IN THE CULTIVATION OF RESEARCH EXCELLENCE – IS RIGOUR A NO-BRAINER?

Fig. 1 - Boris Karloff as Frankenstein

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Abstract

This article explores the metaphor of 'rigour' and challenges its suitability for encouraging research 'excellence' within universities. By way of illustration, the author proposes a non-linear writing method that, when supported by good tutelage, renders plagiarism virtually impossible. The system grew out of the Design Futures, Masters in Art (M.A.), at Goldsmiths University of London, which help designers to write more usefully, and to enable them to re-purpose their writing. This tetrahedral writing structure was designed to subvert imposed rigour by fostering a more dynamic, collective, ethical and entrepreneurial approach.

Keywords

Academic rigour

Research Excellence Framework

Research

Dyslexia

Introduction

If, as some scientists believe, the survival of our species now hangs in the balance, the UK's policies for guiding university research need to be business-like, coherent and imaginative. However, at present, the expensive process of evaluating 'research' is conducted separately from how we look at our other practices of learning and enquiry. This is puzzling, especially at a time when university funding is tight. This article will refrain from analyzing the historical precedents and political expediencies that shape the UK's Research Excellence Framework (REF). Instead, it will examine some of its underlying assumptions by discussing the metaphor of 'rigour' within the term 'academic rigour'. Having written about this issue more than a decade ago (cf. Wood 2000a) I am interested to note that little appears to have changed. While my previous article (Wood, 2000) was recently included in a book on widening participation, commissioned by the UK's Council for Higher Education in Art & Design (Bhagat & O'Neill, 2011) the notion of 'rigour' is seldom acknowledged as being eccentric to the research agenda, let alone misleading or counterproductive. Many use it to mean 'consequential'. Etymologically speaking, it means 'stiff', as in the term 'rigor mortis', which describes the condition of someone who has been dead for more than three hours. If we were to analyze it in semiotic terms we might think of funerals, steroids and Viagra. If so, it is a splendid combination of joyless intransigence and manly potency, which make it a handy buzzword for dodgy political speeches. How, then, can it encourage academics in art and design to work more effectively? To be fair, the REF framework does not use it on its own, but as one of a dubious trio of terms (i.e. 'originality', 'significance' and 'rigour'). Together, they stand for the 'quality' or 'excellence' of academic research.

Originality

While many serious researchers may welcome challenges their 'originality', the term seems more related to the process of grading individual distinctiveness, rather than inviting a spirit of creative questioning and reflection. What is needed is a new descriptor that will cultivate a collegial culture of co-creativity and synergy.

Significance

Similarly, while claims to 'significance' may well encourage innovative links to the world beyond academia, it is more likely to distract researchers into point-scoring exercises that reflect, ironically, the level of peer acceptance, and the brand value and prestige of publishing companies and other agencies that endorse their work.

Rigour

Although I can see how a casual use of the term 'rigour' might help novice researchers to achieve some elementary results, this is far from what I had assumed to be 'research excellence'. Individualists with a doggedly consistent approach are unlikely to deliver excellence in a comprehensive way. The kind of academic research that is needed in the 21st century is a collective activity that requires imagination, self-reflexivity, empathetic awareness, ingenuity, resourcefulness, adaptability, clarity, insight, rationality, passion, scepticism and perceptiveness. For all of the above reasons, it is hard to see how 'rigour' applies. As a metaphor, it is more relevant to death than to life. Even in bog-standard, value-for-money terms it is cynical, anachronistic and counterproductive. In short, it is a no-brainer.

The culture of rigour

This article will argue that, even though the metaphor of rigour was already 'dead on arrival' by the time it reached the twentieth century, it has refused to lie down. Paradoxically, while it is not 'rigorous' within its own terms, it shuffles along as a surprisingly scrawny, ill-defined creature that exercises its power through fear and supposition, rather than through arguments that withstand scrutiny in the light of day. Moreover, it is as contagious as it is anachronistic. Michael Jackson's 'Thriller' video comes to mind, here. By the time we have reached the appointed Day of Judgment (REF Day), 'rigour' will probably have replicated itself as numberless sclerotic forms that rise spontaneously from the ground. The fact that they are dead, yet still able to lurch towards us, will be taken as palpable proof that everything is fine. Fear is a powerful master. Many years ago, when polytechnics were turned into universities, lecturers in art and design became ill with anxiety, lest they be found to apply what, in QA circles might be called 'double standards'. So they taught themselves how to discuss the size, form, cost, weight, swankiness and 'impact' of what they did. They called their new activity 'Research', and did their best to conceal its glorious ambivalence from outsiders. But that was a long time ago, and the fear has been replaced by amnesia and a mild sense of unease. If artists and designers are to prove to the REF that their work is genuinely 'excellent' they must first rethink the nature and purpose of their practices, then decide which of the three REF terms ('originality', 'significance' and 'rigour'), if any, are useful in encouraging best practice.

