Towards a creativity research agenda in information ethics

Justine Johnstone

The value of information and its associated tools and technologies for human wellbeing and social development is no longer controversial. While still less well-endowed than other regions, Africa has growing numbers of print and electronic journals, funding programmes, and researcher and practitioner networks concerned with the generation and use of information in multiple domains. Most of this activity focuses on information as a knowledge resource, providing the factual basis for policy and intervention. By contrast, more creative applications of information – as the basis for new ideas, whether or not they turn out to be factual – have been almost entirely ignored. Being able to generate and develop new ideas is, however, an equally important and arguably a prior capability but, until recently, one that has been little understood. Recent advances in cognitive science and creativity research are changing this, however. It is now possible to see how a rich research agenda can be developed concerned with the role of information and information and communication technology (ICT) as creative resources.

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Introduction

The value of information and its associated tools and technologies for human wellbeing and social development is no longer controversial. While still less well-endowed than other regions, Africa has growing numbers of print and electronic journals, funding programmes, and researcher and practitioner networks concerned with the generation and use of information in multiple domains. And it now has its own learned society dedicated to studying and promoting the welfare of the African infosphere.

This is an exciting time for all those concerned with information and with Africa, and a good moment to consider future research agendas. One area that has received almost no attention so far from either the information or the development community, but which is centrally related to human and social wellbeing and depends fundamentally on information resources, is that of creativity. This chapter outlines some directions for a research agenda that it is hoped will become part of the AIES community's work in the future.

Creativity

The generation of new and valuable ideas is a core component of the ability of individuals and groups, both to respond adaptively to change and to envision and bring about change (Runco, 2004). As such, creativity is clearly of central importance to human, social and economic development – and yet the concept has received little direct attention in development research, and almost none in informatics and information and communication technology (ICT) for the development field.

The reasons for this are obscure, but one might speculate that they could derive in part from the common association of creativity with world-leading achievement in the arts and sciences, and thus apparently a lack of connection with the lives and problems of the poor. In fact, this view, while true of some creativity research, represents a small and somewhat outdated conception of the subject, which increasingly focuses on creativity as a universal human capacity and an everyday activity that can be either nurtured or damaged by a wide range of social and environmental factors, including information

resources and technologies. There is, therefore, a strong case to be made for a research agenda looking in detail at the linkages between information and creativity in the context of African development.

Creativity as a developmental capability

Despite the almost total lack of overt reference to creativity in development writing, there are many points of contact at a conceptual level. Creativity research, for example, focuses on a diverse range of phenomena familiar to anyone working in development, such as:

- Problem definition and problem solving (Mumford et al., 1991)
- Divergent thinking (the ability to come up with multiple possible solutions rather than striving after a single "right" answer)
- Tolerance of ambiguity
- The cognitive flexibility to deal with a changing environment (Flach, 1990)
- Advances in the arts, sciences and technology (Dudek, 2003)

Creativity has also been studied as an economic driver, through its role in innovation and entrepreneurship (Runco, 2004; Stehr, 1994) and in the development of cultural and creative industries. Similarly, concern with aspects of creativity – or the lack thereof – can be found in multiple guises in development literature, including:

- "Cultural dependency" (Seers, 1981)
- Project problem solving (Hirschmann, 1967)
- Explanations for changes in models of development (Sikkink, 1997)
- Alternative and liberatory ways of thinking (Escobar, 1995; Shrestha, 1995)
- Envisioning a better future as the basis for resistance (Scott, 1985) or policy development (Blackmore & Ison, 1998)
- Innovation and new ideas in participatory practice (Chambers, 2005)
- Fostering local research capacity (Kim, 1995; Adair, 1995)

Development applications of creativity concepts can be roughly categorised as either instrumental or constitutive. In the former case, creativity is valued because of its potential to deliver some other development objective. Hirschmann (1967), for example, commented on the role of creative

problem solving in development projects and the way in which long-term commitment and irreversibility tended to unleash more creative responses, albeit at some cost (Chambers, 2005). Similarly, creative arts such as drama and painting can be used to develop awareness of, and engagement with, issues such as HIV or children's rights, or as therapy.[1]

Perhaps the dominant instrumental perspective, however, is an economic one, where creativity is viewed as "human capital" – a resource with economic value. The creative industries as well as technical and scientific innovation can provide employment, generate revenue, attract investment and broaden the economic base. Even from a purely instrumental point of view, then, the importance of fostering creative capabilities is not in question as a development strategy.

