, something termed creative destruction by Schumpeter in his economic theory of innovations.

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Sustainability has been one of the buzz words in business circles these days. We are witnessing a sudden upsurge of organizations concerned about maintaining their survival amidst growing turbulence in business environment.

It is in these times we are seeing quite a lot of global brands struggling for existence and many on the contrary emerging with resilience like never before, continuing their sustainable growth story. Companies like Google, Microsoft, Shell, P&G, Tatas, etc. are creating some of finest examples of sustainability and innovation in these turbulent times and maintaining their record of consistent growth as well as maintaining an image of trust among their stakeholders.

In this paper, we would try to understand how some of these companies have been able to sustain their growth amidst turbulent times by not just being more resilient but also being more mindful in their business practices. Moreover, we would also try to understand how mindfulness can lead to better timing of innovations, which can contribute towards sustainable growth even in an uncertain environment. Also, these organizations are not just aware of their social responsibilities but also more responsive towards addressing the social problems through implementing social innovations and encouraging social entrepreneurships on a local and rural level.

Finally, we propose a mindful innovation programme (MIP) to integrate concepts of mindfulness into the way innovations are managed in organizations. This would require a new narrative on mindfulness based on the perspective of the *circle of trinity*, i.e., what is to be created, what is to be preserved, and what is to be destroyed or eliminated, something that was termed creative destruction by Schumpeter in his economic theory of innovations.

What is mindfulness?

There are various definitions of mindfulness. According to psychologist Ellen Langer: "Mindfulness is not an easy concept to define but can be understood as the process of drawing novel distinctions. It does not matter whether what is noticed is important or trivial, as long as it is new to the viewer. Actively drawing these distinctions keeps us situated in the present."[2]. Moreover he said that "the process of drawing novel distinctions can lead to a number of diverse consequences, including (1) a greater sensitivity to one's environment, (2) more openness to new information, (3) the creation of new categories for structuring perception, and (4) enhanced awareness of multiple perspectives in problem solving. The subjective 'feel' of mindfulness is that of a heightened state of involvement and wakefulness or being in the present."[3]

There is a certain degree of consistency as well as incompleteness in the definitions of mindfulness as it emerges from psychological explanations as seen above and as it emerges from the various eastern mystic traditions. However, most of the time, in an organizational context, mindfulness is more or less explained in terms of its psychological context and there is general ignorance that prevails about the definitions emerging from mystical traditions. This ignorance of mindfulness rooted in mystical traditions of the east, somehow is not able to foster the much needed creativity that is the essence of the innovation culture that exists in any organization. The result is pretty apparent. In spite of increasing empirical evidence about positive correlation that exists between practicing mindful meditations and employee performance and creativity, somehow the general uncertainty of businesses still exists and the objective of fostering a culture of innovation in organizations remains a challenge and formidable task for the top management.

[2] Langer and Moldoveanu, 2000.
[3] Ibid.

What is even more interesting is that organizations still have a sceptic view towards mystical traditions and spiritual wisdom. I remember one of the professors in strategic management discussing with me about the recent movement towards integrating spirituality in management. He just cut my discussion and said, "Well it is interesting to listen all this but are those wisdom made in a context of business? Since they have not been made in the context of business, they are of no use." On the contrary, I keep discussing with lot of consultants, quite a few of them being extremely successful in their corporate career being strategists themselves. Sometimes they don't even discuss management. They trace the whole conception of innovation in practical terms and don't bother using "quantum physics" and wisdom from mystic traditions in boardrooms to arrive at mindful decisions about fostering innovation and creativity and bring the next revolution in the marketplace for customers through their products and processes.

Being mindful doesn't simply mean paying attention in the present moment or drawing distinctions, as some of the psychologists define. From a mystical point of view, it actually means being in the present with a higher state of consciousness, where we are conscious of the higher realities, where you start thinking out of the box and don't just think of a situation psychologically or strategically but in holistic terms. When you are aware of the fact that "this present instant will immediately become past and will be replaced by a future", you are aware of the *circle of trinity*, which states that what is created needs to be preserved and then a time will come when you need to destroy or transform it to create something new. The whole of innovation centres on this particular aspect.

Circle of trinity

The concept of trinity is universal in a sense that we get reflections about the existence of trinity in almost all faiths and religions. Whether

it is the "Trinity of Gods", i.e., Brahma Vishnu Mahesh or the Triquette in Christianity depicting three Goddesses viz., Maiden, Mother, Crone, the concept of trinity is central to the understanding of the whole of the universe that we witness in our life. In our context, we would rather prefer to avoid any religious connotation and would like to see this circle of trinity as an ever-unfolding, ever-existing, all-pervasive concept that basically depicts the eternal cycle of everything that we witness on a physical and mental level, i.e., at the context of space and time in this universe and it constitutes primarily three phases viz., creation, preservation and destruction. The universality of this concept is consistent with the existing scientific hypothesis of the big bang. The most remarkable innovation that we as humans witness is "living", "life", the human body and nature. The mother of all questions in science is "How this whole universe was created"? We speak of a big bang theory, which on a philosophical level basically means that first there was destruction and then there was creation. Another way of looking at it is the destruction was the first step towards creation and there were certain natural laws which always existed (like gravitation, energy, motion, etc.). So, this wonderful concept of trinity basically establishes the point that we are witnessing this whole world within the bounds of this cycle. Because it is a cycle, it's never-ending and ever-existing.

Shaiva and Shakta schools of thought that emerged from the Vedic schools further elaborated this concept of trinity by introducing an additional two phases that a person should witness in order to go beyond the mind and intellect and the physical level. They were obscuration and liberation of the non-physical or soul, the eternal energy. The one who transcends the limits of space and time, becomes the force behind all creation, creates the cause and effect relations but is independent itself from any causal forces.

Even in an organizational context, we are observing these trends and evolution if we trace back their historical origins. Every organization is

trying to become more and more open and liberate itself from the constraints that exist in the general operation and its working. In the journey, it is constantly creating various kinds of innovations, which can be manifestations of the creativity of its employees or efforts to sustain the organizations' growth in the short, medium and long-run. But ultimately, all great organizations have tried to transcend the barriers of space and time inherent in the socio-economic contexts and have become the guiding force behind their sustained growth and establishing best practices. Every organization has a deep rooted causation of space and time within their consciousness for profits and power. Unless that causation is eliminated, the real results won't come.[4]

When we talk of mindfulness, we talk of a state where we are conscious of this eternal circle of trinity and integrate this concept in almost all the contexts in which we make decisions. And the economic or organizational decisions are no exception to this.

From mindless innovations to mindful innovations

Innovation and inventions are two different things and many a time organizations tend to use these terms interchangeably. A company may have a hundred patented inventions but they won't simply mean financial success for the company. Invention is indeed a necessary but not a sufficient condition for innovation. Innovation takes place when that invention is finally converted into revenue and profits through consumer adoption and market acceptance.

Today's dynamic business environment raises the need to constantly be in tune with the changing needs of the consumers. Product life cycles are getting shorter with the rapid changes in customer needs as well technological development. Technological obsolescence has also grown significantly in the last few years. All these developments demand that

[4] Singh, 2011.

organizations need to constantly innovate and foster a culture of innovation.

However, most of the innovations that happen in the market are in response to the ever-changing market conditions. Sometimes if we try to change faster with market change, it could be disastrous because in the process we may make things more complex. It could be because our change is not in the context of market or simply because we are into a "mindless" pursuit.

Let us take the case of LEGO. LEGO has constantly maintained a culture of innovation and has remained a market leader for decades since it started in the building-block toys-space. The company's Founder, Ole Kirk Christiansen followed all the latest innovation mantras preached by the experts and was able to create an innovation culture at LEGO that would have been an envy to not just the existing players in the toy industry but considering innovation centred organizations in general. LEGO was able to identify uncontested markets and was able to bring many disruptive innovations. Yet LEGO nearly went bankrupt in 2003 and was virtually out-of- cash. According to Professor David Robertson of Wharton Business School and author of *Brick by Brick: How LEGO Reinvented Its Innovation System and Conquered the Toy Industry*:

> *"The LEGO story lies at the heart of why companies should not blindly follow the typical mantras of innovation. Management and evaluation must be at the heart of any innovation strategy, he noted, and although it is generally not good for a firm to remain stagnant, the reality is that unbridled innovation in the vein of LEGO may not be the answer, either."*[5]

So the question that may arise is how such mindless innovations can be avoided and companies can make meaningful innovations that will help them sustain themselves and achieve their growth expectations. The answer lies in fostering an innovation culture based on "mindfulness".

[5] Knowledge@Wharton, 2012.

Any innovation begins with creativity. Creativity in simple terms means creation of new ideas. Idea generation is the most important step. But most of the ideas generated in a mind never become innovations as discussed earlier. In most of management literature, the way towards idea generation is through brain storming where we discuss any idea that strikes our mind. We keep listing the ideas however crazy and weird they may see. We do not stop our thoughts. We maintain the flow of thoughts. However, creativity may lead to inventions but not innovations if we do take "mindful" decisions. We can decide to execute any idea that seems feasible or possible but that may not be the next big idea that may lead to a breakthrough innovation changing the whole context of competition in the market.

As we discussed earlier, mindfulness leads to an awakened state where people become aware of the universal truth that the any object undergoes the cycle of creation, preservation, and destruction as has been revealed for centuries by the mystics of the East. And any organization or economic entity is not an exception to this law. We see the manifestations of this circle of trinity in the economy as a whole and at the firm or industry in particular. Even products and processes have no exception. The circle of trinity can explain the timeless truth of existence of harmony (social, economic and environmental) for centuries and how this harmony was gradually disturbed due to growth in mindlessness in the various facets of business; whether it is in business activities, organizational behaviour, timing of innovations or managerial decision-making.

Mindfulness also constitutes the seventh step in the eight-fold path given by Gautama Buddha for attaining nirvana or liberation. When as an organization we practice mindfulness, we can then bring innovations that do not depend on our competitors or markets. We transcend that cause and effect relationship because we are the change that will set the parameters of competition and context of the market development.

As AG Lafley, Chairman of P&G puts it:

"Real innovation can change the context – the market space, the customer space, the social space – in which a business operates. Changing the game, then, means not being hamstrung by the deep-rooted conventional wisdom of your business and industry but rather seizing the initiative to imagine a new game or a new space and, this, shaping and controlling your destiny. Game-changing leaders search for and execute ideas that put the company on a long-term path to prosperity. For example, P&G created a new market by creating the disposable diapers; with iPod, Apple likewise created an entirely new market space and changed the game for those who were not its usual competitors, such as music, media, and consumer electronics companies. Both P&G and Apple refused to be hemmed in current conditions; instead they redefined them. In the process, they forced the competition to play their game. It did not end there. The iPod, with its sleek design, built new capabilities within Apple and was a harbinger of the iPhone, which is changing the game for the cell phone companies. There is an increasing advantage of being a game changer- and higher risk of trying to survive on the defensive. Innovation enables you to be on the offensive."[6]

Clearly, companies that are innovators change the rules of the game by transforming the "spaces" viz., market space, economic space, social space, etc. as well as transcend the effects of time by being on a long-term path. By being the cause themselves, they transcend the barriers of cause-and-effect. Such companies even transcend the fear of failure and convert them into opportunities to further understand the interdependence of the "spaces" and the "time" within the various contexts of the environment in which it operates.

[6] Lafley and Charan, 2008.

Mindful innovation basically means understanding these cause-and-effect relationships, transcending it and then becoming the cause for changing the rules of the game. However, mindful innovation is not the same as game-changing innovations. You may change the rules of the game by not being mindful of the long term consequences of the change and this may have disastrous results. Being "mindful" means being aware of the subtleties of the cause-and-effect relations that exist in our various macro and micro environments and being awake to the higher realities and consciousness. It is only through focusing on higher levels of consciousness that we can transcend the barriers of causation. Mindfulness is indeed the first step in this process.

Mindful innovations are a significant paradigm shift in our present way of defining innovations because of the following reasons –

i. We transcend the causal forces.
ii. We have a better idea of the causal relationships that exist in our various environments and "spaces". And so we are conscious of our environment and the interconnectedness that exists.
iii. By being aware and awake to all the changes occurring around us with time, we have a natural sense of timing the innovations exactly at the moment the existing business context is more conducive and willing to accept. In other words we have a better understanding of the evolution of space and time and their inter-dependencies.
iv. Finally, we create sustainability by accepting the eternal law of nature that follows the "circle of trinity" as has been explained by the Shaiva School of thought (in Indian philosophy).

