Affordances and the New Political Ecologies

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Abstract

The theory of affordances has been around for many years, and is the foundation of the growing field of ecological psychology. What makes it more relevant, and more widely relevant today is that the way we perceive, act and interact in the internet society has changed, opened up and become dynamic on a global scale. This paper situates 'affordances' within an ecological framework based on complexity theory, and outlines the way in which Gibson sought to put perception 'back into the world', rather than seeing it as a purely cognitive matter, by formulating the concept of affordances as the product of interactions between the actor and the environment. Affordances are based on self-organisation, and are associated with change, adaptation and innovation. This chapter outlines in some detail how we can distinguish between affordances and uses, and how affordances relate to metaphors, science and, importantly, identity, communities and networks. Several scenarios are explored from various kinds of political violence and terrorism, to test the idea of affordances in practice. There is also the question of whether the modes of production of the internet society provide the basis not only for a range of affordances in particular contexts, but also in a much wider range of emerging, global, contexts. Knorr-Cetina's theory of 'microglobal structures' provides examples of just such emerging, flexible, global structures, in finance and terrorism, and these are explored at some length, to draw out the implications for political violence and terrorism.

Introduction

The increasing use of 'affordances' in educational research, human computer interface design, and psychology (Laurillard et al 2000, Costall 2008, Norman 1999, Noë 2008) marks a shift into a more explicitly *ecological*[1] framework for describing and analysing perception, action, learning and innovation. Ecologies in this sense are self-organising, interactive, adaptive, and thrive on variance and redundancy[2]. In ecologies, 'survival of the fittest' means the fittest *to adapt to changes* in the environment, and even to adapt the environment itself, rather than 'survival of the strongest'.

Affordances are more than just passive or objective opportunities that the environment or the technology offers: affordances are not 'in' the environment, but 'in' your interaction with it. It might be useful to start with an example: the Two Times Table.

The Two Times Table.

Take two scenarios: In scenario A an adult comes into a room and sees a table, chairs and a table cloth. The adult says: "That's great, there's a nice table and table cloth, so with a bit of rearranging, and some better lighting, I can invite some friends over and we can have a dinner party". In scenario B a four year old child comes into the same room, and says "That's a problem. The table is too high for me to draw on, but too low to walk under, as I'm likely to bump my head. But wait a minute, if I turn it upside down, and throw the cloth over the top of the legs. I can invite some friends round, and we'll have a great house to play in".

The room, the table and the table cloth are the same in both scenarios. The affordances are radically different, and in practice they conflict with each other. The affordances are the opportunities that the room offers the *particular people* in each scenario for making sense of, and acting in that environment, using the same space and materials, but in quite different ways[3]. The adult and the child's individual and social identities and positions are inseparable from the way they perceive and act within them and use them, within a micro-community.

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[1] The ecological framework is based on complex adaptive systems theory (CAST), see for instance Cilliers (2005).
[2] See Blackmore (2008) for an introduction to the broader issues, and to the three ecological replicators: genes, 'memes' and 'temes'.
[3] It is hypothetically possible to make an exhaustive list of all the potential affordances in a particular context. In practice it is impossible, as you never know who is going to turn up next in that environment, and self-organising agents often produce unpredictable outcomes (see Cilliers 2005 on CAST).

Depending on the outcomes of the uses of the table in the two scenarios, the child and the adult's identities will be enhanced or bruised afterwards. They may re-assess whether these affordances are desirable. Their learning and their identities are interdependent in more ways than one. Some of the affordances that they explore, benchmark and master will be put behind them as unfortunate 'learning experiences', while other affordances will become integral to their ongoing identities. They may also develop a community of like-minded people who share and consolidate their affordances within a micro-community.

Why Affordances, and Why Now?

Affordances are the product of interactions between an actor[4] and its environment. Each interaction contributes to the way the actor makes sense of the environment, and potentially changes both actor and environment.

These interactions may depend on particular properties of the actor and/or the environment, but the properties of either the actor or environment, necessary though they may be, are not sufficient for the affordance to be realised; affordances are realised within the interaction between actor and environment. In other words, an affordance is something that is only realised when you carry out an action[5].   And that, in turn, may depend on the creativity and the mettle of the individual concerned.

There are several reasons why the term *affordance* is both relevant and timely for our understanding of political violence and terrorism in general, as well as in the particular political ecologies of the digitally networked world of the 21st Century. If we start off with a definition of affordances as the product of interactions between an agent and its environment, we can identify some of the key elements of affordances, its development, and why it is relevant now.

Perception

Affordances provide us with a rigorous reformulation of the nature of perception, which is fundamental to the way people see and act within politics and within society. The idea of *active-perception,* or *perceptive-action* is based on the work of Gibson, who invented the term affordances, and whose work gave rise to Ecological Psychology, which in many ways cuts across and resolves some of the dichotomies between Behavioural and Cognitive

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[4] 'Actor': i.e. in the broadest sense of the term, including even organisations.

[5] It is of course possible to distinguish between affordances and *potential affordances,* but this is dependent on the imagination and skills of the person concerned, and the time and context that prevails, all of which are variable. So potential affordances might not actually be useful in practice, and it might be better to focus on actual affordances instead.

psychology. Gibson writes that affordances are the realisation of both the 'objective' properties of an artefact and the subjective properties of a particular use for a particular user: "An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behaviour. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer" (1977: 129).

Several researchers have built on Gibson's work, and have developed and consolidated the concept of 'affordances', which now emphasises both Gibson's *active perception*, as well as the notion that perception is embodied, social and interactive, even from the earliest, pre-linguistic stages of development. For instance, Noë writes that: "our ability to perceive not only depends on, but is constituted by, our possession of … sensori-motor knowledge. … perceiving is a kind of skillful bodily activity … perception … is not a process in the brain, but a kind of skillful activity on the part of the animal as a whole" (2006: 3).

Costall emphasises the social embeddedness of affordances. He writes that "affordances are not just *relative* to us, but *relate* to us … objects have been shaped … designed … they have a place in relation to definite cultural practices … the reality that is known is already a *social* reality" (1985:477).

And Reed provides evidence for the fundamental nature of active/perception, right from pre-linguistic infants. He writes that infants' *actively structure* the environment, not just 'perceive' it or even just 'participate' in it. "All social animals actively structure their environment …including infants interacting with their caretakers after 6 months … the one year old child is not only capable of *acts of joint attention* (+) with her caretaker, she is capable of *promoting attention and action to specific aspects* (+) of their shared attention [even though] the child's means for directing the attention of others are *largely non-verbal* (+) (Reed 1993: 8-9, cited and discussed further in Williams 2009: 15). Noë supports this 'enactive', or 'embodied' view of active/perception. He writes that perception is embedded in sensori-motor skills. "Perception is an activity of exploring the environment, drawing on an understanding of the ways in which one's movement effects one's sensory relations to things … perception is a kind of knowledgeable or thoughtful exploration of the environment. Indeed, thought, like perception, is a kind of skilful access to the world itself (Noë, 2008: 663-4). A discussion of more recent issues can be found in Costal and Dreier's book, *Doing things with things* (2009).