A more profound perspective on creativity can, however, be found underlying liberatory and "people-centred" approaches to development, where the ability to free oneself from conceptual constraints, to think differently, to imagine new forms of society and to envision a range of alternatives is seen not as a vehicle for arriving at development, but as part of the very meaning of development. Such views can be found in, for example, the Marxian concept of "false consciousness", Gramsci's notion of ideological control, Freire's "pedagogy of the oppressed", liberation theology, dependency theory, the ideational resistance proposed by Fanon, Said and Escobar, and also capability theory (e.g. Sen, 1992, 1993, 1997, 1999; Nussbaum, 1995, 2000; Alkire, 2002).

Also in the work and meaning of development itself, important but often implicit connections to concepts related to creativity can be found in various forms in several policy domains. At an international level, the Universal Declaration of Human Rights asserts rights to freedom of thought, expression, belief (and, importantly, of the right to change one's beliefs) and participation in cultural life and the arts and sciences. National policies typically include a central focus on the development of "human capital" through,

for example, health and education – both of which have deep and complex links with aspects of creativity. Cultural and economic policies that aim to promote artistic, technical and scientific development, or industries such as media and tourism, or that focus on innovation and entrepreneurship, also frequently make implicit or explicit reference to the fostering of creativity. Many developing countries, for example, have adopted local content strategies aimed at promoting indigenous media production.

Policy is, however, not just instrumentally related to creativity, but can also be seen as the outcome of creative process, based on a vision of what could be and of how it might be achieved. A number of developing countries have shown high creativity in the development of new policy frameworks and approaches to difficult social problems. For example, South Africa's Truth and Reconciliation Commission has shown how a local innovation can come to be globally recognised and influential. The conception of an "African Renaissance" has similar aspirations and African philosophical concepts, such as *ubuntu*, have been creatively used in framing policy and practice in many areas. As recognition grows of the limitations of Western "domination and exploitation" views of the environment, conceptions of nature drawn from African and other traditions of thought can be expected to enter creatively into policy discussions at a global level.

Creativity research

Studies of creativity are standardly classified into four main focal categories (Rhodes, 1961; 1987):

- *Person:* The traits, abilities, motivational and affective states, and behaviours that appear to be correlated with creativity, such as the work of Barron & Harrington (1981), and Amabile (1990)
- *Process:* Cognitive and social dynamics governing the generation, expression and acceptance or adaptation of new ideas (e.g. Martindale & Hasenfus, 1978; Runco, 1991; Csikszentmihalyi, 2003)
- *Pressure:* Pressures in the social and material environment that either enhance or inhibit creativity (Murray, 1938), such as access to resources, family or organisational structure, support for and valuing of originality, or the

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[1] It is arguable that the therapeutic use of creative expression may be better seen as a constitutive perspective, since therapy and self-development are closely allied.

need to find solutions to urgent problems (e.g. Amabile & Gryskiewicz, 1989; Witt & Beorkrem, 1989; Sulloway, 1996; Albert & Runco, 1989; Amabile, 1990)

- *Product:* Studies of creative outputs, such as publications, patents or art works (Simonton, 1984; Gardner, 1993)

Runco (2004) identifies a significant amount of creativity research with a disciplinary focus, some of which cuts across the focal categories or fails to fit the classification scheme above. Those of particular relevance to development domains include the following:

- Connections between physical and mental health and creativity (Maslow, 1971; Rogers, 1970; Runco & Charles, 1997)
- Cognitive research on memory, attention, knowledge, intuition, imagination, problem finding and conceptualisation, as well as specific thinking techniques and skills (e.g. Pollert et al., 1969; Martindale & Greenough, 1973; Mumford et al., 1991; Runco, 1999)
- Research on family structure (Sulloway, 1996) and gender roles and differences (Harrington et al., 1983; Reis, 1999) in creativity
- Economic theories relating creativity to socio-economic status (Dudek et al., 1993) or to conceptions of "human capital" (Walberg & Stariha, 1992)
- Studies of educational practices, such as testing techniques (Reiter-Pelmon et al., 1997), classroom environment (Wallach & Kogan, 1965) and teacher attributes and expectations (Graham et al., 1989; Runco, 1984, 1989, 1992)
- Research on creativity in organisations and groups (Amabile, 1990; Witt & Beorkrem, 1989; Runco, 1995; Rubenson & Runco, 1992) and on innovation (reviewed by Service, 2003; and Rickards & DeCock, 2003)
- Connections between social processes and creativity (Amabile, 1990; Paulus & Nijstad, 2003) and the effectiveness of social techniques, such as brainstorming (Rickards & DeCock, 2003)
- Studies of creativity domains (Gardner, 1983), the addition of new domains, such as morality (Stein, 1993; Gruber, 1993) and nature (Solomon et al., 1999), and the increasing recognition given to "everyday" creativity as part of normal problem solving (Cohen & Ambrose, 1999; Runco & Richards, 1997)
- Cultural differences in creativity, such as

levels of social control (Aviram & Milgram, 1977), attitudes and values (Johnson et al., 2003), expectations (Dudek et al., 1993), domain differences (Runco, 2004) and similarities, for example in childhood developmental research (Raina, 1984)

Some authors have suggested other classificatory schemes. Hemlin et al. (2004), for example, argue that environmental influences on creativity need to be studied at the micro-, meso- and macro-levels. There is, therefore, no simple way of characterising the field but rather – and perhaps appropriately – a broad and divergent body of work cutting across multiple disciplines, all with useful – if very different – contributions to make. As a result, an African creativity agenda has the potential to open up an extremely rich and interesting field of investigation.

Information as a creative resource

Information is the raw material of human thought. Without access to information and the ability to process it effectively, we cannot meet our basic survival needs, relate to others, do our jobs or find our way around the world. Whether acquired as sensory input, through social learning or partially encoded inherently, information is the medium in which our minds operate and the transformation of information – in visual, verbal, spatial, symbolic or another form – *is* thinking. Some of this thinking is about factual knowledge – for example, working out how clean a water source is, how many children go to school or where there are jobs – but a great deal is about how things could, should or might be, or could, should or might have been. These "counterfactual" or imaginative thought processes depend on information just as much, and are just as important as those involved in knowledge acquisition. They are, in fact, heavily involved in the generation of knowledge, particularly of a theoretical or probabilistic nature. Yet they have received barely a fraction of the attention from academic, practitioner and policy communities.

One reason for the lack of attention to creative processes in information disciplines is that, until quite recently, we have had few tools for describing and analysing imaginative phenomena. Recently, however, new approaches in cognitive science seem to offer promising ways of thinking about the creative functions of information and

even, perhaps, about the creative foundations of ethical thought itself.

The theory of conceptual blending

Until recently even in cognitive science, it tended to be assumed that the imagination was beyond the scope of empirical investigation and that while it might be possible to correlate creativity with a range of personal, social and environmental factors, the actual mechanisms of new idea production themselves were somehow permanently inaccessible to scientific investigation (Evans et al., 2006). Since the 1990s, however, a powerful, flexible theory known as "conceptual blending" or "conceptual integration" has been developed in the field of cognitive linguistics. It shows imaginative processes to be systematically involved in human thought and identifiable in language through the use of mapping tools and techniques.

Conceptual blending is a general theory of idea generation as a process in which elements of two or more "mental spaces" are "mapped" onto one another and merged to form a third space with emergent properties of its own not found in the two contributing spaces (Fauconnier, 1997; Fauconnier & Turner, 1998).[2] Conceptual blending, it is argued, is a systematic but complex form of processing which, contrary to traditional views of imaginative thinking, exhibits many standard features and obeys a number of optimality constraints (Fauconnier & Turner, 1998; Turner, 2001). Much of the time conceptual blending operates as "background" cognition at a level below that of conscious thought, but it can also be intentionally engaged in during deliberately imaginative cognition.

This theory of dismantling and recombining elements of symbolic structures has some powerful applications. For Turner (2001), it is the basis of language, and even the distinguishing feature of human intelligence including, in particular, the processes of metaphor, analogy and counterfactual reasoning that lie at the heart of creativity. Counterfactual reasoning is also a primary tool of

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[2] "Mental spaces" are dynamically produced conceptual clusters generated "online" during the process of cognition. They draw on more stable conceptual structures, such as scripts and schemata.

human and social science research. Historical reasoning frequently takes the form of retrospective counter-to-reality speculation, such as: "If the Treaty of Versailles after World War I had not been so punitive, the Nazis would never have gained power in Germany".