In the way that other academics currently tend to use the term 'rigour', it is seldom made clear whether it applies to the method used, or to the outcome that it delivers. I believe this is because the metaphor itself is so deeply, and powerfully ingrained within Western thought. Its perennial appeal is what enables its users to stand, like all good illusionists, on the shadowy border between the actual and the hypothetical. What we know as the mindset of 'rigour' emerged several thousand years ago, with ideas from pre-Socratic philosophers such as Melissus (born *c.* 470 BC) and Parmenides (born 515 BC). Where Melissus believed that the universe was indestructible, indivisible, changeless and motionless, Parmenides used similar tenets to justify an unwavering approach to reason and logic. This approach is exemplified in the mathematical idealism of Pythagoras, the form-based idealism of Plato, and in the categorical and binary logic of Aristotle, all of whom, in different ways inspired the tacit assumption that data, numbers, forms or sets might represent a mode of epistemological 'truth' that is more valid than experiential wisdom. This analytical and convergent approach informed a long trajectory of development that entangled it in a range of logical, devotional and, therefore, emotional issues that led to, for example, the parsimonious reasoning methods of John of Ockham (1285–1329) and the expedient reductionism of Gottfried Leibnitz (1646–1716). Their influence upon Bacon, Descartes, Kant, Galileo and Newton helped to foster methodologies that appeared, briefly, to offer limitless certainty. These findings, in turn, paved the way for today's digital and bureaucratic systems of consumption. Faith in the importance of 'rigour' reached its climax in the nineteenth century,

driven by dreams of technological power (e.g. Shelley, 1818) and justified by a stridently arrogant strain of humanism (e.g. Nietzsche, 1883). In 1825, Pierre Laplace predicted that Newton's Laws of motion would enable us to know, with absolute certainty, everything in the past and the future. Unfortunately, except in the simplest cases, nothing has justified this bold hypothesis. Even a hypothetical interdependent system consisting of little more than two massive objects will defy rigorous predictive analysis. Subsequent work by Henri Poincaré (1854–1912), and others, led to what we now understand as 'chaos theory', which now reflects a ubiquitous characteristic of research at both an epistemological and an ontological level. By 1930, our ancient belief in a rigid material universe was shattered by the development of telescopes in space. By this time, psychoanalysis and quantum physics had already put the epistemological uses of intellectual rigour into serious doubt.

One of these theories was that of Werner Heisenberg who argued (1927) that it is impossible to detect both the velocity and position of a sub-atomic particle in a single act of observation. This was endorsed by Kurt Gödel's (1931) principle, which showed that no mathematical system could always be both consistent and true. Albert Einstein's theory of Relativity (as interpreted by David Bohm) represents one of the most devastating challenges to rigour, implying that, if there is an upper limit to the speed of information, nothing is rigid, either theoretically or practically (cf. Bohm 1980). Einstein was unusually consequential in his thinking about 'rigour' yet, as a young researcher, he would probably have fared badly, using the criteria adopted by the REF. He understood the paradox well, and was happy to explain it thus – 'as far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality' (Einstein, 1983). It is probably Lorenz's work on chaos theory (1963) that gave 'rigour' the final coup de grace when it showed that wave-based phenomena (i.e. the whole living world) are, ultimately, incommensurable with the granular nature of numbers. Around this time, Thomas Kuhn was publishing his research into the subjective nature of academic 'objectivity' (Kuhn, 1962). This could be interpreted as a less welcome description of 'rigour', in that it analyzed the collective intellectual inertia of academia as a whole. None of these arguments have been sufficient to dislodge 'rigour' from its hallowed place within the academic vocabulary. Where the popularity of qualitative research methods have made it respectable to explore emergent, intangible or subjective issues we still expect to manage this process successfully in a top-down way, using arcane industrial metaphors that make claim to 'robustness' or to biblical allusions that cite 'foundations', or 'rock'. Of course, I would not be the first person to warn that managerial rigour can lead to intellectual myopia, amnesia and alienation. In 1810, Alexander von Humboldt made his famous memorandum that criticized the government of the day for its high-handed micro-management of research in the universities (Elton, 2008). This rigidification is a threat to what Ross Ashby called 'requisite variety' that emerges from the bottom-up and enables the system to remain adaptable, but is then simplified for the convenience of external managers (Ashby,