Self-organised adaptation

Ecological psychology, in turn, has drawn on some of the fundamental aspects of evolution and in particular on complexity theory (or complex adaptive systems theory, CAST) to understand the nature of active, embodied and environmentally embedded action and perception, and the link between self-organisation, replication and adaptation (Rihani, 2002; , Blackmore,2008). This is based on a correct understanding of Darwin's notion of the "survival of the fittest", viz. survival of the fittest *to adapt* (and evolve), rather than survival of the strongest. In evolutionary terms, the evolution of new species is essential; cloning is literally a dead end.

Variance and Innovation

Variance and diversity are key to innovation and adaptation. This allows for the expression of variance in behaviour in the 'same' kind of actors, even in the 'same' circumstances. This is based on variance at a number of cumulative levels including: variance in the genetic code and in its expression in reproduction and in behaviour; variance in the linguistic code (the way sounds are combined into words) and in the meaning that different communities ascribe to signs; and variance in the digital codes which sample and represent digital media in various ways, at various resolutions, and the flexible ways in which digital media can be combined and reworked.

At each stage in this evolutionary development, the process of coding and abstraction makes a new range, and a new kind of variation, distinction, combination and recombination possible, ending up in the complex 'mashups' of digital media, social software, and virtual worlds in which even identity can be varied and reinvented endlessly.

It is this multi-level, globally networked environment that provides the unprecedented variation, interaction and access to information and networks that is the foundation for the affordances of the 21st Century.

Let us explore some of these affordances by looking at scenarios from insurgency, counter-insurgency and terrorism.   However, it might be useful to discuss some of the terms first.

Terrorism and Political Violence

There is "no single definition of terrorism that commands full international approval, although the FBI definition: 'the use of serious violence against persons or property, or threat to use such violence, to intimidate or coerce '" has some virtues (Taylor 2010, citing the work of Carlile 2007). Schwartz et al use a simpler definition: "the deliberate targeting of civilian sites for attacks, designed to result in the destruction of those sites and/or the

injury and death of non-combatant civilians" (2009: 537-8), which will be used in this discussion. Targeting civilians is an extraordinary thing to do, and it raises questions about the kind of context that gives rise to it.

Several researchers on terrorism identify issues of identity as key. Erikson writes that "when historical and technological development … severely encroach upon deeply rooted identity … on a large scale, youth feel endangered … whereupon it becomes ready to support … a collective condemnation of a totally stereotyped enemy … which becomes available for organised terror and for the establishment of major industries of extermination" (1993: 89, quoted in Swartz et al 2009: 547). The dividing line between terrorism and political violence is not as clearly defined, so a provisional distinction will be used, namely that terrorism necessarily includes 'non-combatant' casualties, whereas 'political violence' at least makes an attempt to avoid civilian casualties, although the same does not apply to civilian 'assets' (in the military sense of the word).

This chapter will not enter into the debate about the causes of terrorism or political violence in any detail, but it might nevertheless be useful to sketch out some of the more obvious implications of the above formulations. First, there would seem to be a link between a perceived threat to the (civilian) identity of a group, and its attempt to retaliate by threatening the civilian population and/or assets of the other party. Second, this seems to be applicable to conflict between states (either in times of war or peace), between groups ('sectarian' conflict), and between a groups and a state or states. Third, this seems to be applicable to what in the Apartheid conflict was called 'structural violence', i.e. systematic administrative violation of a whole range of civil, political, and human rights against a (majority) group by a (minority) regime – an analysis which could well be applicable to many other contexts, including several countries in the Middle East. Forth, these first three criteria could be applicable to conflict between major powers, but they are probably more applicable to 'asymmetric' conflict, i.e. where mainstream channels for political participation and change are perceived to be closed or irrelevant.

 Scenarios
It might be useful to describe some scenarios in which we can explore relationships between the kind of affordances that are available to people, and the way in which this intersects with issues of identity, possible threats to identity, and possible responses and retaliation. It is not possible within this chapter to explore the ways in which identity is maintained or threatened, and the role of perceptions and propaganda in this process. Suffice it to say that there is a body of research on the role of cultural and political narratives in this process, (e.g. Knorr-Cetina [2005] on Al Qaeda's narratives), which broadly agrees with Taylor and Horgan (2006) that it is more useful to see terrorism not as

a socio- or psycho- pathology, but rather as a "process", which might best be countered if we can "change the choices made for the potential terrorist from violence to other means of [political] expression" (p586).

The three scenarios are: the Afghan farmer's dilemma, the Insurgent's election dilemma and the Religious fundamentalist's dilemma. The Afghan farmer's dilemma is an illustration of one of the most threatening ways of opposing the Western alliance's presence in Afghanistan: IED's (Improvised Explosive Devices); the insurgent's election dilemma illustrates the way civilian populations are often caught up in asymmetric conflict, and the Religious fundamentalist's dilemma, although it can be seen in many different ways, impacts directly on the issue of the 'slaughter of the innocents'. These scenarios will be briefly described here, then the issue of affordances will be discussed in a more detailed framework, after which these scenarios will be discussed at more length.

A. The Afghan farmer's dilemma

The farmer in Afghanistan has the opportunity to acquire fertiliser. He can be a successful farmer by combining specific chemical potentials of the fertiliser with: i), the potential legal market for potatoes, or ii) the potential illegal market for opium. Or iii), he can try to become a hero in the insurgency, by combining other potentials of these chemicals with the potential for military disruption and battlefield victory, by making IED's. A range of people may become wealthy, die or be killed as a consequence of the realisation of these three scenarios, including adults and children, possibly specifically targeted, but possibly random.

B. The insurgent's election dilemma

The insurgent in Vietnam, or Sierra Leone, is faced with a dispersed, rural, civilian population, which from time to time is invited (and/or coerced) by the government of the day to participate in elections, and thereby legitimise the current regime. The insurgents can send a powerful message to the rural population as a whole that they participate in elections at their peril, by cutting off the hands or arms of people in villages which voted in the election.

C. The religious fundamentalist's dilemma

The religious fundamentalist can ensure their own honour and esteem within an earthly and spiritual community by combining their own ability to sacrifice their lives with the potential for causing havoc in public places, including the random killing of innocents who happen to be at that location at the time.

In all these cases there are many different affordances that may or may not be realised, many possible consequences, and many communities and discourses[6] are involved. The actual consequences of these actions will, inevitably, be accepted and endorsed in some communities, and rejected in others. The consequences may also change the status of the actors and of their actions in those communities: they may become heroes or outcasts. In addition, the actors themselves may be changed by the consequences of their actions, and they may or may not be willing to carry out, or even endorse, similar actions in the future.

Affordances are realised at the point of interaction of an actor with the environment, but they are carried out within the ongoing maintenance and development of the actor's identity within social communities and discourses. Realising affordances is not a hypothetical exercise. It leads to consequences, depending on what you want to be, or are prepared to become, and in what community. Affordances are also realised against the backdrop and heritage of social memes and cultures, which are crucial parts of the social environment in which interactions take place. In answer to Costall's question (1995) as to whether affordances are social, the answer is yes, they are, although they are also at the same time individual (see Costall and Gibson, above).