By contrast, policy disciplines operate in prospective mode, focusing on the potential results of actions as yet unperformed, for example: "Increasing income tax to fund better healthcare will be acceptable to the electorate only if they see results quickly". According to conceptual blending theory, what is going on in cases of this sort is, in fact, a type of thought experiment or mental simulation in which elements of a set of ideas about public services, taxation and healthcare provision are combined with elements from a set of ideas about public attitudes about tax and services. The policy being proposed is the result of this simulation. In this case it is a conditional result, with the element of speedy results being seen as critical in the formation of public attitudes. The success of the policy, it is being suggested, will depend on whether healthcare reform can be accomplished in a timescale that integrates with that of public attitude formation. In this way, conceptual blending theory shows how meanings are creatively manipulated in essentially the same ways in a vast range of everyday and expert thinking.

Creative problem-solving blends

One interesting area of application for blending theory, particularly in the context of African development, is in local problem framing and problem solving. A large amount of research and many failed programmes across the development agenda testify to the need for problems and solutions to be locally framed and locally owned. Research by the author, for example, found AIDS organisations operating in KwaZulu-Natal identifying needs for "alternative conceptions" and appropriate "models", "strategies", "approaches", "programmes" and "how to" understanding in multiple domains. At the same time, it is clear that new models and local innovations are emerging, as communities struggle to come to terms with critical problems for which readymade solutions do not exist.

While local innovations themselves have to some extent been studied, very little is known about

the creative processes through which problems are framed and solutions developed locally. Blending theory offers a promising suggestion as to how we might start to undertake such investigations. Consider, for example, this comment by an NGO worker in a rural area, criticising the way in which social science professionals were advising the closure of orphanages in favour of community care – as, she saw it, without full understanding of local realities:

The people who work down there in the community are saying, "Our people are so poor, nobody is prepared to take somebody else's child". One woman keeps about 54 AIDS orphans in her home. She is not rich but she says, "What can I do, they don't have any other place to go?" She is always open and anyone who wants to come and take those children can come. But nobody comes forward. Most people are so poor. They say, "Everyone wants to feed those kids but I can't even feed myself. How can I look after somebody else's child?"

In this example we can identify two contributing mental spaces, one associated with the problem situation and one with the proposed solution. The blend – a mental simulation in which the advocated solution is imaginatively implemented in the problem situation – is implied rather than made explicit:

- *Contributing space 1* (Problem space – perceived real-life situation): There are many orphans in our community but families do not take them in.
- *Contributing space 2* (Solution space – proposed desired outcome and associated intervention): Children do better in families than they do in orphanages. Orphanages in this community should be closed.
- *Blend* (Simulation space – projects intervention into real-life situation generating counter-factual scenario): Local families take in children. Families cannot feed themselves. The implied (unspoken) result is that families cannot feed the orphans either, with disastrous results.

The blend does not cohere but terminates in the asking of a rhetorical question ("How can I look after somebody else's child?"), with the implied answer "You can't". There is no way to integrate the two contributing spaces and the blend disintegrates. The "solution" offered by outside experts turns out not to be a solution at all, and

the thinker is returned to contemplating the problem space. This example might seem somewhat negative, ending as it does in the rejection rather than the generation of a solution. Failed blends, like *reductio ad absurdum* arguments, however, do some useful cognitive work. The thinker is not in the same position after running the simulation than he or she was before. While the solution put forward by the experts has been rejected, the problem ends up being the focus of renewed thought, refocused from a question about the best type of care for orphans to a more fundamental question about poverty and survival.

It is not difficult to see how ethical thinking itself could be conceived in similar terms. For example, in considering choices between different courses of action we typically simulate various scenarios in our minds – often socially assisted through dialogue with others – in order to see what their effects might be and how we feel about them. It may even be possible to give quite precise definitions of moral emotions based on this theory. Empathy, for example, could perhaps be seen as a complex blend of an already blended space (a hypothetical "me in someone else's shoes" space composed of elements of my own subjectivity, combined with elements of another person's identity) with an action or event space, giving a composite "what it would be like for someone else if I did this/if this happened" blend. Simulations of this sort would then feed back in to my conceptualisation of the action or event space, leading me perhaps to adjust my views or intentions in the light of my simulated experience of being in someone else's situation.

