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Innovation in Practice: Innovative Curriculum Development

In an early article on the importance of the embodied, situated, and contextually specific, yet also, relational, participatory, and "tacit" nature of learning and teaching, *'Learning to Learn: Educating with/for the Mind-Body'*, the well known Polanyi scholar Jerry Gill relates a perception, or perhaps even more appropriately, a belief, that is undoubtedly quite familiar, and probably quite amusing, to many of us. As he says;

> I am convinced that a significant majority of college and university professors fail to give sufficient, if any, attention to the epistemological issues and themes which necessarily, if unconsciously, inform their choice of goals and procedures. It would seem that some understanding of what knowledge actually is, how the cognitive process works, and which practical patterns are appropriate thereto would be exceedingly germane to the academic enterprise, but unfortunately such considerations have little or no place in the training of college professors. (Gill, 1993)

If we were to frame these concerns in terms of the language of one of the other great contributors to the theoretical articulation and analysis of the situated, contextually specific, and "tacit" nature of learning, and indeed modern educational theory per se, Donald Schön, and his sometime writing partner Chris Argyris, we could say that their "espoused" theories – if indeed as Gill rightly suggests, they actually have any at all! – bear absolutely no resemblance to their "theories-in-use." (Argyris, 1992) Or, if we were to be even a little bit more provocative about it, we could say - and present company is obviously excepted here, as we have all had enough "self-reflective" critical awareness to attended a conference on "enhancing curriculum"! - they have absolutely no idea about why they are doing what they are doing and the ways in which they are doing it!

This crisis in what Gill calls the epistemological foundations of modern education, that is those fundamental "grounds" on which we base – however consciously or unconsciously - those reasons why we teach what we teach and the ways in which we do it, has taken on an even greater sense of critical urgency in recent years. Spurred on by both the

monumental advances in contemporary neuroscience and the insights that it has provided into those various neurophysiological mechanisms and processes that influence the developing, learning, and adapting brain in particular, and that similar crisis of faith in the legitimacy of our conventional Cartesian conception of subjectivity that has been wrought by the various discourses of postmodernism, poststructuralism, and posthumanism, there is a general sense, as Gert Biesta has suggested in his appropriately titled book, *Beyond Learning: Democratic Education for a Human Future* (Biesta, 2006) that what we have been endeavouring to teach within the discourses of modern education, and particularly within those discourses that emphasize the legitimacy of that representationalist and calculative epistemology that has defined the Elightenment based project of techno-scientific modernity, and that "symbolic" or "computational" understanding of cognition - as Herbert Simon (1996) and Hubert Dreyfus (1992) have described it - that goes with it, is not only completely inappropriate to the ways in which we actually learn, but also to what is required of us in our current state of environmental, economic, and ethical crisis.

Indeed as Biesta suggests - as have many other developmental psychologists, philosophers, and educational theorists, from Vygotsky (1978) to Piaget (2001), Freire (2001) and Foucault (1997), who have also tried to think through the question of the nature and role of education, understood quite literally as a form of *"educare"* or "drawing" or "leading out," in an age in which what is being "educated" or "lead out" is no longer clear or certain - that form of reasoning that has dominated, and indeed continues to dominate, the representational and calculative epistemology of modern education may well be the single biggest contributing factor to the state of crisis in which we currently find ourselves! We seem, in many ways, as Tony Fry (2008), the well known design and sustainability theorist has suggested, to have been fundamentally educated in error!

This "crisis" is not necessarily a bad thing though – as many of the most erudite commentators on the hermeneutically disclosive value of "crisis," "disruption," or "breakdown" from Heidegger (1978) to Flores and Winograd (1987), Christensen (2008) and Sull (2009) have pointed out.

For, as Cameron Tonkinwise and Jacqueline Lorber Kasunic (2006) have suggested in their analysis of the value of what they broadly call "practice-based" research to the modern university, this "crisis" in the legitimacy of techno-scientific reason, and that epistemology that goes with it, has also allowed us to recognise the value of those alternative modes of learning that advocate a more open, pluralistic, indeterminate, situationally and contextually specific, and "tacit," approach to education. A fact that has also, as they provocatively suggest, in an appropriately deconstructive move, allowed us to see the true extent to which, "the

current institutional structure of the university might be incompatible with the ontology of current professional practices" - and this is in spite of its almost obsessive current focus on the vocational value of education - and thus the extent to which it needs to be completely reconsidered from "its basic concepts" if it is to accommodate the type of knowledge and *"educare"* that is appropriate to such "practices." A type of knowledge that is undoubtedly intrinsic to all of our "practices" here.

It is exactly this fundamental lack of compatibility between the "ontology of current professional practices" and the institutional legitimacy of certain forms of knowledge and research, and the inevitable consequences that follow on from this, whether they be practical, economic, pedagogic, or ethical that we want to talk to you about today.

