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Andrew Whitworth

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Learner Generated Contexts: Critical Theory and ICT Education

Andrew Whitworth
University of Manchester
andrew.whitworth@manchester.ac.uk

ABSTRACT

Learning environments may be designed to emphasise the learners' perspectives (e.g. constructivist approaches), but students may remain consumers in a context designed for rather than by them. Critical theories of education and society observe that the consumerist role is basically passive, and contrast it with a more active citizenship where inquiry is directed towards the organisational and technological structures within which we must work and learn. Design methodologies which claim to be context-based – including participatory design – tend to ignore the impact of "persistent structures" on human cognition, and relationships with technology are thus submerged beneath conscious awareness. The idea of learner generated contexts is proposed as a way of adapting critical theories of education to the affordances of available technologies.

KEYWORDS: *Critical theory, Critical pedagogy, Cognition, Participatory design, Heutagogy, Learner generated contexts*

INTRODUCTION

Learners are traditionally consumers in a context created for them. They may be encouraged to act, and interact, within this context, but its parameters – the technologies-in-use, the rules (such as assessment) which bound activity, and other resources such as curricula – are not usually adapted as a result of their learning. However, new ICTs and the informal learning networks arising around them may open up the possibility of learners generating their own educational contexts. Through this they may learn to *consciously* use technology for their own ends (cf. Feenberg 2002 and below).

Learner generated contexts (LGCs) are created by people interacting together with a common, self-defined or negotiated learning goal. This paper discusses: why this is important for education and for democracy; how this idea relates to previous approaches to design, particularly participatory design; and relevant learning theory, particularly critical pedagogy and heutagogy. At the end some possible examples of LGCs are presented, along with criteria for further study of LGCs.

WHY DO LGCs MATTER?

As Feenberg says (2002, p.3, original emphasis): "*What human beings are and will become is decided in the shape of our tools no less than in the action of statesmen and political movements.* The design of technology is thus an ontological deci-

sion fraught with political consequences. The exclusion of the vast majority from participation in this decision is profoundly undemocratic."

ICT has contradictory and varied effects in different contexts. Needs vis-à-vis ICT are never uniform; instead, different contexts demand different configurations of software, and patterns of use. This creates a dynamic environment to which constant adaptation is required by both individuals and organisations. What is needed are not just users who are "competent" or "comfortable" with specific ICTs but *capable*, able to apply their knowledge in new and unfamiliar situations which require innovation and intellectual challenge: perhaps even dissent towards an existing way of working or thinking. This is particularly true in complex social situations where "objective", technical knowledge is less applicable (see Hase and Kenyon 2007; Phelps *et al* 2002; de Castell *et al* 2002).

At the same time, universities increasingly adopt "campus-wide" e-learning and centralised administrative systems that lock them into particular solutions. Schools must work within set curricula, and employers recognise qualifications such as the ECDL which take a prescriptive approach to ICT proficiency, not a student-centred or critical one (Reffell & Whitworth 2002). As a result, the *ecology of resources* (Luckin 2008) available to formal ICT education is more monocultural than diverse, organised by the few rather than the many. Feenberg's warning about exclusion is therefore a cogent one.

DESIGN FOR CONTEXTS

I need now to discuss why technological design affects the inclusiveness of society and its institutions, and why learning is in turn affected by these matters.

Technological solutions to problems are understood and used within particular contexts. Context "is not an outer container or shell inside of which people behave in certain ways. People consciously and deliberately generate contexts (activities).... Context is both internal to people – involving specific objects and goals – and, at the same time, external to people, involving artifacts, other people, specific settings." (Nardi 1996b: 76). Contexts, and the organisations and technologies which make them up, dynamically evolve as a result of their interactions with external systems, but also as a result of the activity of those within them, as they work and learn.

Contexts are therefore fully integrated with *cognition*, the making of meaning and understanding. This is not just an individualised process but a property of communities, networks, organisations and other "persistent structures" (Nardi 1996: 75). Persistent structures are properties of a system which mediate activity. They "carry with them a particular culture and history... [and] stretch across activities through time and space" (*ibid*: 75), being "composed of individuals and the artifacts they use" (*ibid*: 77). Artifacts manifest values developed, and decisions taken, by other groups of people. Hence, "cooperating people and artifacts are the focus of interest, not just individual cognition 'in the head'." (*ibid*: 78).