Before we proceed further towards explaining how to implement mindful innovations in organizations, we need to first understand the inter-relationship between mindfulness, cause-and-effect forces of nature and the circle of trinity. A discussion of the "*Sāṃkhya*" school of Indian philosophy would be relevant in this regard towards understand-

ing the nature of causal relations that exist in our environment in which we live and operate.

Understanding the environment through the *Sāṃkhya philosophy of causation*

An explicit understanding of the theory of causation has been given by the *Sāṃkhya* school of thought and its concept of *Prakriti* (nature), which is the ultimate material principle. The basic question that arises in the theory of causation is: Does the effect pre-exist the material cause? *Sāṃkhya* says yes. All material effects are the modification (*parinama)* of *prakriti.* They pre-exist in the eternal bosom of *Prakriti* and simply come out of it at the time of creation and return to it at the time of dissolution.[7] Production means development or manifestation (evolution); destruction means envelopment or dissolution (involution).

Prakriti (nature) is the combination of the three *Gunas* viz. *Sattva, Rajas* and *Tamas* in equilibrium, which leads to experiences of pleasure, pain and indifference respectively. According to *Sāṃkhya* philosophy, whenever there is a disequilibrium in these three *Gunas*, and one overweighs the others, we see evolution happening.

Let us try to understand this concept in the context of business. In markets, we try to identify the needs of the customers. Needs are states of felt deprivation. A need basically arises whenever there is some disequilibrium. Otherwise we are absolutely content with what we have and do not have an intention for material consumption. The disequilibrium could be in our physical state or in the emotional state, which would lead to a state of deprivation or need. To satisfy these needs, businesses create products. Needs, wants and demands evolve over a period of time, which is reflected in the market trends. We try to understand the dynamics of our markets and the consumer needs; and in the process we

[7] Sharma,1997.

create new products or processes to deliver better value to our customers so as to preserve our customers.

Finally, the markets evolve, products evolve, consumers have more alternatives and so their tastes and preferences become more and more complex. The whole system of markets and consumer culture becomes more complex and may ultimately be in a state of disorder where the businesses are confused due to the heightened uncertainty. They try to cope up with this uncertainty by more creation. But markets are good in rejecting the old and inconvenient and accepting the new and revolutionary. So the old is destroyed and businesses that try to resist change by preserving the old through incremental innovations are ultimately thrown out of the market by the firms bringing disruptive innovation.

The role of innovation in sustaining the economic growth of an organization is unquestionable. It is absolutely indispensable. However, as has been argued before, identifying the right market opportunities, creating new market spaces, keeping track of the overall market innovation as a witness and fitting into the big picture requires that we are more mindful about the timing of the innovations. So innovating is not a mindless pursuit for profits but a mindful pursuit for gaining sustainability and resilience in business.

However, when we say *Prakriti*, it is not only about human nature or organizational nature or the nature of physical substance but it is also about our mother nature, which is an absolute material entity and the inevitable source for satisfying the needs of human kind. Whatever we consume ultimately originates in its crude, raw and natural form from the *Prakriti*.

Until the Rio 20 Summit, most of the world was focusing on mindless pursuit for profit paying least attention to the role of preserving our mother nature from the chemical wastes, plastic disposals and industrial emissions, etc. the results are pretty apparent. We are destroying the very sustainability of the absolute material entity that nourishes all life

and is the source of all business activities. We are witnessing so many environmental concerns these days like global warming, climate change, contaminated air, drying rivers, water pollution, etc. Over-creation to preserve material interests is ultimately threatening the destruction of the natural order in this world. We are already in a collision course where humans are destroying the very entity that is responsible for our living.

Mindfulness is not just a state of attention. It is a mind-set where we are awakened to the importance of the equilibrium that exists in the *Prakriti*, where we are in harmony with the natural laws and don't try to manipulate it. And the same rule even applies in the context of business innovations. When we say mindful innovation, what we mean is not to create new things mindlessly when the market has not yet adopted completely the earlier innovation. It means that when we create a new innovation the market should be ready to accept it. The new creation should be in the best interest of the consumer and not just of the marketer or producer. And above all it shouldn't threaten the sustainability of our mother nature. That's why today there is increasing dialogue for green businesses and responsible business practices. Every organization today needs to innovate and at the same time needs to take a triple-bottom line approach.[8]

Plastics are one of the most radical innovations of the 20th century. But ultimately our environment is facing the bad consequences of plastic consumption. So we are trying to bring in new materials of packing and are talking of recycling. Moreover, if we take the case of energy production today there is increasing dialogue on finding new innovations for renewable and non-conventional sources of energy. Hydro-electric power generation seems to be an attractive proposition but construction of dams threatens the natural habitat in the vicinity of the river-bodies and hence is against the overall sustainability. However, social entrepreneurs are coming up with mindful innovations that are more in tune with the

[8] Bhattacharjee, 2011.

natural laws and also trying to create harmony between the conflicting needs of economic growth, sustainability and social responsibility.

Let us take the case of Husk Power systems (HPS) in India. Shell Foundation is working with a team of talented entrepreneurs in Bihar, one of India's poorest states, to scale up a rural electrification company called Husk Power Systems (www.huskpowersystems.com). The company generates electricity through the gasification of rice husk – an abundant waste feedstock found throughout India's rice belt – and sells that electricity on a pay-as-you-go basis to local communities. Each of their 35-50kW power plants can provide access to reliable and affordable energy for 300-500 households (or 1500-2500 people). A single connection (one energy-efficient light bulb) costs HPS customers less than US$2 a month. This represents a dramatic cost reduction and quality improvement over kerosene lanterns or diesel generator sets. Many HPS customers have access to energy for the first time in their lives. Shell Foundation's support to date has allowed HPS to validate their business model and attract commercial financing. Today HPS operates over 60 power plants, electrifying nearly 300 villages and benefiting over 100,000 people. It is now scaling up rapidly with a goal of reaching over 2000 plants by 2014.

Moreover, Shell Foundation is working with companies like D.light Design that produces low cost, high quality solar lighting products that are now a revolution for rural consumers who are at the remotest corners of the country and have very limited access to electricity. Further, a company called Selco markets bespoke solar systems to rural consumers with no-grid access.

What is interesting to note in this regard is that Shell is also a company that is actively engaged in tapping the creativity and fostering an innovation climate based on mindfulness. Its Empower initiative is trying to enhance the mindfulness of the employees through breathing and

meditation exercise so that they are better able to tap their creative potentials and come up with game changing innovations.

If we look into all these examples above, we finally conclude that it is through mindfulness that we can create innovations that will not only change the rules of the game and create business sustainability but will also be more conscious about the existing environmental concerns and would promote green business practices that ultimately would maintain the planetary sustainability. Mindfulness would lead to innovations that would be in tune with the natural law, i.e., the eternal circle of trinity and would be consistent with the harmony that exists in our *Prakriti.*

Mindful innovation programmes – the new way forward

To achieve sustainability what we need is a mindful innovation programme. Mindful, because we need to transcend the effects of space and time and create new market-spaces or game changing innovations. Innovations alone will not suffice. They need to be conscious of the existing environmental concerns and should be consistent with responsible business practices like environment friendly process and promoting social innovations. Finally, we need to create a mindful innovation programme (MIP)[9] because it is only by having an implementation programme that the practice of mindfulness innovation can be embedded in to the entire culture of innovation that exists in an organization.

According to Bhattacharjee:

> *"An organization which does not cultivate a culture of innovation or at least knowledge-sharing, doesn't has proper compensation structure, and has the least scope for nurturing talents, in that organization people lack passion (Rajas Guna in Samkhya philosophy), tend to engage in corrupt and unethical practices (lack of Saatwic Guna) and tend to find reasons for inactivity.*

[9] See also *courseinmindfulness.com*.

Such organizations foster 'Tamas Guna' in their culture and hence are out-of-business."[10]

A mindful innovation programme should have the following elements:

1) A regular programme of mindfulness meditations – The first step towards creating an MIP is to start with the basics of mindfulness. Companies who are willing to nurture their culture of innovation should start with training employees to develop the habit of mindful meditations and breathing exercises that may constitute a brief 10-30 minutes session every day. And occasionally organizing workshops on mindfulness and innovation. Companies like Google, Shell, Aetna, General Mills, etc. are already running dedicated mindfulness and meditation for their employees based on eastern mystic traditions (Zen Buddhism, Indian Yoga, etc.) coupled with psychological studies. Shell's Mandar Apte is running a programme called Empower that uses breathing and meditation exercises to nurture and nourish the innovation culture of the company. Google's Ched-Meng Tang runs a dedicated programme on mindfulness called the Search Inside Yourself, which has been a pioneering programme focusing on training its employees, how to be more attentive and awake at work. Thousands of people have gone through it and the programme has been consistently rated very highly by the employees as they believe it had a significant impact on their productivity at work.
2) Embracing the circle of trinity to accept complexities and changes – The whole process of innovation should be seen as a manifestation of the eternal circle of trinity. If we look at the terminology of innovation, we come across terms like "creativity", "disruptive innovations", etc., which proves that creation and destruction are at the centre of any innovation process. If we look into the concept of value innovation, the four actions framework given by Kim & Mau-

[10] Bhattacharjee, 2011.

bourgne in their book "Blue Ocean Strategy" advice every business to ask four key questions:

i. *Which of the factors that the industry takes for granted should be eliminated?*
ii. *What factors should be reduced well below the industry's standard?*
iii. *Which factors should be raised well above the industry's standard?*
iv. *Which factors should be created that the industry has never offered?*[11]

Companies should continuously work for value innovations and try to identify factors where our customers are making a compromise and try to improve upon them. True innovations create more value for the customers by producing superior value propositions and simultaneously reduce the cost involved by reducing the factors an industry competes on.

3) From creativity to game-changing innovations – An idea that looks great in the lab and fails in the market is not an innovation; it is at best, a curiosity (Lafley & Charan, 2008). In today's era, innovations are also not enough. We need game-changing innovations as discussed earlier. One of the pre-requisites is to create an open innovation programme that will include not just customers or suppliers but should also engage the infinite creativity that today's youth possess. This can be done by running contests and competitions on innovations (business plan, new technologies, etc.) in engineering colleges and business schools. Today many reputed B-Schools and Technology centres are continuously organizing Business Plan competitions and Technology workshops. Why this is important? Because innovation has to be integrated in to the whole way in which business is

[11] Kim & Maubourgne, 2005.

conducted. Let us take the example of P&G. As P&G Chairman AG Lafley puts it:

"But the critical questions were, How could we put innovation at the centre of everything we do? How could we turn innovation into more consistent, more decisive, and more sustainable competitive advantage? And, how could we manage the risks associated with our all-in and full-on commitment to innovation? Could we identify and take advantage of the opportunities innovation might offer us?"[12]

According to *Lafley*, the answer lies in game changing innovations that would touch more consumers and improve more lives. But according to me, mindfulness is the answer to all the above questions. If we are not mindful, we will never ask the above questions. So, mindfulness will lead to game-changing innovations.

4) *Encouraging social innovations:* The biggest challenge that every company faces today is to concurrently address the issues of profit and social responsibility. But only social responsibility may not be desirable as companies view it more as an obligation than a service. Social innovations help companies to a certain extent shift this mindset as it simultaneously addresses social problems and provides innovative solutions to solve those problems and at the same time is also economically viable. Social innovations hold the key to sustainable and responsible business practices where businesses may have a profound social impact. Great companies like Tatas, Shell, Microsoft, etc. encourage social entrepreneurship and invest in social innovations.
5) (v) Implementing green business practices – Green businesses are essential and should be an integral part of the entire process of creating and delivering value to customers. According to Hart and Millstein:

[12] Lafley and Charan, 2008.

"Most of today's large corporations developed in an era of abundant raw materials, cheap energy and limitless sinks for waste disposal. Over the past few decades, however, it has become increasingly clear that many of the technologies developed during this period contribute to the destruction of the very ecological systems on which the economy depends: The spectres of toxic contamination, depleted forests and fisheries, eroded soils, loss of biodiversity, global climate change, burgeoning population growth, and a widening gap between rich and poor are explicit signals that managers must rethink the social and environmental impact of their technologies, products, and processes. Scenarios abound suggesting that in the absence of dramatic change, we are destined to devolve into a world of environmental degradation, social upheaval, and mass migration on an unimaginable scale."[13]

The above words clearly suggest that green business is the need of the hour. Innovations in processes so as to make businesses go green in the long run are absolutely essential for sustainable development and environmentally conscious business practices. It is not just important to create. We need to find out innovative ways to dispose or re-use the wastes.