Critical and Re-directive Practice

Currently we (the authors) of this paper run the Masters in Design Critical Practice and the Masters of Research in Design at Goldsmiths as well as setting up a new research studio, the pi-studio (prospect and innovation). The construction of the discourse around the role of practice based learning and the concept of re-directive practice is played out within in these programmes. The pi-studio forms an interesting role in that it works with industry and external bodies outside of the institution. As an example the pi-studio has recently conducted a live research project with Microsoft Research into 'Networks in Crisis'. The project background briefing was written by the pi-studio and the research was conducted in collaboration with the students of the MA programmes. The project was located in the safe space between industry and academia, whilst dealing with the real issues of critically engaging with networks in culture and society that are in crisis, and exploring the re-directive possibilities of innovating them into new formations. Outcomes included networked gorilla farming, new prosumer focused supermarkets, software technologies to support families in health crisis, new methods to discuss sexual health in public, communication for families in dispersed diasporas, and a range of other challenging topic areas. Also because the programme is not discipline focused it is possible to construct teams of designers who have varied practices including, jewellery design, product, furniture, communications, interaction, interior, film and architectural design. The results are really exciting, the students at first resist the re-directive nature of the programme and the discourses that can infuse their work, often referring to their prior educational experience of designing a specific thing with no real reasoning or criticality. What then happens is that the students realise the tremendous opportunity of design to change things, and re-make the world for the better, or differently. This process of building autonomous learners, who form a community of peers that grow and develop the whole practice of design becomes central

to the educational role of our programme within the University. In many cases they never leave the community they have helped to build…

Re-directive Education- Innovation in Practice

We have explored the importance of reconsidering university education not as a place of representation of the distanced 'real world' and rather a place where we encourage innovation in our communities of practice inside and outside the institution. This means simply it is not good enough to operate in absence from the real context where design has agency and directly participates in. Design is empowering and transformative in its ability to be engaged in creating multiple futures. Perhaps we could tentatively call acting in the real contexts of a messy and complex reality a form of 'situated innovation'.

Mind the Gap

There is clearly a gap between the University and Industry. This is a particular space where mastery and innovation can grow and nurture excellence, a space that is non-commercial, but full of possibilities. It is concerned with extending practice and building a context for discursive development of both individual practioner and their peer group community. A place where a community of innovation can grow, stories shared and peers critically engage with each other. The professional practice and the academic discipline need more opportunities to collide, synthesise and transform each other. Increasingly professional practice is required to have excellent research skills, and particularly in design these research abilities are drawn from diverse subject areas such as anthropology and psychology or engineering and archaeology, but where best to engage these subjects? It must be the University, but the University is still in many cases entrenched in subject disciplines, unapproachable, and almost impossible to negotiate. What we are attempting to achieve with the new programme 'Innovation in Practice' is the construction of a studio culture from the design discipline, but with the additional of access to wider expertise including, material science, material culture, narrative/film, drama, social science, psychology, cultural studies and others. The student participants will come from a particular context of industry, small business, charity or institution with their own topic or area is used to build an innovation project programme. The programme's content is driven by each student's particular innovation project, methods and processes, creative business, discourses of innovation and studio practice, all use the project to synthesise and contextualise their particular activity of innovation in practice. At the core of the programme is the sense of building a peer based community through the studio culture.

This emphasis on the collaborative, relational, generative, or what we might call the "ontogenetic" quality of learning, as opposed to that more

straightforwardly representational, calculative, and prescriptive conceptualisation of it that has dominated the enlightenment based epistemology of modern education is similarly advocated, and succinctly described, by Jerry Gill in his afore mentioned article on the "tacit" nature of learning. As he says

> Perhaps the most basic and general theme that emerged from my initial exploration is that knowing is a relational reality. The key idea here is that knowledge is not a thing to be possessed but an activity to be engaged in. In other words, cognition happens, takes place in an ongoing fashion in the interaction between and among knowers and the known. To put it another way around, the later actually are constituted by means of the former. In this regard, knowing is quite similar to dancing or any other active, relational phenomenon. Dancing creates both the dance itself and the dancers, in the sense that it is incorporated into and thus participates in the ongoing development of their identity. Knowing, too, participates in the evolution of both the known and the knower; each is constantly being altered by interaction between them, by their cognitive symbiotic relationality. (1993)

Despite the somewhat Romanticist language of Gill's example this idea that knowledge is created through a complex "cognitive symbiotic relationality" between the "knower" and the "known," and that it "is not a thing to be possessed but an activity to be engaged in," an understanding of the nature of education and learning, and ultimately innovation as well, that has informed everything that we have endavoured to create in both the Prospect and Innovation Unit, the MA in Critical Practice, and the MA in Innovation in Practice, has an enormous amount of critical support both within the discourses of contemporary neuroscience and educational theory.