Affordances are realised within a biological and social ecology, often within more than one social community, or discourse. Affordances are ecological in the sense that they are adaptive and new, at least for a particular actor or set of actors at the time. They are innovative, and are differentiated from existing uses and norms, although they may become new norms in due course. Affordances are capabilities that the actor/s may realise, by deploying options within their own capacity, in relation to the potential of what they perceive to be available to them in the environment. But affordances have consequences for other affordances, and for the affordances of others. Evolution produces its own share of collateral damage.

Affordances and Uses

Artefacts, by definition, have uses. Anthropologically, things that are used as *ad hoc* implements become 'tools' by repeated use by individuals in a community. As Barthes says of signs, (1977): "every use becomes a sign of itself". This applies to all uses and signs, whether they are linguistic (e.g. new slang, new scientific terminology) or material.

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[6] Discourse: this is used in the Critical theory sense, to mean "a set of practices and alliances which organises texts and bodies (animate and inanimate) in the interests of a particular community" – for instance: professional organisations, academic disciplines, and business organisations (legal or illegal), (Williams 1992).

Artefacts are not just used, but are made, designed, manufactured, etc, and are created with particular uses, and users 'in mind', for 'later' and/or for 'elsewhere' in a community. In other words, they depend on a theory of mind, of time and of space, all of which are socially mediated; as Noë says (see above), "perception is a kind of knowledgeable or thoughtful exploration of the environment. Indeed, thought, like perception, is a kind of skilful access to the world itself" (2008: 663-4).

However, the artefact's potential uses and affordances are seldom exhausted by this process. People may always find different uses for an artefact, e.g. the "woman who used her walking stick as a telephone" (Forchhammer 2006). She used it to bang on the ceiling of her apartment, to tell the neighbours upstairs that she was ready to be taken on her weekly shopping trip.

What we identify here as affordances are the realisation of a *selection of some of* the 'objective' properties of the artefact, in interaction with *some of* the properties of the particular user; in the case above, the woman is still able to stand up straight enough to bang on the ceiling. "An affordance cuts across the dichotomy of subjective-objective – it is equally a fact of the environment and a fact of [particular] behaviour" (Gibson 1977: 129), and this results in an extension to the actor's *skilful access to the world,* that may surprise even herself.

In more detail, we can add that the affordances *of an artefact* include potential uses that may be: inherent, designed, assembled, disaggregated and re-assembled, emergent, or creative. The properties *of the user* include competencies, capability, and identity and willingness to act in a particular context, and a particular community. Capability, in turn, is defined for our purposes here as including physical, technical, psychological, social and ethical abilities and commitments.

Let us apply this to our three scenarios. Note that the global network of the internet plays a role across many of these scenarios – to provide information, to establish and maintain virtual and actual communities, to profile organisations to the world.

The fertiliser in scenario A has several chemical properties, and the outcome depends on what other chemicals are combined with the chemicals in the fertiliser. The realisation of explosive affordances in IED's may or may not achieve hero status for the farmer, depending on the reaction of the community to the consequences of particular explosions. The farmer's capability to make and deploy IED's will depend on all of these factors, on the

information he can acquire directly or indirectly from the Internet and other sources, as well as his own reaction to the explosion, and whether he, personally, remains 'capable' of deploying IED's in the future.

The affordances that are available to him, to embark on terror (putting civilians as well as the enemy at risk) are of course technical, but they can only be realised within the community, which will make its own judgement on whether the risk (and possible civilian damages and casualties) are worth it, or not. IED's are only an affordance insofar as the affordance 'works' for both the actor and the group that he or she is part of. If not, the same IED could turn out to be a dis-fordance for both the actor and the group.

The amputation of hands or limbs in scenario B is technically challenging – the amputee has to survive for this affordance to be realised; the dis-fordance of being an amputee merges, in a macabre way, with the affordances of the insurgent's warning to others. The 'traces' that are inscribed on the amputee are similar to the 'traces' that are inscribed in the media coverage (and recordings) of the spectacular propaganda of the deed in other contexts, such as 9/11. These traces function as a 'text' to communicate terror to others. In this scenario, the affordance can be ethically and psychologically challenging at a personal level; it depends on whether the person doing the amputation is 'capable' of such actions at the time, is comfortable with the results, and is willing to do so again, or not. In cases like this the borderline between affordances and dis-fordances for the insurgent is very fine, and potentially unstable. The immediate affordances could even backfire, if the 'terror' of the amputation of children's limbs mobilises the international community to intervene, more so than it mobilises (or coerces) the rural population to stop voting. Affordances are ecological, and therefore each realisation of an affordance potentially affects the knowledge, identity and status of the actor concerned, and can affect the broader social environment – positively or negatively.

One of the advantages of describing these kinds of events in ecological terms, using the concept of affordances, is that actions are seen as adaptive, and to have an effect (positive or negative) within a context which is, in turn, adaptive. The context is part of a wider social ecology, so there are potential knock-on effects between various micro-contexts, as well as between particular micro-contexts and a range of broader contexts, both immediately and over time. This means that the observer has no guarantee that they will be able to predict future outcomes too accurately; but what can be observed are trends, in mutually adaptive relationships between actors and contexts. An ecological approach does not preclude the identification of predictable outcomes, it just provides a potentially

rigorous methodology for dealing with those particular situations in which, to use the terms of complexity theory, "actor and structure co-evolve" (Cilliers, 2005).

The fundamentalist's scenario (C) is even more complicated (or simpler, depending on how you look at it). He or she has to be capable of committing suicide, and being able to justify this in terms of a metaphysical community, which invariably includes dilemmas, for instance between the slaughter of innocents and the waging of holy crusades – issues which can often only be resolved by choosing between different temporal interpreters and interpretations of the 'same' holy texts.

These are hard choices, in terms of action and personal identity. The negotiation of identity within shifting contexts of conflict, particularly of insurgency, where uncertain boundaries are one of the contested issues, is difficult. Decisions that are taken to realise specific affordances in these contexts are complex and often emotionally difficult because of family ties, and because of the risks involved in targeting random civilians, some of whom may turn out to be people the actor would not like to target. This paradoxically makes the restricted affordances of absolute religious doctrine potentially attractive to suicide bombers, as it removes any ambiguity by providing a restricted and metaphysical framework, which removes any considerations of 'this' world, because it has been replaced by the 'next' one.

This means that in different contexts quite different kinds of affordances may be attractive – in terms of doctrine, the more restricted the affordances, the better for the suicide bomber – by restricting ambiguity and providing clarity. But in terms of technical possibilities, the more flexible the better, so that the bomb-makers' options are not restricted, and the precise type of bomb they make might be (somewhat) less predictable to counter-terrorism personnel.

Working Definition
So what are affordances?

> An ***Affordance*** *is the product of interactions between a person and their environment, each of which potentially alters their knowledge, competencies and identity, and potentially alters the (micro-) environment, consolidating or disrupting elements within it*.

Affordances are closely linked to the processes of learning and innovation, both of which involve: *exploring, creating, benchmarking and mastering new affordances.* Affordances

are about change and adaptation (See figure 1 & 2, below). But it is not helpful to call everything an affordance (Norman 1999), as the term then loses its specificity, and language becomes clumsy.   We can start by distinguishing between affordances and uses, and by mapping out the relationship between the two terms (figure 1).