6) *A new meaning for creative destruction:* The concept of creative destruction was given by Joseph Schumpeter in his book, *The Theory of Economic Development.* The concept was earlier given by Marx and Engels in their book *The Communist Manifesto* where they talked of enforced destruction of mass productive forces:

"Modern bourgeois society, with its relations of production, of exchange and of property, a society that has conjured up such gigantic means of production and of exchange, is like the sorcerer who is no longer able to control the powers of the nether

[13] Hart and Millstein, 1999.

world whom he has called up by his spells. [...] It is enough to mention the commercial crises that by their periodical return put the existence of the whole of bourgeois society on trial, each time more threateningly. In these crises, a great part not only of existing production, but also of previously created productive forces, are periodically destroyed. In these crises, there breaks out an epidemic that, in all earlier epochs, would have seemed an absurdity — the epidemic of over-production. Society suddenly finds itself put back into a state of momentary barbarism; it appears as if a famine, a universal war of devastation, had cut off the supply of every means of subsistence; industry and commerce seem to be destroyed; and why? Because there is too much civilisation, too much means of subsistence, too much industry, too much commerce. The productive forces at the disposal of society no longer tend to further the development of the conditions of bourgeois property; on the contrary, they have become too powerful for these conditions. […] And how does the bourgeoisie get over these crises? On the one hand by enforced destruction of a mass of productive forces; on the other, by the conquest of new markets, and by the more thorough exploitation of the old ones. That is to say, by paving the way for more extensive and more destructive crises, and by diminishing the means whereby crises are prevented."[14]

Schumpeter in his initial works emphasized the role of entrepreneurs in bringing new innovations that threaten the existence of the incumbent firms and their monopoly and explained how this process of creative destruction is absolutely essential for the existence of capitalism. In his later works, Schumpeter also said that incumbent firms can have a better chance of investing in innovations. But innovations are absolutely essential for the survival of any business. However, in

[14] Marx and Engels, 1848.

recent years we have seen instances where products have been deliberately taken off from the market in spite of their radical success. Established firms sometimes "destroy" highly successful products that have fared well in customer satisfaction for bringing in newer higher priced alternatives. Such instances are very common in the pharmacy sector where we are increasingly witnessing low-cost affordable medicines getting replaced or made to fail by the incumbent firms by influencing them to prescribe the costlier alternatives. These unethical practices do not speak well of the business practices. Creative destruction does not mean creatively destroying the old because it is more affordable but less profitable. Today, enormous business opportunities await in the emerging and less-developed economies, which have more than 60% of the world population. We need to rather focus on "bottom of the pyramid" and find a new narrative for creative destruction to promote value innovations. A mindfulness innovation programme would not be complete if it doesn't create a clear meaning of this concept. Destruction is inevitable. But it should not be artificially forced upon in the name of creative destruction.

Conclusion

Finally, we conclude that mindfulness is absolutely essential for nurturing the innovation culture of an organization and creating sustainable competitive advantages through game changing innovations. However, only mindful meditations are not enough. We need to create dedicated mindful innovation programmes in organizations where the definition of mindfulness would not just be based on psychological studies but also draw more from its true origin in Eastern mysticism (Zen Buddhism, Indian Yoga, etc.). I would like to quote Sri Sri Suddhaanandaji who runs a successful course in mindfulness across the globe for corporates and youth:

"Be the Witness to everything that is happening to you or you are doing or thinking. This is such a wonderful practice by which you can be awake to the reality that you are not the doer, not the thinker, not the boss. That nature in its own course keeps manifesting everything in its infinite creativity, but the Witness within only remains a Witness."

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13

TRADITION-INNOVATION IN SCIENCE AND RELIGION ENCOUNTER

Mathew Chandrankunnel

Abstract[1]

Science and religion are two forces that determine the destiny of human race in every age. While science has a history of innovation, religion keeps tradition and status quo; hence, the relationship of the two is marked with a conflict. The balancing of the two forces with their divergent approach to one and the same truth is, therefore, marred with complexity in all societies and ages. In order to critically analyse the two, one must, therefore, be conscious of the third law of motion that for every action there is an equal and opposite reaction be it to tradition or innovation. In view of safeguarding a sound and integrated future, there must be a vigorous and enlightening intellectual exchange of both tradition and innovation aimed at attaining truth. Let innovation tell the structure of the universe and religion set law of nature and all would be relevant to all ages and in all societies.

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1. Introduction

This essay describes the dynamics of the tradition-innovation in science and the interaction between science and religion and how these traditions are innovating and keeping the tradition. As the third law of Newton – every action has equal and opposite reaction – describes, every innovation is resisted severely by the tradition irrespective of science or religion. The history of science is filled with fights and in-fights to innovate and to keep the tradition. In this process, religion came up in conflict with science, at times, resisting innovation and trying to keep the tradition and the status quo. Once the power of innovation is achieved by science, science itself began keeping the tradition and blocking innovation. There is also conflicting notions about the descriptions of reality in science. It is a fascinating experience to examine the dynamics of how science keeps up the tradition and achieves innovation.

In general, science has a specific methodology developed by Galileo and many others constituting of observation, experiment, hypothesis, verification/falsification, law statement, and theory as a research programme. In terms of the domain, in the chain of being, there are the matter, vegetative life, animal life, human life, soul, and God where the methodology of science could only be applied to the animal life. However, the characteristics of science are cumulative, testable, universal, and applicable in terms of technology. The principles derived from the experiments are used to explain further phenomena and, hence, no outside principles are brought in to explain the phenomena. Religion, on the other hand, is not cumulative, not applicable, not testable, and brings in an external principle, God, to explain everything.

2. Tradition and innovation in India

In India, the balancing of the tradition and the innovation is very much complex. In the original Mohanjedaro-Harappa culture, science and technology were at the service of the society in constructing decent

cities with public paths, brick paved roads, well cleaned drains, with standard metric system of weights and measurements. Unfortunately, however, this tradition was discontinued and, in the Vedic and post-Vedic period, science was subjugated into the service of religion, making it totally submissive to the latter. Thus, the construction of Vedic altars, finding the exact time, the pronouncements of chants in the exact way, with exact grammar and tune, etc., became the important factors.

This tradition continued throughout the history, although India had great mathematicians and astronomers like Aryabhatta and Bhaskara, but always interpolated with religion. Thus, lots of mythical aspects were integrated into the Indian science, as interpreted by Alberuni, just as someone would mix up pearls with cow dung. Also the historic contributions of India in terms of the numerals and the concept of zero or śūnyata are not well accepted. However, the recent tendency is to glorify the past in its mythical framework so that the future could be moulded. Myth as history catapulting the future is promoting the tradition as the only possible innovation, which is indeed unacceptable. In the West, during the renaissance, there was a critical reflection on the culture and its philosophical foundations and, eventually, rejected certain notions that were repressive by which they released the human mind to freedom. Such a critical reflection is lacking in the Indian culture.

3. Tradition and innovation in Islam

The lamentable case of Prince Dara Shickoh is an example of how innovation is resisted by the traditionalists. Ambitious Aurangazeeb revolted against the integration of the Hindu and Islam religions by Dara Shikoh and fought against him, defeated and snatched the throne of the Mugual Empire from Shikoh killing him treacherously. If he would have been the emperor, things would have changed in India.

4. The Aristotelian, Ptolemaic, Aquinian Paradigms

A comprehensive model of the universe was given by the interaction between the Egyptian geometry, Babylonian astronomy and the Greek mathematics.[2] The sexadecimal system of the Babylonians, Euclidean geometry, the ancient Greek notions of the constitution of matter, Hipparchus' concentric circles, and Apollonius' mathematical tools were incorporated into a comprehensive philosophical vision by Aristotle giving rise to the first model of the universe centring on an unmoved earth encircled by the movements of the planets and the sun. It was a common-sense science, based on the natural human experience. Sun rises in the east and sets in the west while the things naturally come to rest and the universe was divided into the celestial and the terrestrial world. Since ether, the perfect substance constituted heavenly bodies, they moved in circular orbits and was incapable of change while change was possible only in the terrestrial world constituted by fire, air, water, and earth. The Aristotelian universe was, thus, a philosophically driven one, and it lacked predictability though it had coherence.

Ptolemy in the first century AD (around 150 AD) introduced geometrical tools such as eccentricity, epicycles, deferent, etc., and provided a geometrical and mathematical version of the Aristotelian universe. This innovation provided predictability of the future. The solar and the lunar eclipses could be predicted in advance using the Aristotelian-Ptolemaic model for the first time in history and celestial phenomena could be predicted with certain amount of accuracy. The Aristotelian-Ptolemaic model remained as the tradition for almost more than one and a half millenniums resisting any change with tooth and nail.

[2] Details of the Aristotelian-Ptolemaic-Aquinian synthesis of the model of the universe, its innovation by Copernicus and Galileo, and their condemnation and rehabilitation by the Church can be found in Mathew Chandrankunnel, *Ascend to Truth: The Physics, Philosophy and Religion of Galileo* (Thiruvanathapuram: CCRI**,** 2011).

This Aristotelian-Ptolemaic cosmology was integrated into the Christian faith through the theologization of the Aristotelian philosophy by Aquinas. The unmoved mover, the uncaused cause of Aristotle was interpreted as the God of the Christian faith. Initially, there was resistance against the Aquinian theology and he was condemned twice by the local bishops. As the general acceptance of the Aquinian theologization of the Aristotelian cosmosophy gradually took place, the common sense cosmology of Aristotle-Ptolemy cosmology and the biblical cosmology were identified and, together, it became a matter of faith through the Church proclamations. Every professor in the seminary was instructed to follow Aristotle and any deviance was punished. As an example, the instructions given by the Jesuit General Aquaviva asked the professors to teach only the Aristotelian philosophy.

5. Replacement by Copernican Heliocentric Model

The Islamic astronomers in the medieval period observed discrepancies with the Ptolemaic model and they suggested innovation. Basing on these observations and the problem of the shifting of the calendar Copernicus challenged the existing Aristotelian paradigm and came up with a comprehensive innovative sun-centred model through his book *De Revolutionibus Orbium Celestium*. This new idea was propagated among the intellectual circles but remained as secretive as possible because of its innovative power.

Almost 60 years after the publication of the book, Galileo took up interest in the Copernican model and was convinced of its truth validity through his investigations with the telescope. The satellites of the Jupiter, phases of the Venus, hills and valleys in the moon, sunspots all provided Galileo convincing proofs for the heliocentric universe and he vehemently propagated it through the books, lectures, and private letters and conversations all of which fired the imagination of the people.

The prayer of Joshua to Yahweh to stop the sun and the moon, in the Book of Joshua Chapter 10:12, came in direct conflict with the heliocentric system and many argued against Galileo and the Copernican system as a heresy and all the mathematicians were proclaimed as diabolical in spirit. The defence of heliocentric universe was considered by many, especially by the Aristotelians and the Dominican priests, as heresy and they reported the matter to Roman Inquisition. Galileo was warned in 1616 by Cardinal Bellarmine under the instruction of Pope Paul V not to publish, teach, and lecture on the heliocentric system as he was teaching against the Bible, the holy faith, and against the Council of Trent. Galileo, with much pain, succumbed to the instruction and diverted his interest from astronomy to mechanics and dynamics.

6. Rejection of the innovation by the tradition

However, an opportunity arose when Galileo's friend Maffeo Cardinal Barberini was elected as Pope Urban VIII. Galileo visited the pope and received the permission to publish a book on the Copernican and the Aristotelian system. He was given permission to write the Copernican system on condition that it should be presented as a hypothetical one. Galileo strictly adhered to this admonition by using the style of a dialogue among three interlocutors, namely, one representing Galileo, another Copernicus, and the third, Aristotle, represented by one of the commentators of Aristotle, called Simplicius. However, when the book was published there were complaints that Galileo caricatured Pope, wrote heresy, and ultimately the book was withdrawn, and Galileo had to undergo a process where he was proclaimed guilty and given life imprisonment by the inquisition. Galileo could not digest to this life imprisonment and posterity proclaimed him as a martyr for science and became a symbol of the unwarranted oppression by the authoritarian forces against intellectual freedom.

