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Futures of knowledge societies – destabilization in whose interest?

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This paper asks whether destabilizations associated with the global financial crisis and rapid innovation in digital technologies may be creating possibilities for a rebalancing of commercial market and other values associated with equality and fairness in policy interventions aimed at building knowledge societies. An analysis of high-level policy speeches and a selection of digital technology projects provides a basis for reflections on this question. The paper considers whether recent destabilizations are encouraging challenges to the discourses and practices associated with market-led technology diffusion models. The analysis indicates that there are some shifts in the discourses, but there is less evidence of shifts in practice. It is suggested that greater attention to the complex features of the innovation process may help to foster stakeholder learning in a way that might favour values consistent with inclusive and equitable knowledge societies.

Keywords: information society; knowledge society; innovation; learning; Millennium Development Goals; WSIS; diffusion; commercial online services; open development

Introduction

The economic crisis of 2008 and its aftermath might be expected to destabilize taken-for-granted assumptions held by those in authority about how and for whom digital networks and services should be implemented. Innovations in the production and consumption of digital information are tightly bound to Schumpeterian forces of ‘creative destruction’ and these ‘forces’ are working themselves out in complex ways in the global North and in the global South (Manyozo, 2012). Might we expect destabilizations associated with continuing innovation in digital technologies and the recent financial crisis to encourage a shift in the discourses and practices of policy aimed at developing knowledge societies? Might this shift encourage wide-scale change in support of the development goals of countries in the global South by giving greater attention to the values of inclusiveness and fairness?

The aim of this paper is to consider whether there are signs of learning specifically in the discourses and practices associated with efforts aimed at promoting ‘knowledge societies for peace and sustainable development’. These are the aims espoused by the United Nations Educational, Scientific and Cultural Organization (UNESCO) for future knowledge societies. This was the theme of UNESCO’s First World Summit on the Information Society+10 or WSIS+10 review meeting convened in Paris in 2013 in preparation for contributions to the review of the Millennium Development Goals (MDGs) in 2015.¹

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The first main section of the paper briefly introduces a theoretical framework informed broadly by J. A. Schumpeter's treatment of disruptive innovation processes. The analysis in the next two sections is based on a review of policy documents associated with the post-WSIS period and on accounts of projects provided by researchers involved in a variety of digital technology and service areas, mainly falling within the mandate of UNESCO. Detailed accounts of these 'cases' were provided in preparation for a UNESCO-commissioned report (Mansell & Tremblay, 2013).² In the third section, the discourses employed by WSIS+10 opening plenary speakers are examined. A discourse that achieves a balance between market and other values is essential if knowledge societies are to become responsive to UNESCO's aspirations. It is also important to consider whether any discursive rebalancing of values is being reflected in practice. The fourth section of the paper assesses a selection of knowledge society projects supported by a variety of organizations. The focus here is on whether there are signs of learning about how to achieve a more balanced approach. The paper concludes with reflections on the prospects for rebalancing values in knowledge society policy interventions in the wake of the global financial crisis and the disruptive influences of novel digital applications.

Destabilizations and opportunities for change

Very rapid and continuous innovation in digital technologies, especially mobile phones, and digital information services has meant that these technologies have become increasingly accessible, despite the scaling back of public and private spending in the wake of a global recession (UNDP, 2012; World Bank, 2012). Various scholars and United Nations reports suggest that destabilization associated with rapid technological innovation and a financial crisis might create opportunities for rebalancing policies and practices towards values more consistent with securing human rights. Stakeholders might, for instance, start to probe the weaknesses of their prevailing approaches in these circumstances (Jorgensen, 2013). Such opportunities could arise if the Schumpeterian insights that the innovation process is not unidirectional and that unexpected outcomes frequently occur at times of heightened uncertainty are taken into account.

Schumpeter's analysis of developmental change in the economy emphasized the processes of innovation that give rise to a 'perennial gale of creative destruction'. In his analysis, a market-led business strategy aimed at generating novelty, as in the case of new digital technologies, acquires 'its true significance only against the background of that process and within the situation created by it' (Schumpeter, 1943/2003, p. 84). In this situation, opportunities for change arise through a 'process of industrial mutation ... that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one' (Schumpeter, 1943/2003, p. 83). The disruptive character of innovation in 'general purpose technologies' such as digital technologies is well documented especially when they diffuse widely and become embedded in all sectors of the economy (Bresnahan & Trajtenberg, 1995; Freeman & Louça, 2001). In his analysis of features of the economy that give rise to instability, Schumpeter also noted that the financial sector and its performance are closely associated with all other features of the economy, contributing, in some instances, to the amplification of the disruptive effects of innovation (Schumpeter, 1912/2004).