1956). Plato recounted the story of an Egyptian ruler, who refused to permit the introduction of alphabetical writing because he knew it would ossify important relations and distort the tacit wisdom of the culture. As Plato wisely noted, 'books are like the painted figures that seem to be alive, but do not answer a word to the questions they are asked'. This is less true of interactive machines, some of which seem like books, yet are able to respond and adapt to our reactions with an alertness that was impossible with paper publications. In the twenty-first century we have moved on from a dependency on clumsy mechanical clocks and tiny-print A–Z maps. While our library shelves and desk diaries may appear to keep the faith with Cartesian and Newtonian paradigms, many of the newer technologies are beginning to confound it. Skype meetings, GPS navigators, pictorial phone apps, Tweets and talking books are steering us into more mercurial, fluent and interactive modes of discovery. How will 'academic rigour' fare in these emerging protocols of communication and signification? Some dictionary definitions equate it with an extremely exhaustive and punctilious approach to accuracy. But excellent research also requires diametrically opposite characteristics that have nothing to do with 'originality', 'significance' and 'rigour'. Perhaps the government wants academics to believe we are more Promethean, or Herculean than we are. If so, this would mean that the purpose of academic rigour is symbolic and rhetorical. There is a joke about a new type of Viagra that must be administered as eye drops. It does nothing for your sex life – 'it just makes you look hard'.

Harry Houdini (1874–1926) was a famous escapologist and illusionist whose stage act included the ability to withstand a devastating stomach punch without flinching. When Houdini was old, someone confronted him in the street and, without warning, struck him with great force, in the midriff. Taken by surprise he did not have time to tense his body for the punch and his internal injuries subsequently proved fatal. Was it a 'lack of rigour' that let him down so badly, or a quickness of response that was too rigid? A slab of rock has rigour but, like all forms of stasis, it is pretty useless in most research contexts. Compared with his ability to make wise situated choices, it is doubly incompetent. It has a poor sense of timing because of its lack of consciousness and a very limited ability to react, on account of its inflexibility. A central paradox of this kind of rigour is that, far from requiring an immovable body, it calls for alertness, suppleness and split-second timing. Houdini was able to resist injury, not because he was innately rigorous but because he trained himself to simulate rigour in the controlled environment of the theatre. What this suggests is that, while 'rigour' is not sustainable for living beings, we can use it within a requisite feedback system that enables it to be self-reflexively adaptive. While consistency and self-discipline are needed at some stages of academic enquiry, these qualities can become self-serving, cynical or instrumentally rationalistic if we forget that they are the clumsiest, least relevant research tools we have at our disposal. I find it irksome that, while uncertainty, entanglement and precession are intrinsic to being alive, the school curriculum prefers to teach students how to be faithful to the rational logic of 'projects'. This entails learning how to

simulate predictive control over our actions. In a design and technology lesson, for example, it means pretending that we anticipated the outcome of a wicked design task. Ultimately, it means curbing our curiosity and inventiveness by learning how to discern hidden agendas, mindless trajectories, exam-based commandments and assessment-oriented algorithms. This is inexcusable. The purpose of education is to facilitate ecological co-adaptation. Humans do not live as inertial objects in a Newtonian and Cartesian space. We are co-agents of an ineffable ecosystem in which we are but one of many trillions of living organisms.