So the condemnation of Galileo is an example of how the tradition fought with tooth and nail in order to keep the status quo and eliminate any innovation. As a result of the punishment inflicted upon Galileo, many intellectuals like Descartes withdrew their ideas about a heliocentric universe and the Church is ever after portrayed against innovation and science. The drama 'Galileo' by the world famous dramatist Berthold Brecht narrates the story of how the institutional authority suppresses intellectual freedom and how the Church is driven by very old conservative cardinals. It is indeed a black mark in the history of the Church and this blemish was eradicated by Pope John Paul II, in 1992, through his proclamation of Galileo as a model believer and scientist who was in search of the truth.

The renaissance was indeed a golden opportunity for the western culture to reflect about its own traditions and to innovate and make progress. The predominant medieval paradigm of God Talk and the salvation of soul were replaced by the study of nature and the development of experimental methods in understanding the patters of nature and describing them in terms of mathematics was initiated by Galileo and others paving the way for the development of science in the West.

7. Condemnation of Teilhard de Chardin

Another similar episode of condemnation and rehabilitation is unravelled in the case of Teilhard de Chardin, a Jesuit palaeontologist, theologian, and philosopher. *The Origin of Species* (1860) by Charles Darwin emphasized the evolution of life in the world and interpreted the diversity due to natural adaptation and the instinct for the survival of the fittest. The evolutionary theory was anathema to the Christian faith and de Chardin tried to integrate it with the faith and, in return, received banishment from his own country and a severe injunction to lecture and publish. However, during Vatican II, de Chardin was exonerated and his proponents like Henri de Lubac were promoted Cardinals in recognition

of the contributions of de Chardin. Here also we find how the innovation in science is resisted by the Church initially and how it has gradually absorbed and accepted the new theories. Just like the second law of motion, it looks like initially any innovation is resisted severely by tradition and accepted gradually as more evidences are available.

In the interaction with science, the Church resisted twice; first, in the case of the physical theory of Copernicus and, second, in the case of life sciences, namely, with the evolutionary theory. There is a probable third chance of conflict when a theory evolves with the brain-mind analysis, and I am sure the Church would be cautious in examining when such a theory would be plausible.

8. Tradition-innovation in science

The dynamics of the tradition-innovation in science itself are not entirely different from the conflicts between science and religion. A few instances from the physical sciences will show how the tradition resists innovation.

8.1 Classical physics and relativity

Since the authority of Newton was very much influential, in his life time, light as particle proposed by him was prevalent. After the death of Newton, the wave concept gradually took over. Everybody was preoccupied with the discovery of the medium of light and several instruments were created. Even though a negative result was received, the scientists were so blind that they predicted that it was impossible to discover the ether medium and proposed the contraction of the body in the direction of propagation. However, the ingenuity of Albert Einstein was necessary to propose that light needs no medium and it moved in empty space. Einstein also denied the simultaneity of events due to the limit of the speed of light and combined space and time into space-time proposing the relativity of space-time. Matter curls up space-time and space-

time moves matter. Unfortunately, though the theory of relativity was proved in 1919, by Arthur Eddington, many German scientists considered the theory of relativity as Jewish science and they resisted the theory.

8.2 Classical mechanics to quantum mechanics

In the beginning of the twentieth century, Lord Kelvin said that classical physics could explain everything and there were only two clouds, namely, blackbody radiation and the detection of the ether. However, these two later paved the way for two major divisions in physics, namely, the microscopic description of the universe by quantum mechanics and the macroscopic description of the universe by the theory of relativity.

In 1900, Max Planck introduced the concept of quantum in explaining radiation and he was convinced that it could be explained in terms of the classical mechanics.[3] However, Einstein proposed that the concept of quanta could not be explained in terms of the classical physics and that there would be the necessity of a new branch of physics with new philosophical foundations in order to explain them. Einstein's idea was resisted by many stalwarts of the day, like Max Planck, who considered that Einstein was crazy. But later when quantum mechanics came into existence, Einstein himself could not agree with the quantum physicists and joined with the traditionalists in resisting the new theory with sharp criticisms.

8.3 Quantum schism

Traditional scientists, like Max Planck, Einstein, Schrödinger, etc., could not accept the Copenhagen interpretation of quantum mechanics and resisted it tooth and nail. The Solvay conferences held in Brussels,

[3]The details of the quantum schism can be found in Mathew Chandrankunnel, *The Philosophy of Quantum Mechanics* (New Delhi: Global Vision Publishers, 2008).

especially the one held in 1911, became a debate between the traditionalists and innovators. They grouped together and fought to show that the newly evolved quantum mechanics was incomplete and wrong. The traditionalists showed that the new concepts in quantum mechanics were absolutely incongruent with the classical concepts such as objectivity, predictability, and certainty.

In classical mechanics and the theory of relativity, which is the refinement of the classical physics, there is a detached observability. The observer can be detached from the observation and can have an objective observation. However, in quantum mechanics, the observer becomes part of the observation and, thus, the observer is also observed. As highlighted by Schrödinger through his cat experiment, the observer is deciding the fate of the cat and there could also be millions of possibilities between a dead cat and a cat alive, which is classically impossible. Also quantum mechanics could not predict with certainty but only with probability in determining the fate of a system. Another problem was the lack of precision in measurement. With regard to certain variables, when measured together, there is an impossibility of precise measurement given by the uncertainty relations. Also the reality is observable when there is a measurement and it is either particle or wave, lacking a precise determination of the reality. These two realities together exhaust the description of the physical reality and the emanation depends upon the experimental set up. This dilemma was expressed by Einstein as 'God never plays dice." Thus, the innovators proposed that nature is indeterminate and the traditionalists held that nature is determinate and the war still goes on whether nature is really determinate or indeterminate or the theory is indeterminate?

Again, the funny aspect is that even these innovators later became traditionalists when newcomers came up with new interpretations of quantum mechanics. Heisenberg, Max Born, and von Neumann proposed a mathematical theorem substantiating that there could not be any

other interpretation than the Copenhagen interpretation, which was disclaimed by scientists like David Bohm. He came up with a new interpretation and his ideas were rejected by the mainstream quantum physicists without looking into the merit of it, simply by employing the authority of Bohr. Bohr said that it is wrong and most of the scientists accepted it on face value. So, in accepting innovation there were politics, polytricks, and lobbying. However, one cannot relativize quantum and quantize relativity, showing the inherent problems of physics today.

8.4 Other Instances

The history of science is fully ridden with traditionalists rejecting innovative ideas. Ludwig Boltzmann, by the end of the nineteenth century proposed the existence of atoms and it was vehemently rejected by Ernest Mach who was a stalwart of science and many gave credence to his ideas and, thus, rejected the innovative ideas of Boltzmann. In despair, Boltzmann committed suicide in 1906. Arthur Eddington, in the 1930s, rejected the ideas of the young S. Chandrasekhar on the theory of black holes and only in 1980 his ideas were accepted and he received Nobel Prize. The matter-waves idea of de Broglie was rejected by Wien and later it was accepted by the mainstream scientists. Such numerous examples could be found not only in physics, but also in all other branches of science.

9. Tradition-innovation in biological sciences

The resistance to innovation is also found rampantly in the biological sciences. In the beginning of modernity, operating on the cadaver was punishable and innovators like Da Vinci and Michael Angelo had to steal dead bodies from the cemeteries and to operate in order to study the physical anatomy and the functioning of the various systems of the body. Now, it has come to such an extent that people donate organs and also organs harvested from cadavers are transplanted into the live bod-

ies. Kidney, liver, and heart transplantations are common and blood transfusion is indeed very common.

In the new developments of biotechnology, there are restrictions and resistances. Cloning, transfusion of species, etc., are at present resisted.[4] Also like blood banks, ova and sperm banks are common, and in-vitro fertilization and surrogate motherhood are becoming style even in India. Even shared parenthood, namely, the parts of ovum and sperm from different partners could be cut and pasted in order to produce a designed baby, is also in the offing. Shopping for prospective babies with fabricated characteristics is becoming possible and any amount of resistance seems to be futile. Engineering life, biomedical engineering, stem cell research, and eliminating life in the beginning by abortion and at the end by euthanasia have already become popular among the new generations. Also the interpolation of nano-instruments into the body and the interaction with the environment as cyborgs will definitely become the style of the future and the ethical implications of such innovations would be definitely alarming.

10. Conclusion

It is obvious that science does not behave differently from any other discipline in accommodating innovation. Any innovation is resisted severely by tradition and traditionalists, and it is indeed a general phenomenon. So, what is this innovation? According to Thomas Kuhn, a philosopher of science, it is like a paradigm shift. The tradition would look at the reality as rabbit and the innovators would look at the reality as duck. Who is right and who is wrong in this endeavour? What are the criteria in demarcating them? Sociology, anthropology, and many other subjective factors play a conspicuous role in prioritizing them and demarcating them rather than rationality alone!

[4]See Mathew Chandrankunnel, *The Confluence of Oceans: Science and Religion in Dialogue*, 2011.

It is, therefore, important to discover what should be the dynamics of balancing tradition and innovation; there is the third law of motion that for every action there is an equal and opposite reaction. Likewise, any innovation would be strongly objected; it is natural. Science provides us with an example as to how to incorporate innovation. There is a special group of particles called solytons. Among them, there are three characteristics: a number of solytons would move forward by themselves; some, once initiated, would move forward; the third group would be sluggish and resist any change. The front-running solytons would pull and push the sluggish ones and all the group of solytons would move forward. Social change or balancing tradition and innovation is almost the same. Inertial forces would resist any change or reform and it is the visionaries and the leaders like solytons who would push forward the others towards progress. Jesus, Buddha, and Gandhi are like these solytons; they transformed the societies they lived in and gave a strategy for balancing tradition and innovation.

Tradition is necessary, and it is our rootedness and if we forget the history, we are condemned to repeat it and, hence, innovation is necessary. Both in the West and the East, we have committed errors; the West rejected its past and rootedness and is at present driven by the market forces. In the East, the past is glorified and exhorted to influence and mould the future in terms of the past. So, a critical reflection is necessary and, thus, by combining the modalities of the East and the West and by giving credence to the tradition and innovation, humanity can grow holistically. As we have discussed about this important concept of tradition-innovation, what should be the net result? We need to develop a strategy to balance tradition and innovation like the centripetal and centrifugal forces to keep the torque spinning and moving and to transmit to posterity so that they can adapt it for the future!

14

INNOVATION ETHICS AS RESEARCH ETHICS

Christoph Stückelberger

Innovation as the combination of creativity and its implementation is in its core first of all a research activity. Innovation ethics therefore is closely linked to research ethics. As the annual Global Innovation Index[1] shows, innovation is a key factor for economic development and competitiveness. Access to research facilities is therefore for similar importance.

Research ethics covers all fields of ethics, especially economic ethics (funding), political ethics (policy), environmental ethics (impact), ethics of science and technology (limits) etc.

1. Global research and publications

Some global research challenges are:

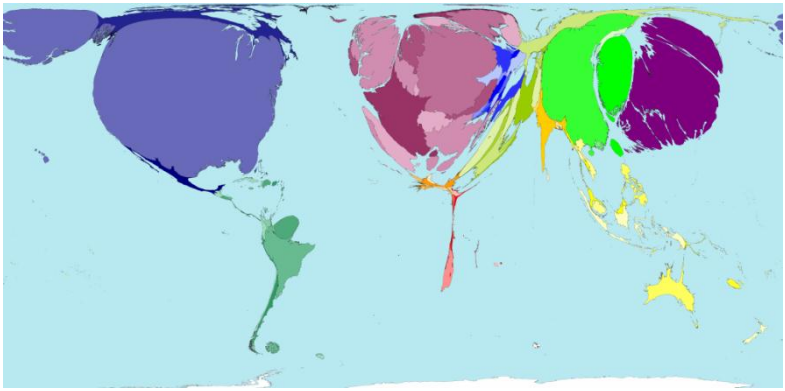
- *Unequal research capacities and research results* (publications) mirror the unequal economic and political global situation. The key questions of research ethics are linked to equality in access. The world map of number of research expenditures and publications per

[1] See Christoph Stückelberger, "Innovation ethics for value-based innovation", in this volume.