It was awareness of these observations that sparked my initial framing of the analysis of knowledge society discourses and practices through the lens of innovation theory. The aim of this paper is not to present a disciplinary economic analysis, but my interest was peaked by a footnote in Schumpeter's *Business Cycles*, where he states that in privileging innovation for the purpose of economic analysis, it needs to be recognized that 'it is other social factors by which, among other things, innovation itself is determined and which make economic as well as general history' (Schumpeter, 1939/1989, pp. 82–83). One of those 'other factors' is the

influence of the policy environment on the values embedded in the policy intervention process. Schumpeter also emphasized that the social processes that yield innovation ‘do not stand in any invariant relation to each other and such relation as they display is much more complex than appears at first sight’ (Schumpeter, 1939/1989, pp. 82–83), indicating that models that overly simplify the innovation process are likely to provide limited insight.

Scholars have since developed a neo-Schumpeterian framework in which the assessment of the developmental potential of socio-economic systems focuses on technological innovation, but additionally considers the ‘institutional, organizational, and social and political dimensions’ that inform the ‘conditions for and consequences of a removal or overcoming of these constraints limiting the scope of economic development’ (Hanusch & Pyka, 2005, p. 8, 3). These scholars link public policy and financial performance with the analysis of industry strategy, noting that a complex, co-evolutionary innovation process involves learning and considerable indeterminacy of outcome (Perez, 2007). An emphasis on social processes of learning, the role of tacit knowledge, capabilities, and power relations is especially present when this theoretical tradition is integrated with insights from the field of the social study of technology which insist on an examination of societal choices or values, the role of guiding visions such as the knowledge societies’ vision, formal and informal power relations and cultural specificity in the way technological innovations are appropriated (Weber, 2007). Drawing on this neo-Schumpeterian framework, it is suggested here that the conjuncture of rapid innovation, financial market instability and policy initiatives for knowledge societies might give rise to changing discourses and practices as a result of learning from the successes and failures of policy interventions. The analysis in this paper offers an investigation of this possibility.

The amplification of destabilizing forces might, for instance, give rise to opportunities for learning about how best to embed a broader range of values in knowledge societies’ policy discourse and practice: values consistent with the commercial marketplace *and* with fairness and social justice. The familiar, and for some social scientists, obvious, insight that change in the digital environment is ‘doubly articulated’, involving reconfigurations of power relations in the material and in the symbolic realm (Silverstone, Hirsch, & Morley, 1991), is not generally taken into account by neoclassical economists or by many computer scientists and digital technology engineers. Their theoretical frameworks usually favour relatively simple models of material and immaterial (information) markets for the diffusion of faster and more sophisticated information processing technologies (Mansell, 2012). Such models arguably neglect social, cultural and political contextual issues that influence the role that digital technologies play in society.

If destabilizations are amplified during the current period of global financial instability and rapid innovation in digital technologies, then there might be evidence of learning arising from an improved understanding of the reasons for the perceived ‘successes’ and ‘failures’ of knowledge societies’ policies and digital technology projects. ‘Failure’ is understood here as a construct that may or may not be applicable to a digital technology project depending upon which stakeholder makes that assessment.

Empirical research on the processes of technological and socio-economic innovation indicates that learning from *both* success and failure is crucial, whatever the outcomes of policy and practice (van der Panne, van Beers, & Kleinknecht, 2003; Poel, 2013; Rothwell et al., 1974). In many reviews of knowledge society projects, reports document ‘success stories’ without indicating why they are successful or *for* or *by whom* they are deemed to be successful (Mansell, 2014). Success stories convey information, but this is rarely of the kind that is required to enable the stakeholders who initiate the projects to learn how to ensure that local stakeholders’ voices are heard or to influence the way digital technologies are appropriated within their societies. This is partly because projects are often evaluated principally from a donor agency, private sector or government

perspective (have initial goals been met? Is a project generating the expected rate of return on investment?).

In the context of the WSIS+10, in some cases progress towards targets is reported but this is usually without providing much insight into why projects have stalled or how problems as seen from the perspectives of local stakeholders might be addressed.³ The potential for learning is arguably minimal partly due to the brevity of reported stories, but, more importantly, because of the politics of seeking or sustaining funding for projects. When the interdependencies of technological innovation, finance and institutionalized relationships are downplayed and asymmetrical power relations are neglected, it is understandable that it is often risky to report the reasons for perceived failures, regardless of the perspective from which the assessment is made. This is partly because reports of failure entail risks for local stakeholders who are dependent upon the financial resources (and frequently the knowledge) of others. As a spokesperson for a local organization that initiated a project on the use of mobiles to monitor water pumps in Tanzania observed, ‘admitting failure ... is easy to support in theory, but much harder to do in practice’ (Daraja, 2011).