Nardi discusses three theories which explore the relationship between user and context: *situated action*; *activity theory*; and *distributed cognition*. Situated action suggests that individual responses to environments cannot be designed in advance.

Planned courses of action, and the technologies in which they are are embedded, "are resources for situated action, but do not in any strong sense determine its course" (Suchman 1987: 52). In situated action, the individual is the principal agent, engaged in "contingent, responsive, improvisatory" (Nardi 1996: 84) activity in response to changing conditions (*ibid:* 80). Goals tend to be stated retrospectively "after action has taken place" (*ibid*). Thus, context is not designed but is generated and re-generated by the actions of individuals who *learn* as they do so.

In activity theory, the "subject" of an activity system acts to fulfil an objective. This activity takes place through a variety of mediators. These may be technological artifacts; cognitive structures made up of prior knowledge and experience; or procedural rules and formal divisions of labour. Individual goals and desires may drive activity but so may more abstract goals, embedded into the persistent structures of the system.

Persistent structures therefore obviate the need for all activity to be *conscious*. Even situated action, which places less emphasis on the impact of structures, recognises this: "The appearance of routines in situated action models opens a chink in the situated armour… being canned bits of behaviour, they obviate the need for active, conscious planning or the formulation of deliberate intentions or choices" (Nardi 1996b: 84). Motivation can therefore be concealed under "procedure". In activity theory, *operations* "become routinized and unconscious with practice" (*ibid*). Distributed cognition struggles to recognise individual agency at all.

THE CEDING OF COGNITION

When activity becomes unconscious, work is no longer being held up to scrutiny. It sinks beneath awareness. Situated "improvisation" may be nothing of the sort, or at best, is not a conscious act. We may not even perceive that what we are doing is reflective of someone else's goals, or system goals, and that these goals have become embedded into the technologies we use. To truly learn within a context, it is necessary to lift up familiar activities into conscious awareness, to question the premises and structures which support what one is doing (cf. Argyris 1999). The essential element of a critical theory of learning is that it not just provide ways to understand a context, but through which it can be *changed* if necessary. However, neither are necessarily straightforward. The problem with the theories Nardi summarises (and with her summary analysis) is that though they recognise the unconscious nature of our relationship with our context, there is little consideration of the political implications of this.

Blaug observes that any theory of organised activity must consider power (2007: 25). The primary and most durable organisational form in the modern world is the *hierarchy*. A hierarchy is "a frozen set of relations, a congealed difference of status" (*ibid:* 26); a social construction that, far from being ossified, is characterised by rapidly changing roles of subordination and domination. Hierarchy is durable because it is dynamic, feeding on new sources of knowledge and routes of application (*ibid*: 26), which now include technology (Feenberg 2002: 16). Yet "[h]ierarchy divides; it separates. Its participants experience different meanings on either side of what might be termed the 'power divide'" (Blaug 2007: 28). This

cognitive separation has been confirmed in experimentation (*ibid*: 40). In education, one result is that different stakeholders – not just teachers and learners, but developers, administrators and funders – think about, and construct the meaning of, the supporting technologies in quite different and often incompatible ways (Whitworth 2007). Which of these "cognitive cultures" does a designed context benefit? Even a design process which recognises the need to understand different contexts risks producing alienating and inappropriate technologies if it remains a process of "design for" rather than "by".

Attempts have been made to address this problem through the field of *participatory design*. In Scandinavia in the 1970s and 80s, this was strongly linked to the idea of workplace democracy and strong trades unions who instead of simply bargaining over pay involved themselves in the design of work environments for the benefit of employees. But more recently, when participatory design is invoked, the emphasis has shifted away from political issues: a change contributed to at least in part by the increased use of standardised technology packages which cannot be easily modified (Gärtner & Wagner 1996: 189). Nor has there ever been much investigation of participatory design for education which involves the learner (an observation returned to below in the section about critical pedagogy).