Adaptation rather than ecocide

As our species now has a very short time in which to adapt to its global ecological habitat my pedantic discussion of words may seem willfully self-indulgent. However, their implications may be of practical importance. In this case, 'rigour' plays a role that is similar to that of the word 'sustainable'. Both are square-bashingly reductionist, if not dangerously misleading. They are symptoms of a solipsistic and presumptuous social order that is in denial about its actions and beliefs. When a large nation invades a smaller one, it may be reasonable for the oppressed citizens to call for 'solidarity' to the cause. However, the politics of resistance is inappropriate to the increasingly complex and difficult issues of designing remedies for climate change, biodiversity depletion or social disparity. In this situation what is needed is a diversity of new options, and a vocabulary that can accommodate the requisite complexities and interdependencies within whole systems. Our collective stupidity is apparent and we urgently need a 'research' culture that is more co-creative, eco-mimetic and inclusive. This calls for more purposeful and coherent educational policies in which survival, not economic advantage, becomes the first priority. It means re-connecting many different ways of knowing, thinking, imagining, acting, feeling, doing and making in order to synergize awareness and action. Society needs to change itself at the level of lifestyle, not just at the level of managerial accountability. Changing the paradigm is a highly complex task that requires coherence rather than consistency. This means orchestrating types of creative thinking that will permeate existing boundaries. It calls for openness to synergies that may, currently, seem unthinkable within the current vernacular.

An obdurate, target-based approach is not what we need. Indeed, there are signs that a truly rigorous approach may already be threatening our survival as a civilization. The abysmal failure of international fishing quotas in Europe exemplifies this problem. Where scientists have rigidly maintained their role as 'neutral' observers and predictors of fishing stocks, European politicians have chosen to exceed the guideline limits for fishing quotas as advised by the scientists. It may be obvious that the ignoring of evidence can bring disastrous consequences, but a more important omission is a designerly approach to the problem. Artists and designers tend to think in a way that is complementary to scientists and politicians. Perhaps this is because they work more directly and empirically with proximal events, materials and the 'stuff' of pragmatic reality. Where the academic

legacy of science and scholarship has encouraged an over-emphasis on logical verification, taxonomies and the alphanumerical repeatability of truth claims, artists and designers are usually more interested in the heuristics of immediate actions and the opportunities they bring. These approaches are not polar opposites. Indeed, both are important to good practice. However, a bias towards 'rigorous' methods can lead to fatal errors of collective judgment. This was evident from public debates surrounding climate change. While a huge emphasis was placed on the veracity of evidence-based truth claims (i.e. whether it is happening), far less importance was attached to the more 'designerly' discussion of possible futures (i.e. how best to act, *in case* climate change is as big a threat as the pessimists believe it is).

Languaging

For more than twenty years, my own 'research' has explored ways in which design might be re-designed in order to cultivate wiser outcomes, rather than producing 'cooler', or 'smarter' products. In our attempts to devise forms of what we call 'metadesign' we tried to think beyond the remit of 'design' as it is usually taught in universities. This taught us several things about the use of language within design practice. The first is that there has been a surprising lack of research into co-authorship. The second is that language is a more influential and auspicious part of the process than we thought. Both issues need some explanation. In general, designers underestimate the power of writing as a creative tool for reforming the world and, we believe, can learn much from the way that infants manage to sustain their survival through the co-creative act of making conversation. By definition, this approach lacks rigour. Instead of memorizing grammatical rules, babies use a profoundly heuristic approach to discover what 'works' for them. The experience then guides their learning process by association, memory, creative interpretation and reinvention. This is a highly affirmative process that our researchers call 'languaging'. By working to incorporate 'languaging' and co-authorship into metadesign we believe that it may be possible to achieve outcomes that cannot be achieved by current methods.

Re-languaging purpose

In my view, design thinking is an important component of auspicious reasoning (Wood, 2009). While some serious academics are reluctant to offer an opinion about an author unless they have read all his, or her works, I encourage my design students to frame provisional opinions, albeit tempered by a healthy dose of self-doubt. I have also found that designers are willing to embark on ventures that appear to be impossible, at the outset. This is not always true of students who have been trained to perform as 'excellent' researchers. However, in order to maintain a creative grip on tactical contingencies they learn only just enough to achieve useful results. These approaches might seem antithetical to 'rigour', yet serve a vital purpose when integrated with more scholastic approaches. When we created the Writing-PAD Network, we wanted the 'P' (in the acronym 'PAD') to stand for 'purposefully'. This was because we wanted to remind learners in Art and Design that it is important to ask oneself why one is doing a given thing (e.g. researching or writing) and, when necessary, to change one's assumptions accordingly. The word 'purpose' is uniquely powerful because it plays a major role in sustaining the paradigm that exists at the time. Hence, rather than confining discussion of the meaning and origins of a word, such as 'rigour', it is useful to enquire about its purpose.