Additionally, in the prevailing discourse about knowledge societies, information and knowledge are often conflated (Tremblay, 2008). Attention is focused on the diffusion of bits of information and their exchange in the marketplace because this is central to market-led technology diffusion models. By contrast, a neo-Schumpeterian framework directs attention to the complex interdependencies between technology and other features of the innovation process. This makes it easier to examine the ways in which non-market values are treated by stakeholders in a more broadly conceived innovation process. The next section turns to a consideration of whether destabilizations are giving rise to a shift in the policy discourses that condition policy interventions relating to developing knowledge societies.

Post-WSIS knowledge societies’ discourses

United Nations agencies are leading deliberations on the reformulation of the MDGs with the aim of promoting policies consistent with greater economic equality, social justice and sustainability (Karver, Kenny, & Sumner, 2012). The Millennium Declaration of 2000 states that ‘we will spare no effort to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty’ (United Nations, 2000, Res. 55/2). The last goal – goal 8 – is to stimulate global partnerships for development through cooperation with the private sector to make available the benefits of new technologies and, especially, information and communication technologies (ICTs).

In line with this goal, support was provided for measuring the diffusion of ICTs, frequently focusing on mobile services and Internet access enabled by telecommunication infrastructure investment and, specifically, by financing broadband wireless networks. The 2012 MDG report observed that ‘by the end of 2011, the number of mobile cellular subscriptions had grown to an estimated six billion including 1.2 billion active mobile broadband subscriptions ... more than one third of the world’s population is using the Internet’; two thirds were in developing regions (United Nations, 2010, p. 63). The emphasis in this report on the diffusion and use of ICTs was consistent with the prevailing market-led technology diffusion approach to building knowledge societies. This model privileges access to technologies that support the exchange of information for a price in the marketplace, enforced through private rights of information ownership (Mansell & Steinmueller, 2013; Tremblay, 2011).

The prevailing discourse – privileging technology and market

The opening plenary of UNESCO’s WSIS+10 meeting confirmed the continuing dominance of a market-led technology diffusion approach, despite the fact that overreliance on market dynamics

has been challenged in the wake of the 2008 economic crisis by economists calling for a rebalancing of values informing economic policy so as to address asymmetries of power (Krugman, 2012; Stiglitz, 2010). Professor Jeffrey Sachs presented the WSIS+10 keynote speech.⁴ He emphasized the diffusion of digital technology innovations, putting advances in information processing, storage and transmission at the core of his presentation. The key feature of knowledge societies, he said, is disruptive change resulting from the revolution in digital technologies. Only by becoming part of ‘Moore’s economy’⁵ is it possible to achieve economic progress. Digital technologies, including infrastructure, hardware and software, are diffusing to all parts of the world, enabling a services revolution through, for example, the use smart monitors, wireless broadband and ‘in the cloud’ educational curricula. This is essential for ending poverty he said. The diffusion process, he argued, enables all countries to ‘leapfrog’ generations of earlier technology,⁶ ensuring that digital applications will serve as tools for peace and sustainable development. Sustainable development in a post-2015 world, he claimed, will yield inclusion in ‘the knowledge society’ (emphasis added). It will achieve this ‘by mobilising Moore’s economy to the fullest, progressively harnessing the ICT backbone’. Though he spoke of the importance of demand, he seemed to imply that the benefits follow more or less automatically from the market-led supply and diffusion of digital technologies.

Following Sachs’s presentation, a member of the International Telecommunication Union – UNESCO Broadband Commission for Digital Development emphasized the need for a broadband infrastructure for training and education, digital literacies, mobile learning and local content, with awareness of local context, but mainly as a result of investment in broadband to increase per capita growth, employment, competitiveness and creativity. Another plenary speaker representing Microsoft argued that policy-makers need to move beyond replicating offline inequalities and to imagine an education system incorporating rich interactive content and personalized learning, but mainly so as to ‘compete in the global economy’. The speakers used a mixed discourse so that values beyond technology diffusion and commerce were apparent, for example, in references to ‘critical thinking skills’, averting offline inequalities and the importance of education. The predominant theme overall was, nevertheless, that knowledge societies are fostered by the diffusion of technologies and market competition which automatically (or at least relatively unproblematically) stimulates innovation, encourages collaboration and promotes the production of content. This theme was present notwithstanding the several decades of empirical research findings confirming that the automaticity of benefits is not a characteristic of the way technologies become embedded in societies,⁷ an observation that is central to the neo-Schumpeterian theoretical emphasis on nonlinearity and the uncertainty associated with the innovation process.