The usefulness of Blaug's paper comes because he shows that these changes do not necessarily arise from deliberate, conscious attempts to exclude. Managing hierarchy requires us to lift processes up into conscious awareness: to turn them from "operations" to "actions", in an activity theory sense. But it is hard to attend to what is routinised. The schema, mental models, and scripts which designers use "are themselves products of prior experience; they are knowledge, learned and stored" (Blaug 2007: 30). Organisations make considerable investments in certain cognitive schema (*ibid*: 33), both financial and psychological. Schema become *designed into* organisations and their technologies, and are then "pushed" at actors, becoming automated and "immune from critical examination" (*ibid*). Therefore, what is normal in organisational life is a ceding of individual cognition to the organisation – and to technology. Involvement in participatory design may either just contribute to the replication of these schema, or participants will have suggestions rejected because they are incompatible with these schema (and are thus a potential challenge to the hierarchy).

Yet Blaug's view is, if not optimistic, at least cognisant of the fact that learning *can* take place within contexts: "…while evidence for our recurrent compliance with power is overwhelming…. [w]e can learn, update schema in the light of new information, question hierarchy and reorganise… *Crucial to such learning is the educational experience of participation itself*" (*ibid*: 40-41; emphasis added). It is through participation in design and work activity that users learn about their context and the unquestioned assumptions that may be holding back their ability to make meaning and improve that context (Argyris 1999).

LEARNER GENERATED CONTEXTS

In education, as noted earlier, learners have been defined only as consumers in a context created for them, regulated by technologies which include ICT but also

the idea of (set) curricula, administrative procedure, and approved lists of resources and providers (Luckin 2008). Power is wielded in educational hierarchies through control over what should be taught, and what technologies should be used to do so. How, then, can education address this in an era defined by the increasingly widespread use of ICT, and the control wielded over this by the ICT industry, centralised institutional hierarchies and governmental control over curricula and other educational resources? What follows are a series of existing suggestions and practices that we can now interpret as possible approaches to the LGC ideal.

Possible signs of an LGC would include:

- learner agency in identifying a social learning need and/or a knowledge gap
- learners generate content and meta content that is recognised by others, thus validating the organisation of their contextually generated knowledge
- learners can recognize and understand enough about the technological and other resources available to them to appropriate them to meet their needs, and can understand the functionalities and affordances of these resources and how they match to their knowledge gap
- the environment and its organisation can be characterised by loose frameworks and freedom of choice
- the learning process is personally meaningful for the learners and facilitated in some way by their environment
- there are signs of ever widening boundaries of dialogue with and between multiple participants across multiple locations.

The LGC idea draws strength from Hase and Kenyon's (2007) idea of *heutagogy* or self-directed learning. Vis-à-vis education professionals, there is also an orientation to *action research* for professional development (Carr and Kemmis 1986). In heutagogy and action research the boundary between learners and teachers starts to break down. Both collaborate in the co-evolution of a context through a cycle of problem recognition, research, design and evaluation. This must now also reflect the embedding of certain educational values into systems of control: critical reflection on the technologies that one is presented with to construct a context and the transformation of these technologies.

Contrast this with a "design for" approach in which technologies and forms of organisation are selected by others. Here, the context is *generated* by learning, not considered a container within which learning occurs. Because of the risk that cognition can be ceded to organisations and technologies, an experimental, improvisatory use of ICT should be retained. This may sound as if it is an appeal without foundation in the current environment but its usefulness has already been seen in evaluations of practice. Whitworth and Benson (2007) cite a CEO for e-learning of a large US university who observed that despite his institution having a centralised e-learning solution, he was still prepared to fund and support certain departments to run their own systems, precisely because he knew that it was from here that the *next* generation of e-learning innovation would have to come. Through such self-reflective and exploratory work with ICT, teachers, leaners and managers alike come to collaborate on the design of context.

Let us also look to the past as well as the future, for decisions about technology policy too often fail to recognise what has been tried before. One fascinating case is that of Dartmouth College, USA, in the 1970s, as described by Nevison (1976). By 1971-72 some 80% of Dartmouth's student body had actively used a computer in teaching, and 1/4 the faculty did so regularly, with another 1/4 having had some experience but not choosing to use it at the present time. Nevison is talking about a situation in which these skills are not just taught to people but thoroughly embedded into curricula, and in all subjects too. Note his assertion that this has happened mostly "organically": "The growth of computing among the students and faculty at Dartmouth has been organic. It has proceeded at an unhurried pace where students and faculty learn to program largely on their own." There is more going on here than just providing "access" to technology – or using a single system to "deliver" teaching or help administer it. Nevison says that when students "*creatively interact* [emphasis added] with a computer, either by writing a program or imaginatively using someone else's program, they can, and do, become more involved with the subject of the course".