It is ironic that politicians want academics to justify their 'research' in the context of innovation, cross-disciplinarity and, perhaps, wealth creation, yet ask them – via the REF – to do so using methods that are counter-productive and anachronistic. Today, new configurations and opportunities for co-creative change and renewal are emerging all around us. Our research into metadesign suggests that we can find virtually unlimited growth in new synergies (Wood 2007a, 2007b). If we are to help communities to deliver ethical and benign outcomes to a wide variety of stakeholders what is needed is an auspicious framework for collective reasoning. While the idea has surfaced many times since Plato, academia lacks sound pedagogic methods for achieving this. Given that employment consists almost entirely as collaborative, rather than solo endeavours, it is strange that collaboration, co-authorship and co-assessment are not seen as more important than their solo counterparts, in schools and universities. While the writing of co-authored articles and papers may appear to be common within academia, many of these practices do not deliver mutual, or reciprocal learning experiences. Many seem to have been the result of an executive editing process in which the research director makes 'top-down' decisions on behalf of the whole team. This process tends to stifle the potential for team building and the co-evolutionary processes this offers. It is a missed opportunity, as it is an effective way to reconcile different or even seemingly contradictory theories or models; and to develop new modes of shared practice. The effective co-production of new knowledge in art, design or science calls for a reasonably high level of mutual and reflexive self-awareness of each author's personal strengths and weaknesses. Professionals who collaborate effectively must therefore acquire and develop sub-cognitive (e.g. intuitive) skills that are 'co-anticipatory' in order to guide the overall outcomes of collaboration. The 'creative space' of collaborative writing resides in a kind of

intermediate zone that is constructed by, and resides in 'between' the author's intentions, rather than within them, as individuals. Often, the dynamic process itself leads to an emergent outcome that can be evaluated only after it has been attained. Nonetheless, a common form that may otherwise be present in a single discipline is absent, and needs to be generated or agreed. Inevitably, these skills and strategies will be informed by the ideological, cultural and cognitive preferences of the authors themselves. The process of interfacing (attaining the 'in-between-ness') is a reciprocal hermeneutic process in which both parties strive to reach a common aim or to find a deeper, joint, understanding.

In a sense, rigour can be defined as a state in which all the parameters of a given system are made explicit and can, therefore, be held in fixed relation to one another. This would correspond with a culture of political correctness in which examination systems are designed more for safety, consistency and equality, rather than for cultivating learning and wisdom in ways that are joyfully unexpected. They are predicated on formalistic assumptions in which methods are seen as more important than outcomes.

Some critics of the REF have assumed that its covert purpose is to encourage a culture of enterprise and business, rather than a cultivation of lofty values and a zest for learning for its own sake (Lipsett 2011). If so, this is another reason why the quest for 'rigour' may be misguided. A high proportion of successful entrepreneurs and wealth-creators appear as underachievers, failures or misfits within the education system. The same is true of those whose difficulties are summarized under terms, such as 'learning difficulties', such as 'dyslexia', 'dyspraxia' or ADHT. However, I continue to be bemused by the scientific evidence that many dyslexics have 'abnormally symmetrical' (*sic*) brains. One of the familiar characteristics of highly creative, entrepreneurial thinking is a flexibility concerning rules. This flexibility can, of course, be interpreted as a form of scepticism that adds rigour to the research practice. However, if scepticism is rigorously applied it raises a paradoxical issue of whether it can only apply to processes other than itself. This is why, when applied within the research context, the quest for rigour may be self-defeating. As Ludwig Wittgenstein reminds us, 'when I obey a rule, I do not choose, I obey the rule blindly' (Wittgenstein, 1968). If the Research Excellence Framework is to serve the needs of government in the most cost-effective way it may learn some useful lessons from the many artists and designers who see little, or no need to achieve what the REF would register as 'research excellence'. Many are able to initiate highly productive actions without needing a full, pre-meditated theory for them. The myth of academic rigour masks these important capabilities and denigrates the designer's potential importance within society. In this respect, Donald Schön's term 'reflection-in-action' (Schön, 1985) is helpful, as it reminds us that designers habitually subvert the received assumptions of 'rigorous' research by merging the acts of thinking and making. But creativity-led pragmatism is not confined to the design studio. Donald Davidson's idea of 'passing theory' also acknowledges the profoundly transitory nature of thinking and reminds us that, in order