Sometimes things and resources just get used, taken at face value, with no regard to the broader possibilities of potential affordances: for example, a walking stick, which is used for exactly that – to assist in walking. As Costall says, "objects have been shaped, even deliberately designed ... they have a 'place' in relation to definite cultural practices, and 'represent' various human practices; their reliable and safe functioning depends on a social system of mutual responsibilities and obligations" (1995: 476-477). However, even the uses of the walking stick can be extended and extrapolated, as it potentially has affordances to be used 'in lieu of a telephone' (see above). It also has potential affordances to be modified into a 'shooting stick', and to be used for sitting on; the shooting stick in turn has potential affordances for being used as a gun rest, for shooting, and so on.
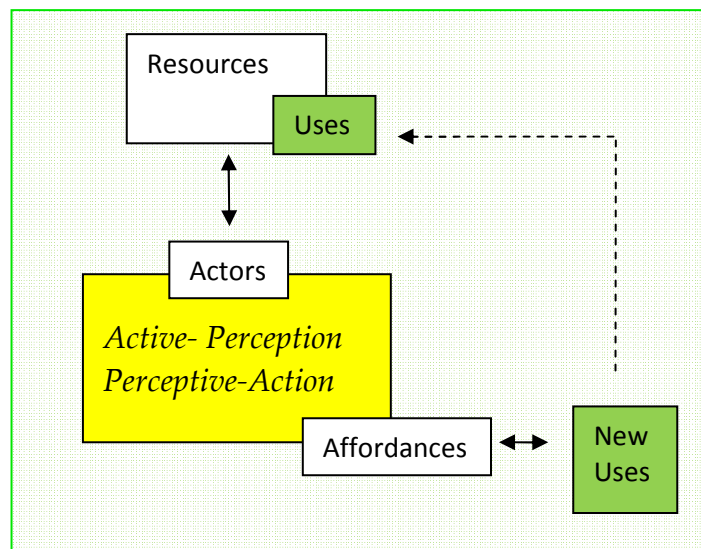

Fig. 1: **Affordances and Uses**

Affordances are the product of the intersection between the subjective and the objective, or the properties of the actor and artefacts in the environment. Insofar as these properties are new to an actor, they are perceived as new affordances for that actor, but once the actor becomes a member of a group who routinely use the artefact for the same function as everyone else, it becomes a use. However, one particular use (as in 'assisting walking') can be modified or extended, as new potentials are explored, created, realised, and consolidated, in new contexts. The new contexts, similarly, are defined by, and are a

product of, the intersection between the 'subjective and the objective' – the use of a walking stick as a telephone will not 'come to mind' to all elderly women who need to coordinate their shopping with the tenants in the apartment above them, and some of them would not be able to reach their ceiling to knock on it, even if they wanted to do so.

So affordances, once broadly established, become uses, which in turn feed into the next iteration of affordances, either on their own, in modified forms or functions, or in combination with other uses and affordances, possibly even in new inventions (see figure 3)[7]. In this way affordances, innovations and uses percolate through the social ecology: sometimes fading out, and sometimes emerging as newly established *memes* (cultural micro-practices), like shooting sticks, or even Blackmore's *temes* (micro-practices based on technologically more complex artefacts like mobile phones), which have to operate within complex mobile cellular networks. However, the transitions between affordances and uses can be very confusing. This applies particularly with changes like the restructuring of private and public space, which happens with the introduction of mobile phones (Williams 2007).

Both memes and temes have a tendency to take on a life of their own, and spread 'virally': by what used to be called 'word of mouth' but which can now take place instantly and exponentially within the 'scale-free' media of the Internet. (Scale-free networks are networks which allow for exponential communication and spread throughout a global network, at very low cost or effort). The spread of (micro-) news videos, recorded on mobile telephones, e.g. at the Mumbai massacre in India in 2008, are now common examples of instant, 'scale-free', global dissemination, which takes place outside the structures and constraints of traditional news organisations, and often outside the regulatory control of nation states.

More pertinent to terrorism is the example of the practice of 'Necklacing', i.e. burning informants alive, with car tyres placed over their upper arms. This spread rapidly within the Apartheid struggle in the 1970's and 80's, as Winnie Mandela infamously pronounced "with our little boxes of matches, we will liberate this country". There is a whole subset of affordances that relates to asymmetries of power, and the means of pursuing asymmetric

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[7] An interesting example of how 'affordances' become 'uses' can be found in Blackmore (2008)'s presentation on *memes* and *temes.* Like *genes*, *memes* (cultural algorithms, as it were) and *temes* (technological algorithms) spread almost 'virally'. Their usefulness is so apparent, and so immediate, that they are adopted quickly and widely within, or even across cultures. And there are interesting parallels to be drawn between *genes* and *memes and temes.*

Resources

Uses

Competence

Actors

Curiosity
Adaptation
Innovation

*Active- Perception
Perceptive-Action*

Metaphors
& Science

Affordances

New
Uses

Inventions

Capability

Further Affordances

Repertoire of
Affordances

Technical
Capacity

Personal
Capability &
Identities

Identity

&

Power

Different and
Potentially Clashing
Communities &
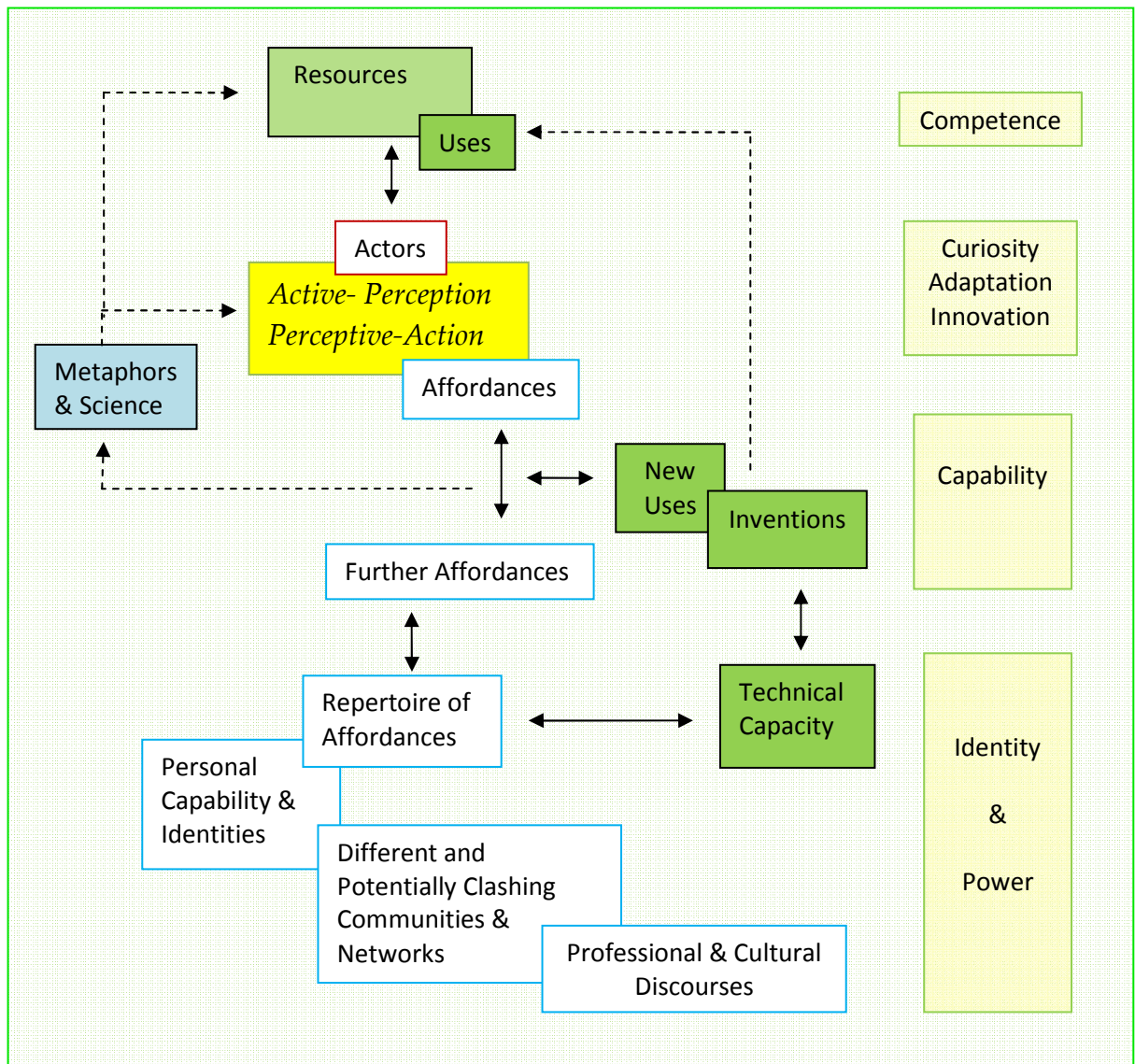Networks