Whether it be in the the Embodied, Enactive, or Extended theories of mind that have been developed by the likes of Francisco Varela (1993), Evan Thompson (2007), Shaun Gallagher (2006), Alva Noe (2006), and Andy Clark (2008), and loosely described as "Neurophenomenological," or within the predominantly "practice" based theories of education that, taking their influence similarly, from either the hermeneutical phenomenology of Heidegger (1978) or Gadamer (2004), or the pragmatic philosophy of Dewey (1997), or even more recently the work of Donald Schön (1991), Michel Foucault (1997), or Pierre Bourdieu (1990), and the developmental psychology of Vygotsky (1978) and Piaget (2001), there is a general sense of agreement that what we know, and how we know it, is created, learnt, and most appropriately for our current context, "educated," through a complex "cognitive symbiotic relationship" between

the "knower" and the "known." Or as Francisco Varela and Humberto Maturana (1992) originally described it in their so called "Santiago" theory of cognition, the "structural coupling" of mind and world.

There is no sense of some ultimately realizable truth, some "transcendental signified" as Derrida called it, that can be made fully present, and thus "known" in this theory of cognition, let alone unproblematically inculcated into the mind of an "other." What we "know," or perhaps even more appropriately, what we can come to "know," is ultimately a consequence of a complex pattern of "sensorimotor coupling," or adaptation, between our mind, or again even more appropriately, our entire "embodied" existence, and that environment or context in which we exist.

Francisco Varela provides a brief, and theoretically well contextualized, description of this position in his 1999 book, *Ethical Know-How. Action, Wisdom, and Cognition*. As he says;

> The idea that the cognitive structures of human life emerge from recurrent sensorimotor patterns is at the very core of Piaget's program and has been argued in recent works by cognitive linguists George Lakoff and Mark Johnson... As Lakoff says, the central claim of this approach is that meaningful conceptual structures arise from two sources: (1) the structured nature of bodily experience; and (2) our capacity to project imaginatively from certain well-structured aspects of bodily and interactional experience to conceptual structures. *Rational and abstract thought is the application of very general cognitive processes – focusing, scanning, superimposition, figure-ground reversal, and so on – to such structures.* The basic idea is that embodied (sensorimotor) structures are the *substance of experience*, and that experiential structures "motivate" conceptual understanding and rational thought. Since I have emphasized that perception and action are embodied in self-organizing sensorimotor processes, it is natural to postulate that cognitive structures *emerge* from recurrent sensorimotor activity. *In either case, the point is not that experience strictly determines conceptual structures and modes of thought; it is, rather, that experience both makes possible and constrains conceptual understanding across a multitude of cognitive domains.* (our emphasis) (1999)

What is perhaps most interesting in this brief passage form Varela, apart from the references that it makes to Piaget's work, and thus the way in which it contextualises his "Neurophenomenological" understanding of the nature of cognition and learning in terms of that entire lineage of educational theory that has been inspired by both his and Vygotsky's work, and his analysis of Lakoff and Johnson's work on the "embodied" nature of cognition and language, is his recognition that, although those phenomenal experiences of our embodied "being-in-the-world" - or what

he calls our history of "sensorimotor" coupling with our environment and the "microworlds" that it produces - do indeed provide the basis for our higher "conceptual structures and modes of thought," they do not absolutely determine them, but simply "make[s] possible and constrain[s] conceptual understanding across a multitude of cognitive domains." Or if we were to express this in terms of Gibsonian psychology, they provide affordances for the possibility of different forms of meaning.

For, as Helga Nowotny has pointed out in her wonderful little book, *Insatiable Curiosity: Innovation in a Fragile Future* (2008), even some of what Lakoff and Johnson (1981) would call our most deeply entrenched "orientating" cognitive metaphors like the relationship between directionality and the future, can change cross-culturally, because some African cultures think of the future as coming from behind them, rather than lying in front of them!

What is ultimately most interesting for us in relationship to this entire heritage of critical and or scientific analysis of the ways in which these "tacit," "phenomenal," or "experientially", derived forms of understanding that both provide the basis for and inform our so called "higher cognitive" processes, whether it be understood in terms of the hermeneutically disclosive phenomenology of Heidegger and Gadamer, Polanyi's theory of "tacit" or "personal" knowledge, Schön's theory or "reflective" practice, the developmental psychology of Vygotsky or Piaget, or more recently the "cognitive" or "Neuroscientific" theories of Lakoff and Johnson or Varela and Clark, is really quite pragmatic. We are not scientists, so we're not really interested in discovering all of the finer neurophysiological or neurochemical details of how these processes function, nor are we philosophers who are obsessed with how they affect or influence particular arguments within the history of the philosophy of mind, we are teachers - and designers - so ultimately, and in difference to many others as Jerry Gill suggested in our opening quote, we are particularly interested in what implications they have for how we might both teach and design more effectively, successfully, and "innovatively".

