

# WHY DESIGN CANNOT BE TAUGHT: GRADUATE ATTRIBUTES AND LEARNING IN AN AGE OF SUPER-COMPLEXITY

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## **Abstract**

*Design thinking features in post-modern educational literature (Doll 1979, 1986, 1993; Kress 1996; Cope, & Kalantzis 2003) as a construct that purportedly enables educators to prepare students to deal with complexity and 'super-complexity' (Barnett 1996; 2000; 2003; 2006) when they enter their professions. Although not explicitly stated, post-modern educational literature tends to stress the importance of systems thinking, critical problem solving, cognitive flexibility, abductive and connective reasoning as competences that prepare professionals to also perform optimally within a post-modern cultural situation and in age of information and super-complexity.*

*In 2010 the University of Johannesburg embarked on the implementation of what it terms its 'Learning to Be Philosophy' (Gravett, Amory & van der Westhuizen 2008) and institution-wide initiative that attempts to position the University strategically within the higher education landscape of South Africa. I contend that it is a philosophy that stresses "operational performativity" (Barnett 2000:40) in producing a new kind of graduate; one that has the capacity to engage professionally with a world of super-complexity through 'being'. This institutional philosophy, a blend of constructivist and phenomenological theory, argues that learning is authentic or deep when a student embodies knowledge by producing it in complex learning situations. Learning is understood, within the philosophy, beyond the scope of the transmission, consumption, processing of information but in terms of the application of conventional professional wisdom. It suggests that graduates, as professionals, need to be able to be durably adaptable and value learning as a lifelong enterprise (Barnett 2006: 59).*

*My paper critiques the Learning To Be Philosophy in terms of Barnett's (2000: 127 -139) notions of the new university in the age of uncertainty. Drawing on the work of Donald Schön (1990), I argue first, that designerly thinking (Nigel Cross 2008, 2011) is a form of artistry that should play a crucial role in not simply preparing students to perform supercomplexity in their professions but to develop their capacity to show insight into apprehending and producing supercomplexity. I argue that despite the importance of artistry to higher education, it cannot be taught because it is not strictly speaking a 'competence' but a set of dispositions. My central hypothesis is that design thinking and artistry can, however, be learnt, as an interrelated set of appreciative dispositions that show understanding into the condition of supercomplexity. I argue implicitly that a situational, transformative, durational and dialogical pedagogy is required in order to realise artistry as a graduate attribute. A pedagogy of this kind would demand a radical revision of the traditional functions of the university educator.*

**Keywords:** *supercomplexity, design thinking, higher education, artistry, pedagogy*

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## **Background: Supercomplexity and the University of Johannesburg's Learning to Be Philosophy**

This paper attempts to sketch out an argument for the importance of designerly thinking to the project of higher education in an age of supercomplexity. It is written with the view to initiate a mid to long-term empirical study that investigates the role design thinking is playing and can play in enhancing learning across Faculties in the University of Johannesburg (UJ). Throughout my career as a visual arts and design educator I have always entertained the notion that a sectoral definition of design has generally prevented the higher educational community from embracing its potential for deep learning. The human capacity to design is an essential aspect of all learning. In this notion, I have been led primarily by the work of Gunther Kress (1996, 2003, 2006), Nigel Cross (2008, 2011), Donald Schön(1990), Felix Gauttari (1995), John Dewey (2005), Lev Vygotsky (1978) all of whom, in their own ways, understand learning essentially as that human capacity *to design*.

I believe that such an insight can become important for a university such as UJ because it is a relatively new institution that is openly grappling with the problems of defining itself as a *new* university. In many senses, the institution is tackling the task of designing its identity from scratch. UJ is unique in the higher education landscape in the sense that it is attempting to forge a coherent post-colonial educational identity within the context of the mix of vocational, professional and academic programmes that it provides. It is also attempting to define itself within the context of the diverse institutional legacies from which it was forged. I also believe that design thinking can play a powerful role in supplementing its institutional “Learning to Be Philosophy”.

In 2010, the institution launched and rolled out its Learning to Be Philosophy. I was lucky enough to participate in a series of pilot workshops offered to the Graphic Design Department by the Centre for Professional Academic Staff Development at UJ. The series of two workshops was designed to prepare the department for the development of its new Communication Design degree curriculum, and pedagogically for the intake of the first cohort of first year degree students in 2011. I therefore had a first-hand experience of the University’s Learning to Be Philosophy. This experience sparked off a personal engagement with the ideas embedded in the philosophy and in particular the work of the educational philosopher Ronald Barnett. This resulted in a paper delivered at the Teaching Excellence at the University of Johannesburg Conference entitled *Habitus and Reflective Practicum: Tensions Between Notions of Teaching and Learning In Design Education* (Gray 2010) upon which this paper is largely based.

### **The University of Johannesburg’s “Learning to Be Philosophy”: Performative instrumentalism in the constellation of production, self, emancipation.**

Three features stand out from UJ’s Learning to Be Philosophy which are pertinent to my later discussion around the value of design thinking in the project of higher education.