Alternative discourses – emphasizing non-market values

The plenary discourse also seemed out of step with the discourse that frequently characterizes UNESCO-led policy debates. UNESCO, for instance, led the way within the United Nations system in promoting a plural and strongly participatory vision of knowledge societies. Its World Report, *Towards Knowledge Societies* (UNESCO, 2005), departed from ‘the information society’ discourse, favouring a discourse more consistent with a plurality of *knowledge societies*, with freedom of expression, universal access to knowledge and respect for linguistic and cultural diversity, among other values being given prominence (Frau-Meigs, 2011; UNESCO, 2009). This is consistent with UNESCO’s Constitution which affirms values beyond those associated with the market (UNESCO, 1945/1946, p. 1). In this context, digital technologies *may* contribute to the goals of peace and sustainable development and align with non-market values, but there is no guarantee that technological advance will yield uniform, costless or, necessarily, empowering benefits. UNESCO’s discourse is closely aligned with a discourse on human development,

understood as a process of ‘enlarging people’s choices ... to enjoy long, healthy and creative lives’ (Sen, 1999; UNDP, 1990, p. 1). Its policies seek to foster an open environment for information sharing, albeit within the prevailing framework of the private ownership of information.

The balance between market and non-market values has been tipping to favour markets for the exchange of individually (or corporately) owned digital information. This is so especially as the pervasive effects of digital technologies give rise to challenges to conventional business models and put company profits at risk and as states find it increasingly difficult to control the circulation of digital information (Mosco, 2014; Turow, 2011). Notwithstanding this trend, hybrid approaches that seek to rebalance market and non-market values in knowledge societies are emerging (Castells, 2012). Though the primacy of the market-led technology diffusion model is unquestioned by many businesses and governments, hybrid approaches favouring collective action and non-market values are increasingly in evidence (Mansell, 2014). More visible emphasis by leading economists such as Amartya Sen on human development approaches suggests that it may be timely for stakeholders who adhere to a market-led technology diffusion model to acknowledge that exclusively market-led approaches to technological innovation can be antithetical to the goals of human development.

Resistance to changing discourses

The WSIS+10 meeting plenary speakers only occasionally articulated this more balanced discourse. Differences in the policy discourse between those favouring a singular vision of a knowledge society and those favouring diversity, local context and collective action will undoubtedly persist. While relatively little is known about the design of policies and practices that might favour values consistent with inclusive practice in the case of digital technologies and information services (Hess, 2012), it is known that open digital technology development initiatives within knowledge societies can present threats to authority (Girard & Perini, 2013). This may occur, for example, when they do not operate within the information curation conventions of science, when the release of digital information is seen as damaging to a government’s view of the public interest in security or when they compete for financial resources with market-led initiatives (Mansell, 2013).

Resistance to learning how policy initiatives can embrace a wider range of values is not surprising in the light of the prevailing discourse that tends to presume the automaticity of outcomes associated with technological innovation. The question is whether an amplification of destabilizing ‘forces’ as discussed in the preceding section is creating new possibilities for learning how to achieve a rebalancing of values. If a rebalancing is occurring, even if it is not very prominent in the policy discourse, it may be visible in changes in practice. Knowledge societies’ project accounts might display evidence of this by illustrating a capacity for learning through awareness of their ‘successes’ as well as their ‘failures’.

Knowledge society projects – evidence of learning

One means of detecting whether a rebalancing of values is occurring is to examine whether there are signs of learning from a variety of knowledge society projects that are linked to the values UNESCO espouses and which are likely to benefit from a rebalancing of market and non-market values. This section focuses on whether there is any evidence of learning from innovations’ successes as well as failures in such projects. A selection of knowledge society projects is considered in domains where policy interventions have been persistent over the past decade – infrastructure investment, online business process outsourcing, open information, freedom of expression, health and education. The last four are broadly within the mandate of UNESCO and the first two fall within mandates of other United Nations agencies.

Infrastructure investment

A key goal for the development of knowledge societies is to bridge the digital divide and to ensure that low income countries (and regions within them) are not left behind by advances in digital networks and services. Infrastructure investment falls within the mandate of the International Telecommunication Union which is strongly influenced by the prevailing discourse of a mainly market-led model of the innovation process and which tends to assume that positive outcomes will follow from investment in 'Moore's economy'. Most investment strategies that are favoured, however, aim to connect the most economically important urban or peri-urban locations as the highest priority with the result of strengthening 'enclave' patterns of development with very mixed consequences. In addition, once connectivity is established, measures that might increase awareness and the use of, for example, mobile services are an afterthought as, for instance, in countries where those at the 'base of the pyramid' often are unaware of available applications (Zainudeen, Samarajiva, & Sivapragasam, 2011). In a study of Kenyan mobile use, although 60% of respondents owned a mobile phone in 2012, few were aware of the range of services they might access (infoDev, 2012). In contrast to the linear view of the digital technology innovation process, this illustration suggests instead that multiple non-market preconditions must be in place to achieve the presumed benefits of 'technological leapfrogging', in this case, through the introduction of mobile phones (Steinmueller, 2001).