to keep up with the uncertain realities of our daily lives everyone is continually formulating ad hoc hypotheses that work in the moment, yet remain incomplete (Davidson, 1996). Benjamin Libet (1996) quantified this kind of process when finding empirical evidence that our brains lag 200ms behind the information arriving at our senses, and that brain responses account for a further lag of 350ms. This means that the motor signals of a bodily action take place around half a second before the brain catches up with them. He argues that we do not notice the delay, as it is an inalienable, and time-honoured feature of being alive. It would appear that our innocent belief in what Heidegger called 'now time' depends on a neural mechanism that deceives us into merging what recently happened at the bodily level with the 'reality' of the thoughts we are having now. Libet calls this mechanism 'backward referral in time' (1996). If we accept that such delays are manifold and ubiquitous throughout the human mind-body we may better understand those integrative aspects of the mind that include 'holistic', 'unconscious', or 'tacit' knowledge. In his book Iain McGilchrist argues that the human brain works most effectively when its capacity to integrate whole sets of complex factors becomes the agent that manages subsidiary processes, like the precise analysis of details. However, he argues that, over several thousand years, the western mind has developed a tendency to reverse this order of dominance (McGilchrist, 2009). This would help to explain why the metaphor of 'rigour' still guides the dominant belief system within academia, despite its destructive influence on learning, and the way that it diverts young learners and researchers from better ways of experiencing, thinking and learning about the world.

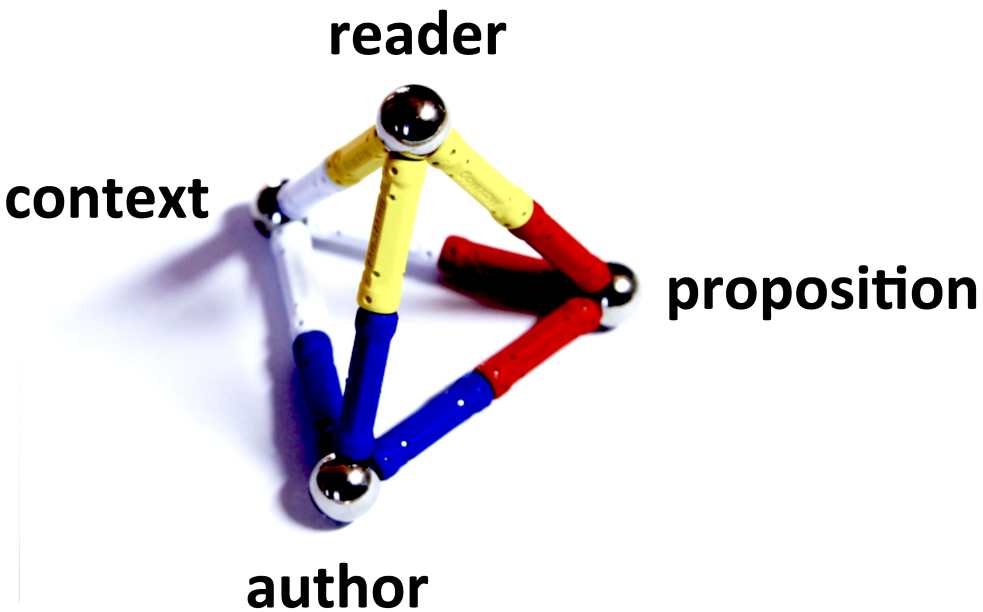

Fig. 2

Caption – The tetrahedron can act as a non-rigorous map of relations for design thinking

Tetrahedral thinking

In 1956, George A. Miller published an influential paper claiming that the mind can only hold onto around seven, or so, interdependent factors at a time. This was a rather more optimistic estimate compared with Richard Buckminster Fuller's earlier claim, that "…the human mind is tetrahedral" (Fuller, 1949). It is interesting that Fuller chose four as a likely limit on the number of interdependent players we can hold in short-term memory. His hypothesis seems to have been vindicated by many more recent studies (Cowan 2001), and it is one of the assumptions behind my tetrahedral approach to design mapping (Wood, 2005). My basic system is exemplified here as a relational map of self, other, proposition and context (i.e. the four nodes of the tetrahedron). This might be constituted as follows:

1. The learner and her chosen/agreed role as 'knower and practiser'
2. The assignment or practice to be assessed
3. A reader or recipient of (2), as nominated by the learner
4. The larger background context, as defined by the author.