Professional & Cultural
Discourses

Fig. 2: **Identity, Capability and Power**

conflict. Few of these more extreme affordances (such as the 9/11 attacks or Necklacing) pass into common 'usage' by definition, but they remain important affordances that people may choose to re-establish in particular circumstances. Kitchener's scorched earth and concentration camp innovations in the South African wars at the turn of the 20th Century, for instance, were eventually 'effective', but increasingly difficult to justify internationally. A later version of this, the use of Agent Orange in Vietnam, was probably seen as a powerful affordance at the beginning of the American involvement there, but might have become a dis-fordance later on, particularly in the eyes of the international public.

The point is that we need to distinguish between (established) uses and (emergent) affordances[8], although we must keep in mind that a use which is new to a particular person can be seen as an affordance for them – in other words, the process of transformation from an innovative affordance to an established use happens at both individual and social levels. And this is not merely a technical or a strategic issue; ethics often play an important role, as in the disagreements in both the second world war and the recent Gaza/Israeli conflict about the retaliatory bombing of civilian areas.

We also need to make a distinction between active and prescribed perception.   Active-perception /or/ perceptive-action is creative and interactive; it is curious about different properties and possibilities, both in the immediate context and in other actual or hypothetical contexts. On the other hand, a perception that goes no further than existing, prescribed uses confines the person (and the artefact) to instrumental action and normative compliance[9].

Identity, Capability and Power

As we have seen in the scenarios above, and in the section on variance and innovation, affordances are both individual and social. They involve personal choices, will and capability, but also require a context and a community within which to develop and maintain that 'capability'.   Now that we have established a basic model which allows us to track and describe how uses and affordances percolate through the social ecology (fig. 1), we can go into more detail, and sketch out the relationships between identity, capability and power (see fig.2).

New affordances not only feed into new uses (and possibly new memes and temes), but they also feed into metaphors (within informal learning), and science (within formal learning and research) both of which provide new ideas for new resources, as well as the stimulus and provocation for further affordances (see figure 2). The physicist Oppenheimer, for instance, when asked by a colleague why he developed the atom bomb, replied: "it was just such a beautiful experiment". Oppenheimer had to wrestle with the

[8] Norman, writing about GUI's (graphic user interfaces) makes a similar point, and differentiates affordances from conventions, symbols and constraints, all of which are valuable in guiding behaviour (1999: 40).

[9] In the strong sense of Gibson's use of 'affordances' of course, there is no such thing as 'prescribed' perception; all perception is active. In practice, however, there are choices to be made, choices which under duress might confine perception to prescription and compliance. This was the case for many Germans under Nazism, which was of particular concern to Gibson, who asked why 'direct' perception about the evils of the holocaust, free from the hegemony of mass media propaganda was seemingly not possible at the time.

consequences of this new affordance and capability throughout the rest of his life. He was lauded for producing 'the A-bomb', then pilloried for years for speaking out in favour of constraints on its use and later a moratorium on developing the H-bomb, and in favour of strategic arms limitation negotiations (Bird & Sherwin 2008).

The distinction between uses and affordances is also the basis for the distinction between 'tool users' and 'tool makers' that defines human culture and human intelligence, which in turn can be creative or macabre. Uses can be transformed into different uses, into exchange, into capital, into symbols. Hands, for instance, can be used to vote, or can be cut off as a warning to others. Buildings can be used for World Trade, or for what Stockhausen infamously called the devil's "finest work of art". A mother's concern for her baby can be turned into a cruel instrument for attention, in Munchausen's Syndrome by Proxy, in which the mother repeatedly seeks attention for herself as a carer, by deliberately making her child ill, and thus in need of more caring.

Costall and Dreier (2006) similarly distinguish between innovative and established uses, but they use the term 'functional affordances' instead of 'uses', which works well in the more theoretical context of their book. However, for our purposes here, the term 'use' seems more appropriate.   The tension between the theoretical term, 'affordances', and the common sense term 'use' captures the relationship between creative and routine practice well - what Wenger calls the relationship between emergence and reification (2009).

This shifts the framework a bit from previous work; and affordances can now be defined as follows:

- An affordance exists in a reciprocal relationship between the objective properties of the environment, and the action capabilities of a particular actor to perceive **and realise** that affordance. (Gibson 1977).

- Affordances are dynamic, and even unstable. Different actors may perceive, explore, create and exploit quite different and even contrary affordances in the same environment, using the same resources. Affordances develop along with, and as a result of, interaction between the actor and the environment, both of which may change over time.

- One person's affordance is another person's *'disfordance',* so what is initially an affordance may turn out to be a *disfordance* for others, or even a *disfordance* for that same person at a later stage. In addition, what you are actually 'capable of' and willing to do, can change (see the example of Oppenheimer, above).

- Affordances are based on active/perception, and "perceiving is a kind of skillful bodily activity. … perception … is not a process in the brain, but a kind of skillful activity on the part of the animal as a whole (Noë 2006: 3, above).

Gibson (as well as several of the other authors cited in this chapter) are concerned with developing an alternative account of what had traditionally been an almost exclusive emphasis on the cognitive aspects of perception, as if it all happened in the head, so to speak, and none of it happened 'in the world'. The problem is perhaps best illustrated by the fact that many years after Gibson's seminal work, we still have no single term for perceptive-action, or active-perception[10], although 'embodied perception' and 'enactive perception (Noë 2006) go some of the way to achieving this.