Online business process outsourcing

A global market for online business process outsourcing has blossomed as network infrastructures have become more resilient in urban areas (Willcocks, Venters, & Whitley, 2011). Relatively basic and more sophisticated work is available to increasing numbers of workers in low and middle-income countries including Bangladesh, India and the Philippines as well as in countries such as Kenya. The economics of this intensely competitive industry sector are the principal factors that drive government strategies to build their knowledge economies, underpinned by digital technology strategies that employ the discourse of the market-led diffusion model. Efforts to address insecure working conditions and issues of worker remuneration do not appear to be high on policy or corporate agendas. For example, some 10,000 freelance workers are estimated to be working online in Bangladesh for clients in the USA and Europe and for local organizations. The online portals for outsourced software development, graphics design, search engine optimization, social media marketing, blogging or data entry generate considerable income for a few very successful workers, but the average is reported to be around a few hundred to a few thousand dollars annually (UNCTAD, 2011).

From a commercial market perspective, outsourcing and a variety of forms of crowdsourcing could potentially offer numerous benefits, but as Prpić and Shukla (2014) demonstrate, the configurations of crowd-based work or microwork using digital platforms (from Wikipedia to Amazon's M-Turk) are many. Efforts to address issues concerning whether workers are being fairly compensated (Kleeman, Voß, & Rieder, 2008, p. 23), or protected by labour laws and regulations (Lehdonvirta & Ernkqvist, 2011), are not prominent. Free's (2014) study of outsourcing in Kenya, for example, suggests that the experiences of those employed in the outsourcing sector are decidedly mixed, materially, relationally and subjectively. Yet the need for effective governance of online labour markets is scarcely mentioned in the discourse of policy reports on the benefits of 'virtual' working, confirming the salience of values associated with the market-led technology diffusion model. Labour practices are within the mandate of the International Labour Office, which does seek to improve working conditions, especially for youths and women in this sector, but with relatively little success in shifting attention to non-market values consistent with upholding worker rights. In Kenya, for instance, Wausi, Mgendi, and Ngwenyi, (2013,

p. 23) report that employers are adopting ‘the use of casual, temporary, part-time, contract, sub-contract and outsource employment as a strategic measure to gain control and manage labour’. Despite the mixed success of government policy initiatives, there is scant evidence of learning to embed values of fairness in the organizational environments that condition the development of this sector.

Open information

Open information knowledge society initiatives might be expected to be more responsive to local communities and their priorities as compared to the digital services and applications developed for the commercial market, but there are examples of projects where this is not achieved. Open information initiatives based on open source software and open social media platforms use freely available tools such as Ushahidi or OpenStreetMap to crowdsource data collection. These projects are often initiated in a way that is intended to privilege collective action and to value local participants. It does not follow, however, that local participants are always able to access and apply the information they generate and market-led technology diffusion model is frequently all too apparent (Wexler, 2011).

Open information projects aimed at enabling local participants to identify and report observations using digital platforms are increasingly common. A United Nations Children’s Rights and Emergency Relief Organization (UNICEF) project, for instance, was designed to enable young people in Rio de Janeiro to map a favela using digital cameras attached to kites or balloons. Images of environmental hazards were geo-tagged and uploaded to an online map which was accessible to local policy-makers. This project was intended to foster civic engagement and it was successful in encouraging anticipation of environmental problems. However, the information cascaded from experts to country officers and from there to community leaders and, only then, to selected youths. Predefined hazard categories were used and training was not contextualized within the locations where risks and vulnerabilities were developing. It is not feasible to assess what might have happened if resources had been devoted to mapping environmental risks in a manner consistent with local residents’ understandings, but this project suggests a failure to value local experience and a tendency to privilege pre-established standards for data collection, analysis and management.

This is not an isolated case. In other contexts where open or real-time data collection is being undertaken using digital platforms, the results are not always accessible or meaningful for local participants (Berdou, 2013). In the scholarly literature there is considerable evidence that when standards for information taxonomies and data classification (coding or tagging) are devised by experts in the global North, they are often incompatible with those that local participants consider appropriate in their contexts (Powell, Davies, & Taylor, 2012). Learning from these kinds of ‘failures’ would suggest a shift to open information initiatives so as to give more attention to participatory processes (Reilly & Smith, 2014), yet this lesson evades the initiatives of many knowledge society projects that aim to empower people through improved access to digital information.