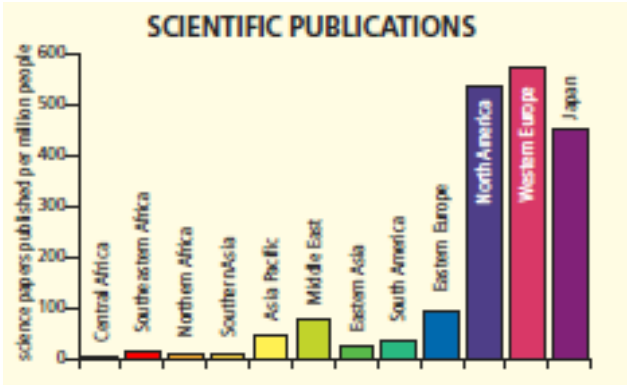
country and region shows the extreme development gap in research (see map below).

- *Language barriers:* English as the world language for research publications is a barrier for non-native English speakers, as many testimonials and research of acceptance and refusal of articles in journals show. Ethical considerations in research with non-native speakers of English are needed.[2]
- *Sensitive research subjects:* Medical ethics in particular is ethically very sensitive (rights of the human, informed consent, research with disabled persons), also bioethics in general, genetically modified organisms, nanotechnology. A good part of research ethics in concentrated on the medical field. Unfortunately, other subjects are less screened, such as ethics of artificial intelligence or ethics of information and communication technologies.
- *Research diversity*: Fast increase of scientific research, especially in emerging countries in Asia like China and India, does not mean that the diversity of research methods is similarly increased. The question is if there is a tendency of "more of the same", which can be important for some fields, but can also hinder real innovation, which comes from diversity.
- *Citizens' participation*: As people realize the importance of innovative research results on their daily life, in the positive and negative sense, more and more people ask for citizens' information, debate and participation in setting research priorities and looking at risk analysis. Especially violent is this debate in some continents like Europe and Asia on research and field tests of genetically modified organisms (GMOs).

[2] Joanna Koulouriotis, *Beyond the pale: ethical considerations in research with non-native speakers of English*, Master thesis, Minnesota, 2010 (download for free from *globethics.net/libraries*).



Territory size shows the proportion of worldwide research and development spending that is spent there (Data from UN Human Development Report 2004. Since then more expenditures e.g. in Africa.[3]



Proportion of all scientific papers published in 2001 written by authors living there.[4]

2. Cooperation and competition

A key topic of research ethics is competition and cooperation between researchers and research institutions and consortia.

[3] *worldmapper.org/images/largepng/165.png*.
[4] *worldmapper.org/posters/worldmapper_map205_ver5.pdf*

Fair competition is an issue between a) private research and public research, b) multinational private companies and small and medium enterprises (SMEs), c) North and South research institutions.
Fair cooperation is an issue between a) bilateral and multilateral academic institutions, b) public-private partnerships, c) increased funding partners from the South (e.g. Gulf countries-US). Cooperation today becomes often more important than competition (for reasons of cost sharing).
Geographical shifts in research can be observed: Fast growth of research capacities in BRICS countries (especially India, China, Brazil). In future we will have to talk about BRICSIT (including Indonesia and Turkey).

3. Nine ethical challenges

Scientific research, as one core basis for innovation, includes many ethical challenges. Research ethics often concentrates on the individual ethics of the behaviour of the researcher. But research ethics is much broader and includes the whole setting of the research conditions, the selection of the topics for funding, the institutional framework, management and communication, the decision-makers and the users of research results. In the following, I highlight only short ethical theses without detailed explanation and justification, for which I refer you to my other publications.

3.1 What? Selection of topics

Needs-oriented, not greed-oriented is the ethical criterion for selection of research topics (including the needs of nature). Not the potential profit of the researcher, company or institution, but the potential benefit for the needy is the selection criteria. “There is enough for everybody’s need, but not for everybody’s greed” (Gandhi)
Long-term, not only short-term: Politicians in all countries, but especially in poorer countries, are under pressure to have short-term results of

research investments (within the four-year term of service/election). Electorate and parliaments have to be convinced that long-term research investments are needed for success in research.

Balanced, not only technical: Research must include technological dimensions, but also social, cultural and religious aspects, in order to be relevant and accepted in society.

3.2 Who and where? Qualification and location of researchers

Qualification criteria? In addition to the core scientific qualifications, cultural and language competencies are also needed for international research cooperation.

Location: Where to locate the research capacities? Private-sector research allocation is more centralized than production units. Important shift are taking place from USA and Europe to South-East Asia (Singapore, China, India, e.g. in medical, bioetech and IT research). Research ethics should reflect on fair, decentralized allocation of research resources and capacity building in the global South. Many improvements can be observed, as the annual Global Innovation Index and the annual Competitiveness Report show.

3.3 With whom? Objects and participation

Participation of the people concerned in defining research topics and expected results is not only in democratic societies more and more requested. Citizens participation, ethics committees with the mandate of public debates, pressure on private companies to publish not only positive, but also negative research results especially in clinical and pharmaceutical tests are signals in this direction. This call for participation, transparency and honesty in research has to be balanced with confidentiality requirements (for competitiveness and for avoidance of misunderstandings and premature expectations of the public on research results e.g. for overcoming diseases). A few examples of publications show the

range of interests in the subject:[5] "Research Ethics with underserved groups", "Privacy and Research Ethics", "Community based research ethics".[6]

Medical research ethics concentrate to a large extent on criteria for participants in research. *Criteria broadly acknowledged* are

a) equipoise (a true null hypothesis should exist),
b) safety of the research participant,
c) informed consent of the participant (Nüremberg Code 1946!),
d) privacy and confidentiality,
e) how to handle adverse effects (how to inform, who pays in case of adverse effects on the person tested)

Medical research ethics also agrees to a large extent on *three values for the participant*: autonomy, beneficence, justice/fairness.

3.4 For whom? Beneficiaries

Who should be the beneficiaries of research? This is a key ethical question. Does research widen the gap between poor and rich? Does it support the needy? Is it concentrated on those who can afford to buy the products resulting from the research?

Basic research has almost per definition no specific target group. Basic research lays the foundation for applied research.

Applied research should contribute to fundamental ethical values such as justice, peace, freedom, empowerment, community etc. Therefore, beneficiaries (target groups) of research should correspond to these values: a) the needy (ethics of basic needs, UN Sustainable Development Goals), b) the victims of conflicts, c) the oppressed and powerless.

Access: Making research results available to the target groups is a key ethical requirement (otherwise they do not benefit as beneficiaries). Its

[5] These articles can be downloaded for free from *globethics.net/libraries*.

[6] For citizens' participation in research and innovation goals see Dirk Matten, Andy Crane, "Jeremy Moon, Corporate Responsibility for Innovation - A Citizenship Framework", in Gerd Hanekamp (ed.), *Business Ethics of Innovation*, Berlin 2007, 63-88.

implementation is highly political and often difficult, as the debates and political struggles on access to basic medicine show.

3.5 How? Funding

The funding of research is another ethical challenge.

Current research funds are dominated by northern funding and private funding. There is a need for conscientization on the importance of research in and from the South (e.g. ministry of science and technology). This awareness is growing, but the actual means are limited. The distribution between subjects is another challenge. While an enormous percentage of the total research funds goes to medical and technical research, relatively little goes to research in humanities.

Payment remuneration of researchers and research results is another challenge. The existing terms of trade of knowledge sources are often not fair. Academic research and especially academic publications do not pay. This is one reason why in the global South researchers publish much less than in the global North. Many would be able to do good scientific research, as I can see with the thousands of qualified researchers in the global network Globethics.net that I founded. But they may have to teach in three universities, with dozens of hours of teaching a week, to get a living, which prevents them from doing research and publishing their results.

Benefit sharing of research results is a related ethical challenge. In North-South research cooperation, the benefit sharing of research results has to be clarified at the beginning of the research. The registration of patents is one of the related topics. Since researchers in the South often do not have the means nor the information or the technical support from their countries to facilitate patent registration, other researchers benefit from it instead.

3.6 How? Online research

Online research is a substantial contribution to more equality and fairness in research facilities. Desk research is done more and more online as it allows substantial cost savings (less travel to library, more efficiency per hour of work) and global access to information resources. Many countries in the global South make enormous efforts and progress in providing online access to scientific research.

Online research methods include specific ethical opportunities and challenges. This method has to be learnt. It includes enormous potential and also some risks:

a) A first step is often brainstorming and random research ("Google search") with trial and error;
b) But this has to be combined with conceptual, systematic research approaches in order to avoid become dependent on the research algorithms of the search machines, which have, as it is known, their own commercial and ideological interests in programming their search tools;
c) What we can observe with students is sometimes also true for researchers: under time pressure or because they are lazy, they concentrate on what is easy to access. Even though Wikipedia is becoming more and more a serious and quotable source, it is not enough for deeper research and innovation. Much research is "more of the same" rather than an original innovative contribution to new knowledge;
d) That is why critical thinking remains a very important quality of research. Easy access to online resources can facilitate and can also hinder such critical thinking. Online research does not replace the face-to-face interaction with other researchers that is the main source for critical thinking and creative research;
e) Online research increases the temptation to plagiarism (quoting texts of others without mentioning the source). Fortunately, plagiarism

software can easily detect plagiarism, even much more easily than to detect it from sources that are not online available;

f) A special challenge is the inner, value-driven orientation in the research, not only in humanities. Why am I doing this research, for whom, with which motivation? To answer these questions needs a regular inner process – some call it spiritual reflection, meditation or prayer – in order to keep the value-driven benchmarks of research-orientation alive.

3.7 How? Ethics instruments

How can research ethics competences and capacities be increased? Examples show some instruments:[7]

a) *Training:* "Research ethics training in Peru. An Empirical Study" (research needs ethical training);

b) *Ethics committees:* Committees to screen and approve research projects. These are more established in Southern and Anglo-Saxon countries than in others; they are more practised in medical fields than in others;

c) *Control of controllers:* "The ethics of research ethics committees" is a critical reflection on the roles and limits of such committees;[8]

d) *Multi-stakeholder research ethics negotiations* by scientific academies, governments, the private sector, NGOs, religious organizations, etc., widens perspectives and ethical arguments;

[7] These articles can be downloaded for free from *globethics.net/libraries*.

[8] The author was for nine years a member of the Swiss Federal Ethics Committee on Non-Human Biotechnology, ECNH (in German, EKAH, *ekah.ch*). This has a *consultative* role for the Swiss government, mainly on genetically modified organisms. Ethics committees that have a decision-making role are more questionable. The political responsibility for decisions lies with political authorities. Ethics committees should give honest ethical advice without looking at the political opportunism or feasibility of a position. This allows a distinction between ethical consideration and political decision. If politicians decide against an ethical position, it is then transparent.

e) *International research ethics policies* are developed by multilateral institutions. An example is the World Health Organization's "Operational Guidelines for Ethics Committees";
f) *Research ethics publications* are not very numerous, but very important, and contribute to transparency in research ethics;
g) *Local and national monitoring capacities* on research ethics are very frequent in some regions and countries and still have to be established in others.

3.8 Research ethics regulations and policies

Research ethics needs the individual responsibility of the researcher, but also voluntary professional codes and a legal framework. Numerous legislative and guidance documents on research ethics exist at international, national and sector levels. Let us take as an example medical research ethics in the UK, referring also to global regulations:[9]

Legislation: Legislation affecting researchers in the UK includes the EU Clinical Trials and Good Clinical Practice Directives (2001 and 2005) and the UK Medicines for Human Use (Clinical Trials) Regulations (2004, amended 2006).

International guidance: Documents include the World Medical Association's Declaration of Helsinki (2000), which sets out ethical principles, as well as regulatory instruments such as the Good Clinical Practice guidelines of the World Health Organization (1995) and the International Conference on Harmonization (1996). The Council for International Organizations of Medical Sciences has produced guidelines outlining how the Helsinki declaration can be applied in developing countries. The United Nations Educational, Scientific and Cultural Organization adopted the Universal Declaration on Bioethics and Human Rights in

[9] Parliamentary Office of Science and Technology UK: Postnote, April 2008 Number 304 Research ethics in developing countries, 2.

2005, to assist member states in the formulation of national legislation, regulations or policies.

National guidance: The Medical Research Council and the Welcome Trust in the UK have each produced ethical guidelines on research in developing countries. The Nuffield Council on Bioethics' report, *The Ethics of Research Related to Healthcare in Developing Countries* (2002, followed up in 2005), is also frequently referred to by researchers and RECs in the UK and in many other countries. Several institutions in developing countries have also produced ethics documents, including the Indian Council of Medical Research and the Kenyan National Council for Science and Technology.