Identities

Affordances are relational and interactive, so the subjective active/perception of the actor, which 'places' both the actor and his or her affordances in a social context, is an integral aspect of affordances. Developing, realising and expanding your repertoire of affordances is not only skilful and thoughtful, but it is also ontological – it constitutes, in large part, who you are and who you become – in short, your identity.

Erikson (1993, see above) links fundamental threats to identity directly to the possibilities of embarking on terror. We can now link all of this. Affordances are important aspects of identity (see also Williams et al 2009, which goes a bit further, and argues that "identity can be seen as a repertoire of affordances"). Threats to identity, which are perceived as fundamental, can prompt actors to engage in terror[11]. Unacceptable as this may be, it is

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[10] There is an extensive discussion of the arguments against 'cognitivism' in the affordances debate in the unpublished paper: 'The Ecological Turn: Affordances for Learning Research' (Williams 2009). This is a theoretical and rather subject-specific discussion, but it points out that there is a substantial body of work which still sees perception as almost exclusively cognitive, rather than interactive, for reasons which are highly contested. Gibson's work can in many ways be seen as a rejection of the binarism and limitations of cognitive psychology on the one hand, and behavioural psychology on the other, as he attempts to account for human action more holistically.

[11] There seem to be at least two ways to interpret what Erikson is saying here. On the one hand, he could be referring to the actor who carries out terror against the state, but on the other hand, he could be referring to the state (and particularly the Nazi state) carrying out terror against the

not surprising. If we consider that a perceived threat to identity is a threat to the culture, and the (civilian) life of a particular group of people, it can make sense to these people to respond in a way that threatens the (civilian) life of the people making the threat to *their* identity in the first place.

It would be useful, then, to explore the relationship between affordances and identity, and the way they interact in social and political ecologies in more detail.

We have argued that affordances are relational, interactive and integral parts of larger ecologies. They are, in the first instance, personal – although they clearly can be, and often are, shared by others in which case they may become uses, cultural 'memes' and routine practices, which are embedded in technological systems and networks (see 'temes', above).

Figure 3 sketches out the way that identity is constituted, edited, revised, re-arranged and re-aligned*, viz-a-via affordances*, based on the following:

- **Competence:** the ability to use resources and tools for specific functions.
- **Curiosity, Adaptation and Innovation:** the interest and the willingness to explore, create, benchmark and master new affordances (i.e. affordances which may be new to you, individually, and/or may be new to everyone).
- **Capability:** what you are capable of doing, and willing to continue to do in existing and in new contexts.

Your repertoire of affordances is reflected in your capability - what you are able, interested and, most importantly, *willing* to carry out. It includes the history and memories of how you acquired the affordances, which leaves conscious and sub-conscious traces and legacies – positive and negative - in the actor, as well as in other people and texts in the environment. You act within your identities, within various communities and networks[12], and within professional and cultural discourses, all of which are potentially different, and may make conflicting demands on you. You exercise power within some of these

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various threats to the purity of the core ('Aryan') national identity, drawing on religious, mythical and 'civilian' narratives (of euthanasia and pseudo-Darwinism - see Bauman, 1989).

[12] Etienne Wenger (2009) has developed an excellent framework and practice in which he explores the relationships between identity, community and networks. He sees learning and identity as inseparable, which is one of the threads running through some of the debates on affordances, and which emerged strongly in the Affordances for Learning research (Williams et al 2009).

communities and networks, based on your identities, your networks, and your access to technical capacity. In more particular terms, power is exercised within discourses[13].

Life/Death

Many communities, and the affordances within them, are characterised - if not determined - by the relationship between life and death, and the willingness of the actor to put their own life, and/or the lives of others, on the line. Ghandi's politics of 'non'-violence, Satyagraha, included an explicit willingness to die, which he frequently operationalised in his 'ticking time-bomb' fasts, a tactic shared by many political prisoners. Mandela summed his attitude up at the 'Rivonia' trial in 1964, and again on his release many years later, saying that he had always fought white discrimination and black discrimination, "a cause for which I hope to be able to live, but for which I am prepared to die". Jihadists represent a new form of 'smart bomb', and, if caught, see capital punishment as a guaranteed affordance for martyrdom.

Knorr-Cetina writes in more detail about fundamentalist terrorism, and the function of "transcendental time" in which the individual is "pulled into living-forward towards the end of a parallel life … while still part of an ordinary life" (2005: 219). This temporality, she says, fulfils some of the structuring functions previously carried out by Weber's rational authority structures.

Global and metaphysical players

Identities are played out on various 'stages', and the affordances of scale and the profiles of these stages is very important: e.g. 9/11, the Munich Olympic Games massacre, Buddhist self-immolations in public spaces, the 7/7 bombings in London, etc. There are a range of opportunities, and affordances, for becoming a 'global', if not an 'immortal' player, even if for only 15 minutes of fame. Serial murderers, and political (and celebrity) assassins may aspire to similar status. They 'inscribe' themselves and their actions across public space and history, using the mythical symbols of celebrity status, either their own or, even more macabrely, that of their victims.

The actor's identity and capability may be fundamentally affected by the allure of these macro-contexts and macro-affordances, which can lead to a perception of the global media environment, or even the metaphysical 'environment', as loaded with unrivalled affordances for threatening civilian populations and simultaneously achieving martyrdom,

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[13] See Text and Discourse (Williams 1993) for an introduction to discourse, and the application of discourse theory to media analysis and an analysis of civil, military and totalitarian discourse within Apartheid.

in quite surprising ways. And surprise is always an advantage in conflict. The question remains whether 9/11 was indeed 'unthinkable'.

Social Software and Emergence
The last 20 years have seen unprecedented, exponential growth in interaction and communication via social software. The quantitative changes (in traffic, growth, and revenue) are staggering, but they are not the most important point. The qualitative and structural changes are what concern us here: speed, access, openness and ubiquity, as well as the flexibility to manage different identities, spaces, and for new 'voices' to be heard across the world, in days, or even hours.

Hierarchy, formality, certification, and position are becoming somewhat less relevant than they used to be: "there is still leadership discernable in social networking, but it is grounded in and shaped by the morphology of the social networking framework" (Taylor 2011). Twitter is a paradigm example, and in 2011 it became the site for a clash between the UK judiciary's "super-injunctions" (against disclosure of celebrity affairs), freedom of the press, and personal privacy. In effect, by publishing names on Twitter in contravention of a super-injunction (which prohibits the publishing of the content of the story, but also prohibits the publication of the name of the person who applied for the injunction) the 'tweeter' effectively made a mockery of the high court process. This of course provoked a response, but it remains to be seen how effective that will be.

The opportunities for collaboration and for publishing in complex, emerging and adaptive networks, outside of conventional social and legal norms, have got potentially profound implications. The range of affordances has increased exponentially and rapidly, even if in micro-steps. Complex adaptive behaviour occurs, broadly speaking, when a large number of actors interact and communicate frequently, with large degrees of freedom, but within some constraints; none of the actors can see the full picture, but the network of actors nevertheless produces emergent, adaptive behaviour (Cilliers, 2005). As this kinds of social collaboration gets embedded as a new (and far more efficient) infrastructure for the way people live their lives, it will be increasingly difficult for the Mubarak's of this world to just decide to turn them off (see the discussion of Webworld, below).