We cannot retrospectively apply the criteria listed above to a detailed analysis of this case: the present state of Dartmouth College's ICT infrastructure would need to be studied with an eye on what has happened to that institution, organisationally, since 1976. But from Nevison's report almost all the criteria above were being met at least at one level, with rates of *genuine* ICT facility (e.g. the ability to *manipulate* the technological environment, not just passively act within a context defined by others) higher in 1976 than they would be in most 21st century universities, among students and faculty alike. What Nevison is describing is *capable* ICT use (see above), rather than just passive acceptance of it.

Interestingly, ICT is a "problem type" to which younger people are suited (Young 1990: 117). Everyone can become both learner and teacher: "Within the limits of the problem level, the child, in principle, could as easily demonstrate the invalidity of the teacher's validity claim as vice versa" (*ibid*). Although children may not be able to enter into rational argument, with ICT they are already developing their own validity claims: "the idea of 'reflexive participation' by children in setting the conditions for their own learning, and in deciding the specific and *concrete* forms [technology] in which such principles might be realised, is potentially important…." Sharples *et al* (2007) have tried to develop a "theory of learning for the mobile age" which takes account of the role of informal learning networks and how technology is integrated into these networks; they recognise the contradictions which emerge within institutional education as a result (242-3). They recognise that it would be dangerous to assume that LGCs involve the rejection of the role and authority of the teacher, which may lead to the proliferation of "non-knowledge" (see the 28/1/08 debate at http://learnergeneratedcontexts. pbwiki.com). But LGC is not an "anything goes" relativism, but a recognition that self-guided processes occur because an externally-designed experience (whether or not it takes account of context-specific factors) cannot meet the needs of all users. The question is how these insights generated by learners can be *democratically integrated*

with the needs of other educational stakeholders. As Young (1990: 82) says: "there is no substitute for detailed concrete analyses, creative invention or appropriation of new practices, shrewd political judgments conerning what is achievable, organisational skill and political action of organisations and social movements, and solidarity among democratically inclined progressive forces." Always, practice and research must come together in *all* stakeholders, "allow[ing] the specific context of the critically informed practitioner to be taken into account, as well as the nature of his or her opportunities" (*ibid*) within that context. Ultimately, LGC is a call for educational researchers and practitioners to, at least in part, *let go* of technology, but it does not dismiss aspects of control and exclusion which are needed to keep educational environments orderly.

CONCLUSION

Feenberg states (2001: 120) that ICT in education can foster "postindustrial virtues such as temporal and spatial flexibility, individualised products, and personal control" – but also that (*ibid*: 124) "there exists a great temptation to think of technology as a managerial tool for centralising the university… bad decisions will be locked in technically and difficult to reverse." What he is discussing is a cognitive division: there are different needs and motivations for the use of ICT in education. The resolution of this contradiction cannot be found in the features of the technology itself, but the way it interacts with activity: "Educational technology will not determine which of these paths is followed. On the contrary, the politics of the educational community interacting with national political trends will steer the future development of the technology. And this is prcisely why it is so very important for a wide range of actors to be included in technological design…." (*ibid*: 128). These actors can have relevant abilities nurtured through education. Ultimately, ICT: "holds out the possibility of an alternative modernity that realises human potentials ignored or suppressed in the present society…. Furthermore, these potentials can express themselves only in a communicatively open environment. This vision implies a broad education for citizenship and personal development, as well as the acquisition of technical skills." (*ibid*)

However, simply embedding "a wide range of actors" into a technological design process does not help address the recognised political problems which then emerge. Democracy is only one solution to the problem of co-ordinated action, and can be retarded by the tendency of organisations to design and then push cognitive schema at all their members, subsuming our relationship with technologies beneath conscious awareness. *Participation* of the sort called for by Feenberg will, almost by definition, struggle to emerge from existing organisational hierarchies: but if educational researchers and practitioners can integrate their use and understanding of ICT with the contexts being generated by learners, in that way might creative, adaptable responses be made to rapid change in ICT and education. More research is required into how learners are already generating contexts using ICT and informal learning, and how these can become integrated with the systems of expertise and cognition generated by teachers.

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