Project failures that are attributable partially to resistance to developing locally relevant information standards and management processes display asymmetrical power relations that lead, in turn, to fragmented, albeit open, databases. This frequently also occurs when there is a failure to establish standards for linking data or when information that is curated or validated by professional science or government institutions is valued over information gathered by local project participants. This issue is illustrated by a project financed by the Dutch Information Knowledge Management – Emergent programme which aimed to make household and child survey data from the Oxford University Young Lives project more accessible to policy-makers, researchers and practitioners by using digital visualization tools and by integrating these data with other data from organizations

such as the World Health Organization.⁸ The project was unable to progress because the large organizations were not able to release usable data to groups whose data collection and reporting standards were incompatible with their official standards. Yet, the intra-organizational power relations that create barriers to data sharing are well documented in the scholarly literature as is the role of standards in developing interoperable data sets (Hawkins, Mansell, & Skea, 1995; Wehn de Montalvo, 2003). The evidence from multiple studies on innovation processes in this area and on the way power relations can create barriers to data sharing is substantial. Yet these lessons seem to be persistently neglected in knowledge society projects of this kind which privilege a narrowly conceived model of technological innovation.

Freedom of expression

The application of digital technologies in support of enhanced government transparency and freedom of expression in the political sphere is a major arena for knowledge society project investment (Heeks & Bailur, 2007). Yet, open government initiatives often stall because of a reluctance to share information, as indicated earlier. They also may fail to attract citizen participation because of political barriers to more transparent policy deliberation, another well-researched area (Dunleavy, Margetts, Bastow, & Tinkler, 2006). Despite considerable empirical evidence on the reasons for ‘failures’ of e-government websites, market-led values leading to efforts to contain costs, to reduce security breaches and to decisions to commission companies that offer proprietary products tend to predominate and the lessons in the literature frequently go unlearned by site developers.

In Estonia, for instance, over a period of 13 years, three e-democracy portals were introduced, including the Rahvakogu.ee site that was initiated in early 2013 in response to a political crisis. Researchers have reported, however, that many Estonians remained sceptical of the benefits of the website partly because two earlier platforms were regarded as failures. Despite the fact that citizens had taken up other state e-services in large numbers, poor portal service design, the absence of a clear role for the website within the legislative system and a misaligned offline decision-making procedure were all said to account for the lack of take up of the most recent site. In another case in Kenya, when the Kenya Open Data Portal, supported by the World Bank, was launched in 2011 to provide free access to government data sets for reuse by citizens, journalists and technologists, the data sets are reported to have remained locked up in government departments and the anticipated Apps had not been developed some two years later. The primary focus was on the deployment of the technical platforms privileging a simple technology diffusion model rather than attending to the power relations that so often limit willingness to share data.

Digital technology initiatives in the form of citizen-sourced data, video reports and digital storytelling may open up spaces for expression but they can also be perceived as failures when, for example, ‘digital shadows’ negatively impact on the lives of children or adults, especially when information transparency values are privileged that do not take prevailing structures of inequality into account. Here there is evidence from research that learning the lessons from such projects about the need to protect project participants from threats occurs only rarely. There are many instances of the absence of protections for those who are encouraged by project initiators to provide stories on topics such as sexuality or war crimes (CITIGEN, 2012), again suggesting a resistance to learning how to inculcate non-market values such as equality.

Health applications

Digital health applications are increasingly pervasive as a means of enhancing well-being. This is an area in which issues of privacy and people’s rights to control information about their lives are

particularly acute. Here too, though, market-led technology diffusion models are proving hard to resist. This is not, however, always the case. In Venezuela, for instance, front-line workers in health clinics focusing on reproductive health have worked with researchers and a local community, Centro de Salud Santa Inés, to identify ways of using mobile phones to improve health care and education. In this case, local health practitioners identified maternal health priorities and the researchers investigated the women's day-to-day mobile phone practices *before* a project pilot was started, taking into account local needs and learning lessons from previously failed initiatives. In contrast, a Health Information System in Malawi was designed by the government to respond to the need for organizational structures and networks to provide reliable and timely health information to mothers and children in remote areas. The project was seen as filling an important need, but little attention was given to the implications of the project for the quality of the health information distributed using the digital technology. The scarcity of resources for training medical personnel and overstretched hospitals due to staff shortages were not taken into account, notwithstanding evidence indicating that the provision of technology does not automatically yield benefits and, as in other sectors, health initiatives need to be introduced in ways that are cost neutral for their intended beneficiaries (Bloom et al., 2011). Too frequently, such projects are overtaken by the drive to minimize costs in line with a principally market-led model that calls for commercial sustainability and a neglect of the complex interdependencies among actors in the private, public and civil society sectors.