The New Political Ecology
Prior to the internet, and within the Weberian structures of the industrial and 'post'-industrial societies, freedom of speech, association, and the press could be encouraged to

behave, or just be shut down by controlling fairly large, expensive, and cumbersome institutions – political parties, newspapers, corporate advertisers, etc.

The affordances that were available to articulate and mobilise dissent and opposition were highly structured and expensive (typically, national elections once every 4 or 5 years), which meant that in a context in which power was perceived to be distributed asymmetrically, the only alternative was an asymmetric response: non-violent dissent or, failing that, guerrilla warfare, or even terror. In broad terms, the traditional political context can, for our purposes, be differentiated into civil, military and totalitarian discourses, and the example of Apartheid South Africa illustrates all three (Williams 1993). Control in such societies could in the past be exercised effectively, if brutally, in a 'closed' system (shifting from civil to military and, if necessary, totalitarian discourse), which can maintain power for some time. Syria and Iran, in 2011-12, were interesting examples of societies trying to maintain power in a such 'closed' context, partly by switching off platforms like Facebook on the Internet.

Knorr-Cetina differentiates the politics of the old political ecology from the new very clearly in her detailed analysis of the difference between Weberian and post-Weberian social structures (see the section on Global Micro-structures, below). But first it might be useful to make some broader points about the communication and interactive infrastructure of the early 21st Century.

Webworld

The distinctions between the 'old' world and the new, or between 'old' Europe and the new are less relevant in a world where one Egyptian commentator on the 'Arab Spring' demonstrations, said: "Mubarak and the older generation are still living in 'land-line' Egypt. The demonstrators just don't recognise that country anymore; they are living in 'Facebook Egypt'" (BBC news, Spring 2011). In Egypt the government was forced to switch it all back on after just a few days; in Syria and Iran, major parts of it are permanently off, but it is far from 'leak-proof'.

This is the same world in which Lucy Annson, from *UK Uncut,* said in an interview with Emily Maitlis of the BBC:

> "We are a network of people who self-organise. We don't have a position on things. It's about empowering the individual to go out there and be creative." "But is it wrong for individuals to attack buildings?" asked Maitlis. "You'd have to ask that particular individual," replied Annson. "But you are a spokesperson for UK

Uncut," insisted Maitlis. And Annson came out with a wonderful line: "No. I'm a spokesperson for myself." Curtis (2011).

Contrary to Curtis's sarcasm (that this is a "wonderful line") and his incredulity about the effectiveness and supposed 'naivity' of Annson's perspective (his central complaint is that she has "nothing to say about power"), this is in many ways a very interesting and clear-cut articulation of the affordances (the perceptive-action) of 'the politics of emergence'. This approach has some affinity with previous modes of asymmetric conflict, 'leaderless movements' or 'distributed leadership', but it functions within the totally new social and economic infrastructure and context of social software, which radically re-structures public and private space, political and non-political discourse, cycles and forms of 'representation', and makes possible a new 'emergent politics' in the strict sense of the word 'emergent' (Cilliers 2005, Williams et al 2011). That is why it is now possible for Annson to say 'the network is the organisation', which resonates with Sun Microsystems' credo in the late 1990's that 'the internet is the computer'.

The interesting question about the new political ecology is the question of who is in and who is out of what might be called 'webworld'. The threshold for whether a country is a member of Webworld, or not, can be defined by whether the country is irrevocably committed to being 'switched on' to technical functions, as well as to political and constitutional guarantees, in some of the following areas (listed, loosely, cumulatively):

Universal access

In telecommunications policy terms, *universal access* is a minimum guarantee by the State – for all people to have access to a service – in this case, the Internet. It can be implemented in a number of ways to supply basic broadband services. The next level of policy is to even out urban/rural provision, which is complicated by the privatisation of services.

The 'global' nature of the internet changes the nature of political and economic infrastructure and governance, and social software restructures the nature of the 'social', particularly public, private and anonymous 'spaces'.

Constitutional Rights

Constitutional rights have not caught up with the Internet.   Countries that are radically changing their constitutions (e.g. Egypt, in 2011-12) might consider whether to include, in some way, the provision not only of general rights, but also of 'digital rights'. For instance, freedom of speech, of the press, and more interestingly, of assembly, could be formulated to expressly guarantee rights such as the right to 'digital assembly'.

Universal Human Rights

Universal Human Rights, too, have yet to take account of 'digital rights'. Although these rights are 'universal', they are generally formulated as being desirable *within* sovereign states. But the internet is global, which is making some of these rights (e.g. to privacy) difficult to govern, if not sometimes absurd (see above). The difficulty is that these rights need to be formulated *across* sovereign states, not just *within* them. Exceptions to international governance, such as the refusal of the USA to sign up to the provisions of the International Criminal Court, indicate that such global agreement on governance of these issues might be a long time coming.

Universal rights (in the literal sense of the term), to access, publication and assembly, *across* what is left of the borders of sovereign states, is an odd thing for sovereign states to endorse, and could well be a difficult thing for national politicians to sell to their electorates.

Economic thresholds

More fundamental, perhaps, to the issue of the thresholds for 'webworld' is whether a country is irrevocably *economically* committed, in practice (rather than in policy) to the Internet, because large sections of the country does business that way. This includes (again, roughly cumulatively): email, access to information, e-business and e-commerce, as well as a number of services (e.g. tax, health care, etc) which are increasingly embedded within the Internet. Many countries are already 'living in the Cloud' to some extent. Cloud computing is not tied to 'sovereign states', and is becoming 'global' in the sense outlined below.

Global Microstructures

Sovereign states are still important in international politics, and the governments of many of these states are determined not to cross some of the thresholds of webworld, or at the very least, to hold onto the absolute right to revoke them. It remains to be seen how realistic this is in the future, technically, economically and politically. But there are some interesting examples of how some of the new 'social morphologies' of the digital world have already established themselves in radically new *global microstructures*, across sovereign states, particularly in global finance and terrorism (Knorr-Cetina 2005).

Knorr-Cetina sets out the foundations for a theory of micro-globalisation and the new global architectures of a world society. There are several interesting aspects to this. To

start with, a micro-global structure is not 'inter-national', as it is not based in cooperation or coordination between nation states; in many ways it functions separately from them[14]. It is also not a 'network' in the conventional sense of the term, as it includes inter-subjective associations ("rich" and "textured" communities – see below). And finally, a micro-global structure is, in Knorr-Cetina's terms, 'light' – it achieves global penetration quickly and cheaply, the digitally networked version of a network of the classic "war of the flea". Microglobal structures are something of a paradox; they are not based on the large, formal, rational structures of Weberian bureaucracies. Rather, they are "fields of practice that link up and stretch across all time zones (or have the potential to do so), [and they] need not imply further expansions of social institutional complexity. *In fact, they may become feasible only if they avoid complex institutional structures".* (+) (Knorr-Cetina 2004: 214).