3.9 Who owns? Publication, copyright, open source

Right to information (access to information) is a human right. Copyright as right to (intellectual) property is also a human right, but less vital than the right to information. Ethically speaking, in case of conflict it is inferior to the right to information. The rights of authors, institutions and communities are normally part of intellectual property (IP) rights.

An ethical reflection of the current IP regulations developed under the World Intellectual Property Organization (WIPO) in Geneva would merit a separate article. Here we mention only three ethical considerations for *fair copyright rules:*

a) *Respecting copyright rules* as indicated in publications and other works is ethically important as a respect of laws and regulations, the rule of law and the rights of other persons;

b) Some copyright regimes are very restricted and hinder sufficient access of disadvantaged populations to information and knowledge. Therefore, from an ethical perspective, the now broadly used international standard *Creative Commons Copyright (CCC)* is an ethically fair solution for the users and the producers. The core is simple: "The author grants the right to copy, distribute and transmit the

work under three conditions: attribution, non-commercial, no change of text";[10]

c) *Illegal copying* of knowledge is unethical in general. It can be ethically legitimate (e.g., social bookshop) only under very restrictive conditions: not for profit, if no other way, if available means are not otherwise used or wasted.

4. Ethical principles for research and research partnership

4.1 Ethical values and principles

What are core values and ethical principles for value-driven research and research partnerships? This would require more in-depth explanation. Here I only mention five values:

1. *Need, not greed:* Research freedom has to be combined with research reason (*sophrosyne*/wisdom, limitation, moderation). Not greed for knowledge, but curiosity for knowledge (Thomas Aquinas: *Wissensneugier aber nicht Wissensgier* – inquisitiveness for knowledge, not acquisitiveness for knowledge). The passion of researchers can lead to greed to know everything without limitation. But since all virtues in life can turn into vices, only balancing different values can prevent from it.
2. *Justice as fairness: Fair sharing.* Golden rule of mutuality: sharing of resources means "give and take" (principle of Globethics.net). Researchers who get information and knowledge from others should also be ready to share theirs with others.
3. *Freedom with respect: Free and caring.* Free research and freedom of expression is key for progress and innovation. But it has to be linked to respectfully caring for cultural sensitivities, religious feelings, community needs, participants of research such as patients and victims in research objects.

[10] Globethics.net uses this for its own publications. See the full text: *globethics.net/web/ge/copyright*.

4. *Unity in diversity:* Searching on common ground of ethical values and standards and enforcing diversity in languages, methods, approaches.
5. *Participation: Empowerment* through participation of research objects (e.g. informed consent in medical research).

4.2 Principles of research partnership

Research partnerships, especially between partners with unequal funding or facilities, as often in North-South partnerships, need special attention if they are to be a fair cooperation. As a global network on ethics that initiates, supports, coordinates and publishes the results of many international research projects, Globethics.net adopted twelve principles of research partnerships. They can be summarized as follows:

1. Deciding on objectives together
2. Building mutual trust
3. Developing networks
4. Sharing the responsibility
5. Creating transparency
6. Evaluating the results
7. Disseminating the results
8. Applying the results
9. Sharing profits
10. Increasing research capacity
11. Building on the achievements
12. Research cycle

Globethics.net Principles of Research Partnership[11]

Adopted by the Globethics.net Steering Committee in March 2005

1. The ethics of knowledge-sharing

The Steering Committee, at its meeting in Zurich (March 4-5, 2005), worked for the programme 2005-2008 on principles of research partnership. The principles in the "Guidelines for research in partnership with developing countries" of the Swiss Commission for Research Partnership with Developing Countries (CRPD) were of great help. Research partnership is about the ethics of knowledge-sharing. It is imperative that there be common ownership, common responsibility and different roles for participants in the Globethics.net. This can be done through different modules, methods and instruments, fitting multiple and diverse academic, social, cultural, and methodological research settings in different parts of the world. Research in Globethics.net is always focused on ethical issues.

Questions that are also relevant to this discussion are: What is knowledge? And what kind of knowledge/wisdom is worth disseminating? Where is knowledge produced and for what purpose and by which means is it disseminated? Thus, the questions of communication technology is of utmost importance, especially in countries that still lag behind others in terms of providing basic needs such as electricity, and those for which internet is still considered a luxury – or a dream. Choosing the means of communication and dissemination of research then becomes a way of inclusion or exclusion of research and beneficiaries of this research. For Globalethics.net it is imperative that as an electronic network it must not exclude those who do not have access (or have little access) to electronic media. The electronic network must be supplanted by other modes and instruments such as publications, brochures, face-to-face meetings and local/regional/international seminars.

Impact of research and shared-knowledge is also a key factor if Globalethics.net aims to produce knowledge that touches people and affects positive transformation, especially in base communities that grow wary of academically-oriented research projects that have little effect on them. As such, Globalethics.net must work in ways that are participatory, transparent, that aim to build community, and ultimately engenders ethical means of researching, ethical use of outcome, and ethical ways of sharing this output with those from whom and by whom this research was extracted.

[11] See *globethics.net/web/ge/research/about-research*

2. Twelve principles of research partnership

The following "Globethics.net principles of research partnership" are based on the general "Goals and principles of Globethics.net".

1. *Deciding on objectives together* is a key element for the participatory nature of Globalethics.net. This was already done at the founding workshop in Bossey/Geneva in August 2004 and would continue. In terms of research, this means that research topics (and modes of output) would be highlighted, discussed and decided-upon by the participants. This would also imply setting priorities in topics and themes, and keeping abreast of regional and global developments that mandate certain research interventions by Globalethics.net.
2. *Building mutual trust* can come with the strengthening of the partnership and the ability to reach objectives for which the research is undertaken.
3. *Developing networks* in terms of south-south cooperation, by encouraging young researchers to become active in research on ethics, and by providing modes, instruments, and forums for those who would not necessarily have access to them.
4. *Sharing the responsibility* in formulating research topics, in disseminating the research results, in inviting new researchers to the Globalethics.net forum and in shared fundraising in order to get the necessary funds for the research. This would also be done by realistically designating and delegating tasks to members of the steering committee and the participants at large.
5. *Creating transparency by* encouraging transparency where it is needed. This is especially critical in exchanges between all members of the network if ethics is to be the base upon which the network is built. For research purposes, this is also a key element in conducting and disseminating research outcomes.
6. *Evaluating the results* must adequately and fairly reflect the needs, means and objectives of Globalethics.net in its planning, monitoring and evaluation. It must also challenge the network in order to develop without hindering and/or taxing its work with bureaucratic processes. At the same time, it must respond to the demands of partners and funders of the network.
7. *Disseminating the results* by electronic and other means in order to reach all participants and interested circles outside the network.
8. *Applying the results* must be done locally, and must become part of an overall system of advocacy for the network in that its research aims to positively effect and transform the communities from which the research was extracted. This would necessarily mean that there would be creative means of application of research using different modes and methods

(seminars, books, training modules, seminars, workshops, etc.) alongside further on-line training.

9. *Sharing profits* as in equally sharing the outcome of research and being at all times responsive to the differing and diverse needs of all members of the group. Sharing the burden of the cost would necessarily entail economic ways of publication, or meeting using a minimum cost approach, and being flexible enough to move for meetings and/or workshops to more economic locations that involve contributions by the members.
10. *Increasing research capacity* of young researchers, especially in the South, by encouraging bilateral and multilateral exchanges, and by developing programmes that further train, empower and build the capacity of young researchers and research organizations by addressing new forms and methods of research-action.
11. *Building on the achievements* means building the Globalethics.net capacity by accumulating knowledge, and by learning from our experiences and those of others rather than 'starting from scratch'.
12. *Research cycle* as a means by which knowledge returns to benefit the base community in which it was conducted.

15

INCORPORATING ETHICS INTO EU RESEARCH AND INNOVATION

Bernd Stahl

The Green Paper[1] recognizes that research and innovation have a key role to play in delivering the policy goals of the Europe 2020 strategy. While the Green Paper discusses and seeks opinions on numerous important aspects, it fails to address the important question how ethical issues arising from technology development should be addressed.

1. Ethics in Research and Technological Innovation

The present contribution builds on the work of the ETICA project (Ethical Issues of Emerging ICT applications), an FP7 funded (GA 230318) research project, running from 04/2009 to 05/2011. The ETICA project has demonstrated that emerging information and communication technologies are likely to raise a significant number of ethical issues. At the same time it has shown that current ways of dealing with ethics of technology, whether they are embedded in FP7 procedures such as the ethics review, or whether they are used outside of European funding, can be incapable of identifying and addressing such ethical issues. While

[1] This article is the written contribution to the consultation regarding the Green Paper on a Common Strategic Framework for future EU Research and Innovation Funding. Position of the ETICA project, authored by Professor Bernd Stahl, coordinator, on behalf of the ETICA project consortium.

current ethics processes have proven to be successful in many respects and they can guide action with regards to established ethical issues and legal requirements, they need to be developed and broadened to allow proactively engaging with emerging ethical issues.

The subject expertise of the ETICA consortium extends to issues of ethics of technology. This contribution concentrates exclusively on this area and does not venture to engage with the other questions of the consultation. Below it outlines the recommendations developed in the ETICA project on steps to be taken to allow ethics to be incorporated into research and innovation. These recommendations are based on the findings and analyses of the project, which can be found in detail on the project website: *etica-project.eu*.

The contribution contains two main sets of recommendations: one for policymakers and one for industry, researchers and others involved in the research and innovation process.

2. Recommendations for Policymakers

Policymakers have an important role in creating the regulatory framework and the infrastructure to allow ethics to be considered in ICT. If emerging ICTs are to be developed in a responsible manner that allows identifying and addressing the social and ethical problems outlined above, then a framework and infrastructure for the development of responsibility needs to be provided. Such a framework should cover at least the following three main areas of policy activity:

2.1 Provide a regulatory framework that will support ethical impact assessment (EIA) for ICTs

- to raise awareness of the importance of ethics in new ICTs;
- to encourage ethical reflexivity within ICT research and development;
- to provide appropriate tools and methods to identify and address ethical issues;

- to address the wide range of current and new ethical issues arising from ICT, modelled along the lines of environmental, privacy or equality impact assessments;
- to allow ICT professionals to use their expertise in emerging ICTs to contribute to ethical solutions;
- to raise awareness of ethical issues regarding animals and environmental issues;
- to proactively consider legal solutions to foreseeable problems that will likely arise from the application of future and emerging technologies.

Overall, this set of recommendations addresses the institutional framework that will be required for further subjects to recognize responsibilities and develop mechanisms of discharging it. The idea of an "Ethical Impact Assessment for ICTs" was chosen because it provides precedent from areas of the environment, privacy, or equality. Such a framework is required to provide incentives to engage with issues of responsibility in innovation and emerging ICTs. It will thereby encourage discourses that will lead to the development of specific responsibility ascriptions.

2.2 Establish an ICT ethics observatory

- to collect and communicate the conceptual, methodological, procedural and substantive aspects of ICT ethics;
- to provide a community-owned publicly accessible repository and dissemination tool of research on ICT ethics;
- to give examples of approaches and governance structures that allow addressing ethical issues;
- to disseminate past and current research ethics and ICT including relevant work packages and deliverables and relevant national ethics committee opinions;
- to facilitate the ethical impact assessment;

- to provide an early warning mechanism for issues that may require legislation.

While the first recommendation aimed at providing a procedural framework for identifying and addressing ethical issues in ICT, this set of recommendations aims to provide the content required for actual responsibility ascriptions. The work undertaken by the ETICA project, for example, provides important pointers towards possible ethical issues to be considered. Individuals involved in technical development are often not experts in these matters. A shared repository of ethics-related theories, practices, methodologies etc. is a necessary condition of the development of widely shared good practice.

2.3 Establish a forum for stakeholder involvement

- to allow and encourage civil society and its representations, industry, NGOs and other stakeholders to exchange ideas and express their views;
- to exchange experience between these stakeholders to develop ethical reflexivity in the discussion;
- to reach consensus concerning good practice in the area of ethics and ICT;
- to build a bridge between civil society and policymakers.

This final recommendation for policymakers points to the necessity of institutionalizing important discourses that allow civil society and other stakeholders to engage on a content level with the policy as well as the technical community. Such a forum is required to ensure that responsible innovation covers not only specific technical interests and perspectives but is allowed to reflect broader social concerns.