This is not an easy question though. For as Stephen Turner (1994) has pointed out perhaps more systematically and thoroughly than anyone else, the mechanisms by which this sort of knowledge that exists "tacitly" in practices is communicated and transmitted - what he actually calls the "problem of transmission" - and thus is teachable, is by no means straightforward or unequivocally understood. Indeed for some Polanyi scholars, this form of understanding that was intrinsic to his entire critique of the representationalist, calculative, and positivist epistemology of modern science in particular, cannot ever be made explicit.

So how can we teach it? Or perhaps more appropriately "educate" for it? How can we "lead it out" of an other?

Well according to some contemporary thinkers like Hubert Dreyfus (1992), Ikujiro Nonaka (1995), and Etienne Wenger (1999), who all subscribe to some form of an embodied, extended, enactive, or "situated" theory of cognition, and in spite of Turner's, amongst others criticisms, it can be best learnt, and not simply taught, through immersion in a "community of practice" as Wenger describes it, where knowledge is "co-created." A situation which, as Dreyfus has suggested in many different instances is more inherently "phronesically" and "ethically" aware, and as Nonaka has also suggested more "innovative."

And this is exactly the type of space that we have been endeavouring to create in the courses that we have been teaching and the unit we have established.

Bibliography

Argyris, C & Schön, D. (1992) *Theory in Practice: Increasing Professional Effectiveness.* Josey Bass. San Francisco

Biesta, G. (2006) *Beyond Learning: Democratic Education for a Human Future*. Paradigm. Boulder

Bourdieu, P. (1990) *Reproduction in Society, Education, Culture*. SAGE. London

Clark, A. (2009) *Supersizing the Mind. Embodiment, Action, and Cognitive Extension*. OUP Press. London

Christensen, C. (2008) *Disrupting Class. How Disruptive Innovation Will Change the way the World Learns.* McGraw-Hill. Berkshire

Dreyfus, H. (1992) *What Computers Still Can't Do*. MIT Press. Cambridge. MA

Foucault, M. (1997) *The History of Sexuality: The Care of the Self.* Penguin. London

Friere, P. (2001) *Pedagogy of Freedom: Ethics, Democracy, and Civic Courage*. Rowan and Littlefield. Lanham

Fry, T. Design (2008) *Futuring: Sustainability, Ethics, New Practice*. Berg. London

Flores, F & Winograd, T. (1997) *Understanding Computers and Cognition. A New Foundation for Design*. Addison-Wesley

Gallagher, S. (2006) *How the Body Shapes the Mind.* Clarendon Press. Gloucestershire.

Gill, J. (1993) *Learning to Learn: Educating with/for the Mind-Body*, The Polanyi Society Periodical, Vol XX No. 2 1993-94

Heidegger, M. (1978) *Being and Time.* Blackwell. London.

Lakoff, G. & Johnson, M. (1981) *Metaphors We Live By.* Chicago Uni Press. Chicago.

Maturana, H. & Varela, F. (1992) *The Tree of Knowledge. The Biological Roots of Human Understanding*. Shambhala. New York.

Nonaka, I. (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation.* OUP. New York

Nowotny, H. (2009) *Insatiable Curiosity. Innovation in a Fragile Fututre.* MIT Press. Cambridge.

Piaget, J. (2001) *The Language and Thought of the Child*. Routledge. London.

Schön, D. (1991) *The Reflective Practitioner*. Ashgate. Surrey

Simon, H. (1999) *Sciences of the Artificial*. MIT Press. Cambridge MA

Sull, D. (2009) *The Upside of Turbulence: Seizing Opportunity in an Uncertain World.* Collins. Cork

Tonkinwise, C. & J. Lorber-Kasunic (2006) What things know: exhibiting animism as artefact-based design research. *Working Papers in Art and Design* 4. Retrieved <date> from URL
http://sitem.herts.ac.uk/artdes_research/
papers/wpades/
vol4/ctfull.html
ISSN 1466-4917

Turner, S. (1994) *The Social Theory of Practices.* Polity. London

Varela, F. (1999) *Ethical Know-How. Action, Wisdom, and Cognition.* Stanford. California.

Vygotsky, L. (1978) *Mind in Society: Development of Higher Psychological Processes.* Harvard University Press. Cambridge. MA

Wenger, E. (1999) *Communities of Practice. Learning, Meaning, Identity. Cambridge* Uni. Press. Cambridge