Knorr-Cetina's microglobal structures are based on several central characteristics of complex, emergent structures, and their accompanying affordances, including:

- Light, open, emergent, adaptive systems and behaviour.
- Self-organising principles and patterns, often operating close to (the edge of) chaos.
- Asymmetries, unpredictability and playfulness.
- Reflexive amplification and augmentation.
- Temporal rather than spatial structures and organisation.

It is worthwhile to explore these characteristics in more detail.

The Internet has long been said to have changed society and the economy (Castells, 2001). The world has 'shrunk', and everyone can get in touch with everyone else on the planet, instantly, and at very low cost. As a consequence, several crucial aspects of social structure have shifted, substantially, including the boundaries and the relationships between adult and child, private and public space, personal and global communication, organisational- and user-generated content, and access to, and the business model of, publication and participation in public discussion and debate (both trivial and serious).

However, Knorr-Cetina's micro-global structures (of finance and terrorism) go beyond these aspects of "spacialisation", and are based instead on "temporalisation" – the continuous, iterative 24/7 cycle of time zones, which replaces the rationality of the

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[14] The closest heritage for 'global microstructures' is probably the '*Trans*-national Company' - a later version of the 'Multi-national Company' – but neither of these are 'light'.

Weberian institutional structures (of modernism, and of consumerist post-modernism) with "sequentialisation", which is not tied to any particular time zone or place, or 'host nation'. It also provides temporally structured instability, with continuous de-generation and re-generation of the system which, far from being a disadvantage, is vital to complex emergent systems, adaptability, and innovation[15].

Temporalisation is an 'emergent structure': adaptive, unpredictable, flexible (uncoupled from location and the current 'host' country), yet still 'ordered' by the rhythms and cycles of time zones, and it relies on "reflexive amplification and augmentation". Knorr-Cetina writes that the strategies of terrorist microglobal structures

> … seek and exploit the potential for disproportionalities between input and output or effort and effect … (which) can be distilled … from the use of technology, from scientific and other innovations, and from 'media' of various kinds used as amplifying and multiplying systems. Global microstructures may also derive disproportionality benefits from decoupling internal operations from support structures that provide for the conditions under which operations can remain light; 'outsourcings' of this kind also point away from the inclusive notion of an internally rationalized system. Finally, lightness may emerge in response to de- or under-regulation, which create the space for an adaptive and adaptable self-organization (2005:216)

And she continues that global finance, in particular, includes

> … a level of intersubjectivity that derives from the character of these markets as *reflexively observed by participants* in temporal continuity, synchronicity and immediacy. These markets are communities of time, but in a different sense than the terrorist groups for which disconnections and 'structural holes' are a characteristic of operative practice. Though global microstructures tend to be flat rather than hierarchically organized systems, they are at the same time highly textured systems. The specific textures re-specify and may in fact contradict [traditional] assumptions about network structures. (Knorr-Cetina, 2005: 217).

Clearly the affordances of such microstructures are quite different from the affordances of more traditional Weberian organisation. Complex behaviour and complex structures

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[15] Of course the global financial system got far too innovative in the multiple-derivatives products that it produced in the 'noughties', but that does not mean that the baby should be thrown out with the bathwater. The lesson is perhaps that global, and specifically unstable, systems are more prone to 'overshoot' than any others, and are therefore more in need of truly global regulation.

provide radically more *open* affordances, or more flexible opportunities for a range of unpredictable affordances, and unpredictable behaviour. One of the benefits of Knorr-Cetina's analysis is that she: i) identifies the micro as a key (if not *the* key) level of articulation of such adaptive and innovative behaviour, and that ii) her choice of terminology ('complex microstructures') emphasises the paradox of complex systems, namely that although they are unstable, unpredictable, they are none the less ordered (see above). This is a far cry from the world of 'uses' and 'compliance' that characterises Weberian organisation and its accompanying styles of management[16]. Knorr-Cetina succeeds in laying the foundations for a theory of microglobalization, which is a world apart from the platitudes of 'think global, act local'. The theory of microglobalization is "the view that the texture of a global world becomes articulated through microstructural patterns that develop in the shadow of (but liberated from) national and local institutional patterns. Microglobalization implies that ... the micro in the form indicated instantiates the macro; micro-principles enable and implement macro-extension and macroeffects" (2005: 214-215).

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[16] Snowden and Boone (2007) is a very useful account of the issues facing management and leadership in a world where both complex and predictable events have to be managed.

Conclusion

The way we communicate and interact in 2011 is still changing rapidly, and even after 20 years of the internet, web 4.0 (the internet of things) promises to continue that process.

As a global community, we write, communicate, talk, and create and exchange information exponentially more every decade, if not every year. Who 'we' are is changing too, and is becoming deeply embedded in networks which, although they may look similar to earlier, pre-internet networks, have changed fundamentally[17]. We need a new theory of communication and interaction, to enable us to understand what is going on, and how to respond to both the opportunities and the problems that arise.

There are two aspects to this: i) we are now, literally, a global community, and ii) we face many problems that require a sophisticated global awareness and can only be responded to at a global level, such as international finance, terrorism and ecological crises. A broadly ecological theory is required, to respond to the scale and the dynamic inter-connectedness of what is happening. Gibson's theory of affordances provides a foundation for thinking about how we perceive-and-act within an explicitly 'ecological' psychology, and several others, including Costall, Reid, Noë and Ramachandran have all taken this forward in various ways, in terms of theory and in terms of testing it against actual practice.

This paper has put some ideas together on how the innovativeness and creativity of affordances 'percolates through' social and political action and interaction, and leave traces, residues, or artefacts in the form of uses, memes and, interestingly, Blackmore's 'temes' (technological memes). This is a dynamic process, and in a sense there 'will always be another affordance', even after we think all the possible uses have been exhausted. Nevertheless, it is argued that we need to acknowledge both the dynamic interaction between uses and affordances, as well as the difference between the two.

Knorr-Cetina's theory and case studies of microglobal structures provides a crucial advance in the debate about the way that changes in the social and economic modes of production provide affordances for radically new 'social morphologies', in fields such as finance, terrorism, political mobilisation and 'self-representation'. The notion of *self-organising actors in emergent, adaptive systems* includes both the sense of representing the self, as a participant in a network, and the sense of spontaneously creating your own affordances –

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[17] One might even say that the traditional theory of mind (and theories of time and space, see above) need to be fundamentally reconceptualised, as they are all taking on radically new, more flexible, and even unstable properties.

your own forms of (self-organised) representation and participation within a network of the like-minded, and within a time-frame and cycle which you determine.

The old forms of social structure and interaction have not disappeared; many will survive, but those that don't will not necessarily even be contested. Instead, new forms of social interaction are emerging in parallel, and in true ecological fashion, the forms of interaction and representation that turn out to be irrelevant will just fade into obscurity. What is important for the argument here is that dynamic, uncertain, unpredictable, reflexive, and even unstable (yet ordered) social structures and forms are, ironically, 'establishing' themselves. We need different theories to describe what is happening and why it is happening, and we can make a start on this if we combine a theory of how people act (affordances), how the modes of communication and interaction have changed (the internet, and the affordances of the micro/global), and how new global/unstable forms of political and economic 'commerce' are emerging and, already, becoming established 'uses' in the world-wide web.

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