In this article, the fourfold system of players therefore includes you and me.

(1) (YOU) READER: I do not know who you are but I have assumed that, like me, you are involved in education in some significant way, and that you have an interest in how artists or designers use writing.

(2) (BIG) CONTEXT: We live in an increasingly overburdened natural world in which research is increasingly important to our survival. While artists and designers may have significant, untapped potential for addressing the key issues (e.g. climate change, biodiversity reduction) the meaning and usefulness of 'research' within their practice differs from that of the older, scholastic research tradition.

(3) PROPOSITION: If the purpose of 'research excellence' is to find better ways for society to prosper and survive, the metaphor of 'academic rigour' is anachronistic and counterproductive.

(4) (ME) (AUTHOR)

Born in England in 1945, I was a practicing artist and performer from the mid-1960s until the end of the 1980s when my anxieties about global trends led me to launch several design degrees that emphasized a more thoughtful approach to practice. I currently direct the Metadesigners Network –

http://metadesigners.org.

This mapping method enables design thinkers to visualize, and to manage, the six interdependent relations represented by the edges of the tetrahedron. Without this approach, the traditional way of teaching design has tended to focus almost exclusively on the design (i.e. the 'proposition') without explicitly relating it to the role of the client (i.e. the 'reader'). Likewise, although 'context' is often seen as a useful thematic foil within academic writings about design, it seldom includes reader and author. The tetrahedral approach enables design thinkers to gather their thoughts in a non-linear way, before attempting to summarize all of the relations in a linear narrative (e.g. essay). While essays and conference papers may, eventually, sound plausible to a reader, they usually omit vital factors that are intrinsic to the full set of tetrahedral relations.

Making plagiarism impossible

Ironically, the more rigorously codified, or homogeneous the curriculum becomes, the more prone it is to plagiarism. This happens whenever the four-fold configuration of players is incomplete, or disjointed, rather than a living, tetrahedral whole. This approach means that academic learning and research are in danger of being reduced to isolated 'facts', or presented in independent pairs of relations, in which 'questions' are matched to 'correct answers' and essays are blind-marked, on the assumption that truths can be detached from their contexts, or that authors should be able to formulate arguments that appear to be true for any reader or context, etc. This means that the 'flatter' formal examination process is not designed to notice whether the candidate sees herself as a self-reflexive subject, or whether she is managing her own level of curiosity, imagination, empathy and self-scepticism in order to optimize the learning process. (Wood 2005). Using this method establishes a set of relations in which the self-reflexive role of the author cannot be overlooked. In practical terms, it is therefore is a very learner-focused preliminary approach towards writing. Because each of the relations are bi-directional, it quickly raises questions about the ethical nature of the proposition, because it forces the author to consider what her proposition means for the reader, the context and herself. If it is applied fully, the ethical dimension becomes explicit. One of the useful aspects of this explicitness is that it makes plagiarism – slavishly copying the words of others, not attributing them to their rightful owner, and passing them off as their own – pointless or impossible.

References

Ashby, W.R. (1956), *Introduction to Cybernetics*, (London: Chapman & Hall)

Bhagat, D., & O'Neill, P., (2011), *Inclusive Pedagogies: learning from Widening Participation Research in Art & Design Higher Education*, eds. Dipti Bhagat & Peter O'Neill, CHEAD, London, 2011, pp. 176-197

Bohm, D. (1980), *Wholeness and the Implicate Order*, London, Boston and Henley: Routledge and Kegan Paul.