2.4 Recommendations for industry, researchers and CSOs

Industry, researchers and other individuals or organizations should

adhere to the following recommendations in order to be proactive and allow innovation to be socially responsible. If the institutional framework, background, repository and social discourses are there, then the conditions will be favourable for the incorporation of ethics and reflexivity into technical work and application usage.

2.5 Incorporate ethics into ICT research and development

- to make it explicit that ethical sensitivity is in the interest of ICT users and providers;
- to distinguish between law and ethics and see that following legal requirements is not always sufficient to address ethical issues;
- to engage in discussion of what constitutes ethical issues and be open to incorporation of gender, environmental and other issues.

The points of this recommendation aim to ensure that ethical reflexivity is realized within technical work. It furthermore aims to sensitize stakeholders to the difficulties of discharging their responsibilities.

2.6 Facilitate ethical reflexivity in ICT projects and practice

- to realize that ethical issues are context-dependent and need specific attention of individuals with local knowledge and understanding;
- to simultaneously consider the identification of ethical issues and their resolutions;
- to be open about the description of the project and its ethical issues;
- to encourage broader stakeholder engagement in the identification and resolution of ethical questions.

This final set of suggestions aims to ensure that the different stakeholders realize that ethics is not a pre-determined and fixed structure. Ethical issues are context-dependent and need to be interpreted in the particular situation. Interpretive flexibility of technology requires the participants in a technology development project to engage collectively in the initial definition of ethical issues to consider, but also to review

this initial definition continuously and engage with stakeholders involved in other stages of the technology development process.

3. Conclusion

This policy brief summarizes the main findings and recommendations of the ETICA project.

Implementing these recommendations will contribute to better and ethically more sensitive processes of technology development. By incorporating the views of all stakeholders the benefits of novel technologies will be maximized and ethical risks can be addressed early. ICT has now attained such a cross-cutting and central role in business, research and society at large that we can no longer afford to ignore its possible downsides. Following these recommendations will give the European Union the opportunity to show world-wide leadership and set positive standards based on its shared values.

16

INNOVATION, ETHICS, AND BUSINESS

Kirsten E. Martin

Introduction[1]

The words innovative and innovation are bandied about in the media, in business, and in our everyday lives. The words evoke a feeling of progress with technology moving us upward and forward while simultaneously pushing aside existing, soon-to-be-outdated, technology. How does business handle this disruption? How can we think about the responsibility for the innovation and the associated wake of changed beliefs, behaviours, and relationships?

As innovation researcher and best-selling author Harold Evans notes, "It has been said that a scientist seeks understanding and an inventor a solution, to which we might add that an innovator seeks a universal application of the solution by whatever means."[2] For Evans, the difference between invention and innovation is profound: innovation includes making a match between a solution and a community. As with all business decisions, however, innovations carry ethical implications that must be addressed.

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[1] The article was first published by Business Roundtable Institute for Corporate Ethics, Bridge Papers, 2008, www.corporate-ethics.org.

[2] Harold Evans. *They Made America. From the Steam Engine to the Search Engine: Two Centuries of Innovators*. New York: Back Bay Books, 2004, 6.

Ethics of innovation

Innovation has never been without scandal. From the steamboat to the camera phone, innovations push communities to the frontier of their knowledge and their comfort zone.

Before embarking on the telegraph (which provoked the ire of the Pony Express), Samuel Morse was forced to defend his innovative photographic technology from an assault by the painting community. In another example, some declared the steamboat to be an abomination against God for bringing together fire and water.[3] Businesses that shepherd innovations are left to deal with the aftermath of their groundbreaking technologies.

The view of innovation offered here incorporates the inventiveness of the technology with the impact on the community and addresses the ethics of innovation, often overlooked when solely focusing on the technology.

As demonstrated below, viewing the innovation as a combination of technological invention within the context of a community helps frame the issues, praises, and complaints common to the process of innovation. The key rules of innovation should guide managers as they make important decisions about their innovations and help their business create innovations that are both good for their organization and good for the community. As we see through countless examples, such mutually beneficial innovations are sustainable.

Rules of innovation

1. Innovations are new to a community

That innovations are new is not a novel concept. However, it is necessary to be more precise—the newness comes from a new technology-

[3] Evans, 6.

community relationship. Innovators marry an invention with a community, thereby making an invention innovative.

Perhaps the Internet provides the best example. The initial development and use of DARPNet (the current Internet) was for military use. Slowly, use of DARPNet filtered over to academics within universities to work on large projects simultaneously yet across great geographic distances. The Internet as an innovation was recognized only when it reached a larger, more general, community. Historians talk about the Internet as a disruptive force or market-changing in relation to its use by the non-academic, non-military community. And the disruptive force of this technology persists as new technology-community relationships are continually innovated.

Evans refers to many innovators as democratizers—innovators who are constantly taking new inventions to more varied communities. Thomas Edison is credited with inventing the light bulb; however, Edison focused on taking inventions (created by himself or a co-worker) to new communities and societies. He measured an innovation's success by its proliferation in a community: "Anything that won't sell, I don't want to invent. Its sale is proof of utility and utility is success."[4] Edison recognized the importance of an invention reaching the market, or a broader community, as a sign of its innovativeness.

2. Many people are affected by and have an effect on an innovation

We tend to focus on the user or the point of purchase when assessing a technology for market. Many more people, however, are affected by and actually affect an innovation. Sometimes, the end user is not the person making the buying decision (e.g. large organizational purchases, governmental contracts, minors with adult purchasers).

Separate from the organizational stakeholders, an innovation relies upon users, ancillary materials, technologies, and organizations to sur-

[4] Evans, 180.

vive. When the camera phone was initially introduced in Asia, 14-year-old-girls were the assumed users. Their needs (colours, ease of use) were incorporated into the design. As the innovation was absorbed into the community, unintended uses and consequences began to emerge. Middle-aged men took hold of the innovation and began using the silent, small camera to take voyeuristic pictures of women. Camera phones were used in corporate espionage. At times, the innovation was banned at the corporate offices of the very companies that developed them. Assessing the stakeholders of the technology minimizes such damaging and unintended (yet foreseeable) consequences.

For innovative technologies, identifying the specific names and faces of stakeholders who are impacted by and impact the technology not only helps to circumvent unintended consequences and uses of the innovation, but also allows the business to create a community around the innovation that previously did not exist. This community or network of stakeholders reinforces the use of the technology and will increase the longevity of the innovation.

For example, both Linux for its operating system and Macintosh for its personal computer created strong ties between members of their user and stakeholder communities. Even with initially small market share, these innovations continue to flourish. The Internet facilitated collaborations between stakeholders and innovators through community bulletin boards, thereby supporting a sustainable innovation that fits within its community.

3. Innovations disrupt the status quo

The goal of innovations is to upset current beliefs, behaviour, relationships, and technologies for a given community. The automobile disrupted the horse and buggy system. The telegraph disrupted the Pony Express. Linux interrupted the proliferation of Windows®. As technologist Langdon Winner points out, innovations such as the tomato harvester necessitated the hardened tomato to withstand cultivation, and the

bridges to Jones Beach in New York facilitated the discrimination against public transportation and its riders because they were structurally too low for buses.

Economist Joseph Schumpeter refers to this phenomenon as "creative destruction." While Schumpeter was concerned primarily with existing technology, innovations can also destroy existing systems of technology and individuals. Jobs can be lost as was the case with both Winner's tomato harvester and McCormick's mechanical reaper. McCormick's mechanical reaper was an amalgamation of existing inventions yet was particularly effective.[5] Innovations change people's lives with both short-and long-term impacts. The loss of jobs to the reaper and the harvester freed labour for use in a more productive and less labour-intensive manner—sometimes literally—as in the case of slaves in the South and the indentured servitude of illegal immigrants in the West.

The implications of innovations are understood within the surrounding community. As has been well publicized over the past decade, the issues faced by Nestle with infant formula in Africa were completely different from those faced in the United States. While the technology (supplemental feeding for infants) was identical in each location, the community-technology relationship worked in the United States but failed in Africa.

Infant formula within the United States became an integral part of parenting and allowed many who could not breastfeed adequate nourishment for their children. In Africa, however, the introduction of formula to new mothers created a continuing reliance on safe water (which was not available) and education (which was not provided). Its introduction not only dissuaded new mothers from breastfeeding but made such activity physically impossible. When mothers did not use their breast milk, the quantity available for feeding naturally diminished.

[5] Evans, 89.

The implications of such disruptions must be assessed within the community of the innovation. The tomato harvester, low-lying bridges, and infant formula: each innovation produced different reactions dependent upon the context of the community.

4. Innovations are a shared responsibility

By viewing the innovative process as bringing together technology and communities, the innovation and its consequences become a shared responsibility. The community has a responsibility to use the technology within a given range of permissible behaviours and to incorporate rules and norms to support the technology. The innovating firm, however, has a responsibility to understand the community into which the innovation is being introduced.

In the case of the camera phone, acknowledging the responsibility of the organizations that introduced the camera phone for their role in allowing the technology to be used for surveillance and voyeurism does not diminish the responsibility of the spy or observer. In fact, acknowledging the shared responsibility might have led to incorporating appropriate modifications when the camera phone was later introduced into the United States. Instead, design modifications, which could have alerted people to the potential of being photographed, were never introduced.

Business involvement in Nazi Germany and Apartheid South Africa drew similar criticisms for supporting dangerous regimes through innovative activity. While not responsible for the decisions of the government, US companies who marketed their technologies drew criticism for allowing their technology to be a party to the illegitimate behaviour of the respective governments.

Alternative views place the responsibility on the *technology* by declaring the communities of users and stakeholders as beholden to the dictates of the innovation. The community is assumed to be too ignorant or incapable of modifying the new technology. Others declare, "Let the buyer beware"—usually when they are not the buyers or in the commu-

nity of the novel innovation—placing sole responsibility on the community to use the innovation appropriately. This argument, however, ignores the *newness* of the innovation in the new community. Those knowledgeable (the innovators) have a shared responsibility to shepherd the innovation as it is introduced into new communities.

For example, in its efforts to take responsibility for the environmental impact of its products, Xerox has worked to achieve "chain of custody" certification for its distribution centres, whereby all products are certified as having been produced in liveable working conditions and by preserving forests, wildlife, and waterways.[6] In doing so, Xerox has taken on a role to ensure that all parties throughout the production process meet its standards for sustainability. Not only is Xerox focused on its suppliers and distributors, but the organization "is greening its own operations, recycling its copying machines and helping its customers achieve their environmental goals."[7] Xerox is being proactive in sharing responsibility for the environmental impact of its products and services.

5. Successful innovations require continual modifications

As Evans notes in his book on innovators in the United States, "Nothing works the first time." Those innovators who have the tenacity to remain engaged with the community to both understand their needs, norms, laws, and beliefs and modify their innovations to meet the community, increase the longevity of their technology while continuing to take responsibility for their portion of the innovation.

IBM designed its marketing and pricing around this idea. When Roosevelt opened the government coffers with the introduction of the New Deal, IBM was "uniquely able to satisfy the requirements of the bureaucracy in 1935. A sold machine was out of sight, out of mind. A rented machine required IBM technicians to be on hand, repairing and

[6] Marc Gunther, "Does Green Make a Difference?" *Fortune* (13 December 2007) *archive.fortune.com/2007/12/12/magazines/fortune/gunther_xerox.fortune/index.htm*
[7] Gunther, "Does Green Make a Difference?"

updating, and inevitably they acquired an awareness of present—and future— needs. This liaison, developing into a partnership, was very much to the benefit of both sides."[8]

Similarly, Xerox retains sociologists called workplace specialists to match the innovation to the needs of the customer and the way they work and to avoid unintended uses (or non-uses!) of a disruptive innovation.[9] In doing so, Xerox modified its product—in this case, paper—to make it reusable after noting that 40% of paper at a customer site is thrown away. As Xerox's CTO Sophie Vanderbroek states, an "innovation is only innovation when the creative idea makes a difference to our customers," and retaining a connection to the customer allows Xerox to make modifications to its product to meet its customers' changing needs.[10]

Remaining engaged allows businesses to help shape the innovation as both unintended uses and unintended consequences erupt during its continued use. In this way, innovators are able to share responsibility for the ultimate impact of their innovation. Furthermore, user needs, context, and stakeholders change over the lifespan of an innovation. Maintaining engagement in the ongoing relationship allows innovators to continue to innovate, addressing those changes as is demonstrated by IBM's ability to meet the needs of its customers.

6. Features matter

Finally, small design decisions make a difference in the use, consequences, and sustainability of an innovation.