The role of ICT

Another direction for research in this field is in investigating the linkages between creativity and ICT. To date, research on these topics has been conducted almost exclusively in Western contexts where there is, for example, a significant research agenda examining the effects of electronic environments on various forms of creative activity, such as idea generation, problem solving, expressive writing and artistic production (e.g. Wertheimer, 1985; Christensen, 1989; Christensen & Tennyson, 1988; Moore-Hart, 1995; Klein et al., 2003; Klein & Dologite, 2000; Yang, 2003; DeRosa, 2007; Delfino & Manca, 2007). In

addition, software and hardware development has been seen as a creative undertaking; digital media are increasingly being integrated into artistic production and performance, leading to new genres; while, on a more macrolevel, whole new creative and content industries are emerging, at least some of which may have genuine claims to influencing the economic dynamics of creativity.[3]

In trying to establish some order in this field it may be useful to categorise approaches to ICT and creativity according to the nature of the engagement with technology, for example, whether it is concerned with development, implementation, use or automation (Mateos-Garcia, 2006). Development here refers to the process of constructing new and useful technologies, applications and products; implementation to find new ways of applying existing technologies; use to apply ICT instrumentally as a tool or medium for supporting or enhancing creative activity; and automation to enhance attempts in artificial intelligence to replicate creative activity in machines. In addition, research will vary according to level (individual, social, industry sector, etc.) and according to object of study or disciplinary orientation – for example, whether it is focused on an individual behaviour, social process or creative outcome of a particular sort. Almost no research in any of these fields has been focused on developing regions of the world. This is cause for concern, given the intimate connection that exists between development and capabilities such as problem solving and innovation.

Conclusion

A considerable amount has already been written on the general topic of information and ICT as contributors to development, and particularly on their importance as resources for development knowledge, communication and interaction. So far, there has not been any equivalent focus on information as a resource for more creative development functions, such as idea generation and problem definition. A creativity perspective, it is proposed, may well provide useful insights that complement and enrich existing perspectives on the developmental role of information in the African context. Investigating the mechanics of mental blending and simulation, for example, may show how local perspectives can lead to new and more constructive ways of framing problems, and how expert understandings can be more coherently integrated with local realities. Considering ICT as a creative resource may lead to new ways of conceiving and evaluating the role of Internet projects such as Development Gateway and Eldis, and may suggest new forms of technological intervention and engagement.

It is perhaps not obvious that this is an *ethics* research agenda. However, as hinted above, creativity research holds out the prospect of new ways of understanding ethical thinking. In addition, a focus on information as a creative resource necessarily incorporates a value dimension, as creativity is explicitly about the production of *valuable* new ideas. Considerations of who creates new ideas, who they are valued by and for what purposes, how they are propagated and to whom, and how they interact or conflict with other values and interests, are thus necessarily central to a creativity analysis. Ideas are born into political and contested space, and how they succeed or fail to achieve recognition and influence can depend on a multitude of social, political and economic factors entirely independent of any intrinsic or technical worth. Thus, in considering the role of information, access, participation and influence will be key issues to address. ICT has the technical potential to provide tools for both idea generation and idea propagation and recognition. However, ICT resources are not equally available to all and even when they serve as mere access to resources it does not enable equal use to be made of them and equal benefits derived.

In examining the creative dimension of information and ICT, then, it is essential to consider not only the technical aspects, but also the full range of factors affecting the ability of individuals and groups to derive creativity benefits from them. A central part of a creativity agenda in information ethics will thus be the analysis and critique of existing systems and regimes as they impact

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[3] The use of the word creative in "creative industries" does not, of course, imply any necessary connection with ideas that are either new or valuable. In the UK, for example, the Department of Trade and Industry defines creative industries as those which make money from content or intellectual property, thus including mobile phone ring tones and satellite navigation systems.

differentially on the creative capabilities of individuals and groups. If blending theorists such as Turner and Fauconnier are right and creativity is the distinctive mark of our humanity, then there can be no issue more important in information ethics.

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