Cowan, N., (2001), *The magical number 4 in short-term memory: A reconsideration of mental storage capacity,* Behavioural and Brain Sciences (2001), 24: pp. 87-114, Cambridge University Press, Cambridge

Elton, L., (2008), *Complexity, Universities and the Arts*, Journal of Writing in Creative Practice, Volume 1, Number 3, 1 December 2008, pp. 205-209(5) – downloadable from http://www.ingentaconnect.com/content/intellect/jwcp/2008/00000001/00000003/art00002 (accessed 18th November, 2011)

Libet, B., (1996), *Neural Processes in the Production of Conscious Experience*, chapter in Velmans, M., "What is Consciousness? psychological, neuropsychological, and clinical reviews", Routledge, London and New York, 1996

Einstein, A. (1983), *Sidelights on Relativity Einstein*, Canada: General Publishing Company.

Fuller, R., B., (1949), *Total Thinking*, reprinted in "Ideas and Integrities: A Spontaneous Autobiographical Disclosure" (1969), Ed. Robert W. Marks, Englewood Cliffs, N.J.: Prentice-Hall

Gödel, Kurt (1931), *Gödel's Incompleteness Theorems,* http://en.wikipedia.org/wiki/G%C3%B6del's_incompleteness_theorem. Accessed 21 March 2008.

Kuhn, Thomas (1962), *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.

Lipsett, A. (2011), 'Universities braced for heavier research burden', *The Guardian*, 1 March 2011, p.6.

Lorenz, E. (1963), 'Deterministic nonperiodic flow', *Journal of Atmospheric Sciences*, vol. 20, Issue 2, pp.130-148

McGilchrist, I., (2009). *The Master and His Emissary: The Divided Brain and the Making of the Western World*. USA: Yale University Press. ISBN 030014878X

Meadows, Donella H., (1999), *Leverage Points: Places to Intervene in a System, Hartland*, VT, USA, The Sustainability Institute

Schön, D., (1985), *The Design Studio*, RIBA Publications Ltd., London

Tarnas, R. (1991), *The Passion of the Western Mind*, Pimlico, London.

Wittgenstein, L., *Philosophical Investigations*, translated by G. E. M. Anscombe, 3rd edition, New York, Macmillan Publishing, 1968

Wood, J., (2000a), *The Culture of Rigour*, article in Design Journal, vol. 3, Issue 3, ISBN: 0566 08308 6, UK, April 2000,

____ (2000b), 'Un-managing the butterfly; co-sustainment and the grammar of agency', paper presented in the *Second International Conference on Sociocybernetics, 'Designs for Globalisation and Sustainability'*, Panticosa, Spain, 29 June.

____ (2005), 'The tetrahedron can encourage designers to formalise more responsible strategies', *Journal of Art, Design & Communication*, 3:3, pp. 175–92

____ (2007a), 'Relative abundance; Fuller's discovery that the glass is always half full', in Jonathan Chapman and Nick Gant (eds.), *Designers, Visionaries and Other Stories: A Collection of Sustainable Design Essays*, Earthscan, London, UK. ISBN 9781844074129.

____ (2007b), *Designing for Micro-Utopias; Thinking beyond the Possible*, UK: Ashgate.

____ (2009), *Auspicious Reasoning; can metadesign become a mode of governance?* An article in the journal of Postcolonial Studies, Volume 12, Issue 3 September 2009, pages 315 – 327

Wood, J. and Nieuwenhuijze, O. (2005), 'Synergy and Sympoiesis in the writing of joint papers; anticipation with/in imagination', paper presented at *Seventh International Conference on Computing Anticipatory Systems*, HEC Management School, University of Liege, Liège, Belgium, 8–13 August.

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Emeritus professor of design at Goldsmiths, University of London. In 1989, after ten years of experience as Deputy Head of Fine Art at Goldsmiths, University of London, I introduced a design degree that emphasized entrepreneurship, ethics, ecology and philosophy. This was followed by the development of the first MA Design Futures degree (1995). Most of my publications and editorial roles reflect an interest in science and design philosophy. More specifically, they represent an attempt to champion the ethical, environmental and philosophical aspects of design, including a strong interest in the auto-didactive potential of writing. In 2001, Julia Lockheart and I co-founded the Writing-PAD Network, after which we launched the Journal of Creative Practice, a few years later. This enabled us to begin our development of a new field of design that we call 'metadesign' and led to the launch of our Metadesigners Open Network (2005).

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