Educational applications

It is often asserted that improved education is needed to enable inclusion of the populations of countries in the global South in knowledge societies, the implication being that access to digital information will automatically counter power asymmetries as a result of improved access. In knowledge society projects, e-learning is one response and there are increasing numbers of projects supported by some of the world's leading universities. Smith and Winthrop (2012, p. 4) conclude, however, that although some content is locally sourced and there are projects that are enhancing the potential for learning, 'there are also many cases in which it does little to impact educational processes and outcomes'. Achieving a shift in the values that guide these projects involves much more than skills acquisition through access to information and improved education (Adam, Butcher, Tusbira, & Sibthorpe, 2011). The provision of educational content is of course crucial for the development of knowledge societies, but there is much scholarship demonstrating that it is not just any education that will encourage a shift towards practices that embrace values of equity and fairness. Willems (2014, p. 417) argues, for instance, that it is essential to 'take cognizance of the broader politics of knowledge production that privileges certain voices and marginalizes others'. This observation is consistent with the neo-Schumpeterian emphasis not only on industry dynamics and markets, but also on the need to take power relations into account in the local environment where novel technologies are being deployed.

Prospects for rebalancing values

The preceding section offers an analysis of knowledge society projects, some of which are initiated by the state, some by the private sector and some by non-profit organizations. While the discourse employed by their sponsoring organizations might adhere in some cases to the values of equity and fairness, in practice, they are seen frequently by their local stakeholders as having failed to privilege these values. What can we conclude about whether 'Schumpeterian' destabilizations are provoking learning about the limitations of the market-led technology diffusion model? There is of course some evidence of shifts in discourse and practice suggesting

learning from both ‘successes’ and ‘failures’, but relatively little evidence of the values of equality and social justice being balanced with those consistent with market-led values. Whatever the theoretical potential for a rebalancing of values, policy-makers and practitioners appear mainly to be clinging to a discourse and practice that privilege the market-led technology diffusion of innovations model. As Albornoz (2013) observes, paradoxically, the spread of participatory possibilities offered by digital technologies too frequently coincides with a deterioration in participatory processes and confirmation of the primacy of the prevailing model.

During times of economic crisis, policy-makers and practitioners might be expected to be prompted by changes in the environment for innovation to be learning about ways of implementing digital technology and service initiatives that are less prone to failure from the perspectives of local stakeholders. This might occur when they seek novel approaches to reinvigorate their market prospects. The discourse during the WSIS+10 plenary session and, indeed, in other sessions at the meeting employed terms such as participation, multi-stakeholderism, freedom of expression, indigenous knowledge and cultural diversity, as well as technology diffusion (mobile, Internet and broadband). This mix is consistent with the discourse present in earlier WSIS 2003 and 2005 debates (Padovani, 2005). The foregoing analysis suggests, however, that learning how to rebalance values and practices in a way that is sensitive to the complexities of local organizational, social and political conditions is not much in evidence over the past decade.

In our UNESCO-commissioned report, *Renewing the Knowledge Societies Vision for Peace and Sustainable Development* (Mansell & Tremblay, 2013), we suggested that it should be feasible to foster the values of openness and participatory initiatives especially since UNESCO’s mandate sensitizes it to non-market values. It should be well positioned to take the lead in enabling learning about the reasons for the successes and failures of knowledge society projects. We refrained from commenting in the report on the likelihood of this happening because we expected that a pessimistic assessment would put our report at risk of being deemed too ‘critical’ for publication and distribution by UNESCO.

Writing here for a scholarly journal, an assessment of the likelihood of a shift in values is warranted. In spite of advocacy by many members of the scholarly community and not a few practitioners who lobby for values respecting the rights of local populations, it is principally commercial values associated with investment in hardware and software (mainly but not exclusively proprietary) that continue to guide knowledge society projects. There is little evidence in the projects discussed in this paper of learning from failures to apply digital networks and services in ways that give local groups visibility, voice and the authority to make decisions.

Power asymmetries favouring the market-led technology diffusion model are unlikely to wither away. This model or vision of the role of digital technologies serves as a proxy for the interests of those seeking economic or political benefit from producing them and the digital information that is sold in the marketplace. Even in the face of destabilizations associated with financial markets and rapid technological innovation, and notwithstanding wide-scale change associated with a sharing culture (John, 2013), there are few signs of learning that would favour a rebalancing of values, at least in the case of the projects considered here.

Scholarly examinations of the potential role of digital technologies in resisting (and overcoming) asymmetries of power sometimes suggest that ‘control over linguistic sense and meaning and the networks of communication’ is the core issue in the political struggles in the twenty-first century. In this context it is argued, for instance, that digital ‘tools’ will be implemented to empower the excluded and disadvantaged (Hardt & Negri, 2001, p. 404). This faith in the automaticity of technological progress is another instance of failure to learn about the asymmetrical power dynamics that are embedded in the technological innovation process. The assumed link between technology innovation, diffusion and empowerment seems to serve an interest in resistance against those pursuing market-led strategies. The discourse of these scholars, nevertheless,

continues to embrace the prevailing market-led technology diffusion model, notwithstanding their aim to foster non-market values.