Many times these differences in features set apart the successful from the unsuccessful innovations.

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[8] Evans, 451.

[9] Geoff Colvin "Xerox's Inventor-in-chief," *Fortune* (9 July 2007) *archive.fortune.com/magazines/fortune/fortune_archive/2007/07/09/100121735/index.htm*

[10] Colvin, "Xerox's Inventor-in-chief".

For Otis elevators, not requiring central power for the operation of the safety elevator acknowledged the circumstances of most building operators. For Ford and the Model T, moving the steering wheel to the left side of the automobile was a design decision that anticipated a driver's need to focus on other drivers rather than ditches on the side of the road.

And these design decisions often have moral implications—particularly for innovations where users and other stakeholders do not have the experience or knowledge to modify by definition the new technology. In previous examples, the camera phone without a warning sound allowed unsuspecting objects of photography to have their privacy violated, and the height of bridges along an overpass became a discriminatory technology.

Case study: Google, Inc. in China

Background

To illustrate the importance of context in understanding innovations and technology, consider the case of China and the Internet. The introduction of search engine technology to China has not gone smoothly for any US company. Yahoo! has come under fire for releasing the name of a journalist/blogger to Chinese authorities thereby providing the evidence necessary to send the dissident to a prison camp. Microsoft took down a blog at the request of Chinese authorities for this person's writings about China. Cisco Systems came under congressional inquiry during hearings for providing the technology to develop the vast Chinese Firewall by which the Chinese government monitors and filters Internet communication.

Google, Inc. maintained a certain distance from the fracas by only developing a US-based, Chinese-language version of its technology without filtering of search results or relations with Chinese authorities.

After Chinese authorities, however, made Google's search technology inaccessible for Chinese users, Google, Inc. decided to look into developing a search engine within China, therefore, abiding by Chinese regulations. After a year of consultation with China-Internet experts, NGOs, and business leaders, Google, Inc. decided to deploy its own innovation within China by developing a Chinese search engine complete with filtered results to appease the censors. Additionally and substantively different from their competitors, Google, Inc. decided to maintain all personal information associated with e-mail and web logs outside Chinese territory and the jurisdiction of Chinese authorities.

For this decision, Google, Inc. received a tremendous amount of public scrutiny. Its "Do no evil" slogan has been ridiculed, and it was called before the US Congress (along with Yahoo!, Cisco, and Microsoft) to defend its decision to work in concert with Chinese authorities. Many pointed out the similarities between these US Internet companies' involvement with China and previous issues in Nazi Germany and South Africa. The search technology was being used in concert with a totalitarian regime's efforts to monitor and control its citizens.

Assessment of Google, Inc. in China

Google, Inc. has come under fire for following in the footsteps of the rest of the industry. When Google's innovative search technology is assessed in light of the innovation rules discussed earlier, the differences between Google's innovation and others' innovations become clear.

First, public outcry, opinion columns, and congressional hearings demonstrate the importance of context in assessing an innovation. While the Cisco representative defended his company's actions by declaring that the technology implemented for Chinese authorities is the same as that implemented everywhere else, the defence fell on deaf ears. The routers, while commonplace within the United States, are an innovation within China and need to be assessed within their new environment. The same holds true for search technology, and Google, Inc. clearly under-

stands this phenomenon. Google, Inc. took considerable time and effort to understand how its search technology would work within China and made adjustments accordingly. *Rule #1: Innovations are new to a community.*

Second, China's Internet system is a complex network of people and organizations that needs to be acknowledged when assessing Google's search technology. Multiple governmental agencies, cyber cafes, cyber police, regulated content providers, regulated access providers, NGOs, reporting fellow citizens, users, users' families and friends, and even villagers without electricity impact and are impacted by Google's search technology, Google.cn.

The Chinese government has an interest in keeping dissent at a minimum and protests non-existent. The authorities feel the impact when more and more information is traded among their citizens, therefore, increasing their regulation of Internet providers and their surveillance and arrests of citizens. NGOs and dissidents attempt to provide access to unfiltered information by developing ways around the government filters. By taking into consideration the many stakeholders of its technology,

Google, Inc. was able to balance its goal of providing as much unfiltered information as possible with the Chinese government's goal of filtering search results and monitoring the use of the Internet. Google, Inc. identified more than just the end user when assessing (and continuing to assess) its decision to enter China. Focusing on the market when assessing China would leave many important stakeholders out of the equation. *Rule #2: Many people are affected by and have an effect on an innovation.*

Third, the reaction of the Chinese authorities to the introduction of search technology illustrates the degree to which innovations can disrupt the status quo. The proliferation of uncontrolled, unfiltered information throughout its citizens has led Chinese authorities to invest incredible

time and money into a robust Internet surveillance programme consisting of over 30,000 Internet police, propaganda, monitoring technology, and regulations in an attempt to recreate the status quo. News of SARS, contaminated rivers, AIDS, jailed dissidents, Tiananmen Square, or Tibet is no longer controlled by Chinese authorities. *Rule #3: Innovations disrupt the status quo.*

Fourth, as evidenced by its lengthy deliberations before the introduction of search technology into China and its public comments in its aftermath, Google, Inc. acknowledges its role in the innovative process. Google, Inc. participated in congressional hearings and was the only company to respond to Xiao Qiang, UC Berkeley professor and well-known China-Internet scholar, who went to investment firms to track companies and their involvement in China. Google, Inc. has remained involved in the discussion around Internet search technology and China; it has not merely thrown the technology into China and attempted to walk away. *Rule #4: Innovations are a shared responsibility.*

Fifth, Google, Inc. has made it clear that its current decision is constantly under review and will be reassessed over the coming months and years. While Cisco's John Chambers stated that the company does not "see the implementation that is done by the user," Google is staying involved in the implementation and use of its innovation. Co-founder Sergey Brin stated, "I think it's perfectly reasonable to do something different. Say, OK, let's stand by the principle against censorship and we won't actually operate there…. That's an alternative path. It's not the one we've chosen to take right now."[11] Google's decision was "based on what we know today and what we see in China"[12] and is something that

[11] Quoted by Joel Rothstein, "Google Co-founder Says Company Is Staying in China," (9 June 2006) *reuters.com* (accessed 6 March 2007)

[12] Congressional Testimony before the Committee on House International Relations Subcommittee on Asia and the Pacific, "The Internet in China: A Tool for Freedom or Suppression?" 15 February, 2006.

is under review. *Rule #5: successful innovations require continual modifications.*

Finally, Google, Inc. decided to develop a physical presence closer to the actual Chinese user, and thereby, is not obliged to the Chinese government's own filters sitting at the Chinese border. Google's Gmail and web logging services, however, reside outside the Chinese border where Google can best protect the identity of its users. This brings us to the sixth point: design decisions matter. The decision to split the technology into search, e-mail, and blogging with different rules and locations for each suits the context of the Internet in China.

Such differentiations are not necessary in the United States. Furthermore, Google, Inc. has attempted to notify users of filtering based on governmental rules. This differs from those search engines that simply do not list the filtered results, leaving the Chinese user ignorant to the presence of filtering. *Rule #6: Features matter.*

How to innovate ethically

Coupling the outlined framework with the case example of Google, Inc. in China leads to questions that guide the development of ethical innovations.

Community. Innovations happen within communities possessing existing and changing norms, knowledge, relationships, technologies, and beliefs. During innovation we begin to ask the question: Are we assuming a new community will react similarly to a community currently using the technology? What are the lessons learned from the technology's current use?

Stakeholders. Users are but one stakeholder to innovations. Innovators should seek to analyse the community impacted by their innovation. How is it different from the current users of the technology? Who will be impacted by this innovation? Who will impact the use and continuing development of this innovation within the community?

Disruption. Ethical implications exist whether we acknowledge them or not. It is important to ask: Who is adversely affected by this innovation? Are we effective at achieving the given task? Are we maintaining the rights, autonomy, and dignity of the community by not treating stakeholders as mere means to the goals of the technology?

Responsibility. Responsibility is shared and cannot be placed solely in the hands of either the technology or the community. As innovators, we must understand our part in the ongoing use and misuse of the innovation. How can we make sure we can rectify eventual issues that arise from the innovation?

Modifications. Innovations have a lifespan, while the needs of stakeholders change. How can we design and deploy the innovation so that we stay involved with the innovation?

Features. Features matter for stakeholders, technological longevity, community impact, and innovative sustainability. How can we accommodate the many needs of the stakeholders in the design of the technology?

Conclusion

Innovators are matchmakers who introduce an invention previously used in another market, a lab, on a patent application, or in someone's head, to a new community. An innovation is novel to someone or some people. It is applied in reference to a community of users and other stakeholders not familiar with a technology. Defining innovation as the relationship between a technology and a community accounts for the many times a technology can be innovative as it is deployed to different communities.

This focus on the relationship also highlights the shared responsibility for the consequences of the innovation.

Many may question whether acknowledging the ethics of innovation would make the technology less scientific or objective. Ignoring the

moral implications of an innovation, however, does not make the implications go away. The suggestions for developing an ethical innovation are just good business. Sustainability in the market, a goal for most innovators, requires acknowledging the relationship between technology and community with its ethical implications, shared responsibility, and mutual goals.

Business has a tremendous role in being the engine of innovation for many communities. Acknowledging that role and the responsibilities it carries will allow businesses to create value for themselves and their many stakeholders. Ethical innovation produces a sustainable competitive advantage for the organization, creating good technology-community relationships.

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INNOVATION ETHICS RECOMMENDATIONS

The African Innovation Foundation and the Globethics.net Foundation held an African workshop, "The Ethical Innovator. Ethics of Innovation – Innovation of Ethics", 23-24 August 2013 in Cotonou, Benin. The international and interdisciplinary group of twelve innovation experts represented technology, entrepreneurship, international politics, ethics, philosophy, youth and religious organizations. The following recommendations are the fruit of the workshop. The different target groups are invited to discuss and consider these recommendations for action.

We, the expert participants of the workshop on Innovation Ethics, recommend

To all sectors dealing with innovation

- to include the ethical analysis of positive and negative impacts of innovation (priority 1)
- to include ethical criteria in innovation policies, priorities, methods and management (priority 1)
- to create new and additional interdisciplinary "protected spaces" for innovation by amplifying existing protected spaces, leveraging social media with protected spaces, and cross-fertilizing existing protected

spaces and to increase interaction between informal and formal protected spaces.

To the governmental sector (national and international)

- to include codes of ethics for ethical innovation in innovation governance policies (priority 1)
- to include ethical criteria in the development and implementation of patent laws and in protecting innovation of developing countries (priority 1)
- to set up a venture capital fund in all countries to support the commercialization of innovation and thereby the creation of formal enterprises (priority 1)
- to support African governments in adhering more rapidly to international law and in adapting domestic law and practices to international standards (priority 2)
- to overcome double standards in international regulations and treaties, such as protectionism and subsidies, as unethical and an obstacle to innovation
- to design and implement appropriate policies on social and technical innovation in consultation with the relevant sectors (priority 1)
- to develop as donors an entry and exit strategy to innovation projects

To the private sector

- to promote ethics and fundamental values in the management of companies (priority 1)
- to develop hybrid models combining open sharing of information and documents with monetizing products for the sustainability of providing content (priority 2)
- to overcome and condemn as unethical business conduct the dumping of obsolete technologies and products (priority 2)
- to make a business case and create incentives for innovation

To the educational and religious sector

- to introduce courses on "ethics and innovation" in science and technology and other subjects in universities (priority 1)
- to integrate curricula on "creativity and innovation" in education programmes from primary to university
- to link indigenous knowledge to innovation (priority 1)
- to increase research on indigenous and informal ethical systems, link them with innovation, and support this with scholarships (priority 1)
- to produce stories of ethics innovators in Africa and make them known (priority 1)
- to facilitate access to information about legal aspects of innovation, such as copyright, plagiarism, patents and intellectual property rights, and make them understandable for both literate and illiterate people (priority 1)
- to analyse how far religious values and behaviours hinder or promote ethical innovation and to raise consciousness, starting with religious leaders (priority 1)

To the African Innovation Foundation and Globethics.net

- to address African governments to promote innovation ethics, law and justice for the benefit of the emergence of the African countries and the protection of innovators (priority 2)
- to suggest to the publishers of the Global Innovation Index additional indicators for the future editions of the index. These indicators include especially ethical, social and cultural criteria (priority 1)

African Innovation Foundation: *www.africaninnovation.org*
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