In some reports on knowledge societies, it is acknowledged that there is no necessary relationship between technological innovation and poverty reduction, empowerment or well-being, for example (UNDP, 2004). In these instances, it seems that there is a discursive move away from the market-led technology diffusion model, and towards a more nuanced understanding of the complexities and nonlinearities of the innovation process. Clearly, however, a discursive move needs to resonate with change in the practices of the stakeholders who are charged with implementing digital technologies. In the African context, for example, Willems (2014, p. 418) insists that where power asymmetries persist, it is essential to explain *how* these emerge and how they are replicated, and to 'relate them to the broader set of power relations that characterizes global academic knowledge production'. This suggests the need for an analysis that exposes these power relations and the way they become embedded in digital information projects. This is unlikely without a framework that highlights the organizational, institutional, social and political dimensions of the innovation process, consistent with a neo-Schumpeterian informed analysis of the issues.

Conclusion

UNESCO and other organizations with a mandate to foster knowledge societies for peace and sustainable development have opportunities to provide exemplary insight into the values and practices that could help to foster collaboration in open and participatory knowledge society environments. If they find the political will to do so, based on greater exposure to the reasons for innovation failures (as well as successes), however, they undoubtedly will face strong opposition. Schumpeterian 'creative destruction' threatens prevailing authoritative economic and political interests everywhere. Unsettled or destabilized by the combined forces of digital technology innovation and economic crisis in recent years, public and private authorities are relying on the commercial production and consumption of digital information, or on the rapid diffusion of digital technologies for their intelligence, to secure their interests. Learning will continue to play a major part in this. Stakeholders in the global North and South that fail to learn the limitations of the market-led technology diffusion model are likely to be able to command the economic resources to engage in continuous technological innovation. The question, however, is whether they will do so in ways that counter initiatives – when they do occur – that aim to rebalance market values with cultural, social and political interests in inclusion, voice, equality and diversity.

Research cannot itself change the asymmetrical power relations in knowledge societies in the face of resistance to learning about alternative models which give greater attention to *all* of the facets of the innovation process – in addition to market and industrial dynamics. It can, nevertheless, at least expose how these relations are being perpetuated by failures to take into account the way simple models of market-led technology diffusion neglect non-market values and, subsequently, influence policy interventions. The research community needs to make greater efforts to analyse the values that underpin knowledge society projects and to bring imbalances in the value mix to the attention of the stakeholders involved in them. Exposing and explaining the reasons for their success or failure from the vantage point of local people are crucial if they are to be empowered to make demands for change.

Framed by a theoretical understanding that highlights the co-evolutionary processes of innovation and acknowledges that change in knowledge societies does not follow an automatic pathway, the analysis in this paper suggests that there is some potential for shifts in prevailing discourses and practices. When researchers and policy-makers in the global South ask 'are we really advancing with ICTs [information and communication technologies] towards an information society different from current society, or are we moving towards a disinformed society,

with new divides?’ (Macedo Diniz, 2013, p. 89), a space is opened for critical examinations of how imbalances between market and other values are being maintained – as Schumpeter observed, capitalism is ‘never stationary’ (Schumpeter, 1943/2003, p. 82).

This space is particularly likely to open when the conjuncture of financial and technological destabilizations is creating uncertainties about the viability of existing models and practices. These spaces could be exploited more effectively by those who value inclusive and equitable knowledge societies if the information that is needed for learning were to become more widely available. This requires far more than fostering the rapid spread and availability of innovative digital technologies; it requires an understanding of the power relations at work within a multi-faceted innovation process; a process that is understood to involve many more complex features than are considered when analysis is informed by the market-led technology diffusion model.

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Notes

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2. Thanks to Tim Davies, Indrek Ibrus, Linje Manyozo, Dan Paré, Mike Powell, and Pollyanna Ruiz for the illustrations used in this paper.
3. Fourteen reports published between 2010 and 2014 by United Nations agencies, including UNESCO, ITU, UNDP and UNCTAD, in relation to reviews of the WSIS goals and action plan were reviewed to make this assessment.
4. Professor Sachs is the Director of The Earth Institute, Quetelet Professor of Sustainable Development, and Professor of Health Policy and Management at Columbia University. He serves as special advisor to the United Nations Secretary General who is responsible for the processes leading to the renewal of the MDGs and we may assume that his views are influential.
5. The prediction in 1965 by Gordon Moore that the data density on integrated circuits would approximately double every 18 months which it more or less has thereby supporting ever faster information processing.
6. See Soete (1985) for an account on technological leapfrogging.
7. See Winner (1977) and for a review of the literature on this point, see Mansell, Avgerou, Quah, and Silverstone (2007).
8. See <http://linkedinfo.ikmemergent.net/content/young-lives-linked-data-demonstrator>.

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