The first contention of the position paper of 2009 is that the role of the modern university is not to disseminate information but to facilitate understanding through the quality of discipline and profession-related learning experiences it offers to its students. In making this insight, the philosophy draws on the work on “deep learning” by Jerome Bruner (as cited by Gravett, Amory, van der Westhuizen 2008: 2), an educationalist, who, in some respects, like Paulo Friere (2005), maintains that authentic learning is not a question of dispensing and receiving content but facilitating authentic engagement with it. Bruner departs from Paulo Freire on the question of engagement in his assumption that authentic learning is simply an active and dialogical engagement on the part of student with knowledge constructs rather than with broader ethical and social justice concerns. It is left to the professional knowledge and wisdom of the educator to lead the student to “see” the world in a transformed way (Gravett, Amory, van der Westhuizen 2008: 3). The student’s lived experience does not feature prominently in this thesis on deep learning. The position paper argues for a graduate who has been profoundly shaped by the disciplines in which they have been immersed by their educators in the course of their studies. A position such as this implicitly assumes that goal of “learning to be” is the construction of authentic *professional identities* (rather than the creation of emancipated human identities) and that this identity is the outcome of the ability of the educator to engage students with a deep knowledge of their own circumscribed field. The educator’s responsibility lies in his/her ability to engage students in the disciplinary/professional paradigms and the related processes that will transform the student and, by extension, ultimately prepare them for “graduateness” (Barnett 2006:55) which ultimately means preparing them for the *world of work*. In this sense, the “Learning to Be Philosophy” position paper implicitly positions the role of the university and its educators in professional-instrumentalist terms and situates its project within what Barnett (2000: 48, 56) would call “the constellation of production” and the “constellation of self”. The point is that the first aspect of the “Learning to Be Philosophy” argues within the framework of “instrumental performativity”.

The second prominent feature of the philosophy is that it also attempts to transcend its own narrowly conceived instrumental performativity (highlighted above) by also positioning the university within the “constellation of emancipation” (Barnett 2000: 56). Educators are encouraged, in the “Learning to Be Philosophy”, to focus on forming and transforming the identity and dispositions of the student. But not any identity will do. The dispositions, personal attributes of the student need to be geared up for a professional life which would mean a deep internalisation of the relevant “knowledge domain” (Gravett, Amory, Van der Westhuizen 2008: 2 - 3) as well as the attendant outcomes that mark out professional identity in an age of supercomplexity including cognitive flexibility, the ability to transfer of skills, critical

thinking skills and so on. The dispositional emphasis of the argument suggests that the kind of professional identities that need to be forged are those that have the capacity to see own identities as unique and incomplete, identities that require a “lifelong” learning in order to be effective within their respective professional domains (Gravett, Amory, Van der Westhuizen 2008: 4). As a catch-all term, “being” is underscored by both the harder performative dimension of professional life (skills, competence, technical capacity) and the new softer demands that are being placed on professionals today (ethics, cognitive flexibility, understanding etc). But ultimately here, “being” (despite the emancipatory rhetoric of the position paper) is largely framed in terms of the transmission, internalisation and performing of, again, *professional* “domains of knowledge”.

The final aspect of the philosophy relates to curriculum design and it is here that the philosophy suggests that it is primarily entrenched in the “constellation of knowledge [production]” (Barnett 2000: 48-49). It is good and well to imagine a new kind of “graduatedness” but how does the university go about creating this outcome? What is the transformative/experiential pedagogy and curriculum that is required to realise the capacities required above? Drawing on the work of Johan Muller (2008), the philosophy offers a distinction between “conceptually” and “contextually” oriented curricula (Muller 2008:33). This distinction asks educators, programme and curriculum designers to be mindful of the fact that learning and knowledge formation in their respective disciplines must *necessarily* assume different forms. The student’s deep engagement with knowledge domain must be highly structured and thus the curriculum must take either a “contextual” slant (where knowledge gains purpose and legitimacy only within bounded situations) or “conceptual” slant (where knowledge is built in conceptual sequences or scaffolded). The adoption of Muller’s ideas within the context of instrumentalism suggested above shows a favouring of a particular cognitivist view where knowledge structures are seen as stable, apriori, disinterested and ultimately detached from the student’s frame of reference.

In many senses, this values contained in this philosophy mark out the attempt, by a young university (and it must be added, one with a technician and conservative legacy) to distinguish itself from its competitors by focussing on a quality of ‘innovative’ and ‘excellent’ teaching that it envisages will produce better results under a new set of societal conditions of uncertainty and supercomplexity. In terms of Barnett’s constellations of roles for the university, what is strikingly absent is an emphasis on critique and democracy. The implicit focus on production, self and emancipation is fitting for a university that has generally focused on vocational training. It make sense, given what I have argued above, that UJ in its advertising, calls prospective applicants to “be what you want to be”. What needs to be asked, however is why the “Learning To Be Philosophy” focuses on the operative/instrumental performativity in the notion of “being”?

## **Supercomplexity: the end of knowledge and the crisis of higher education**

[t]he point of this excursion into knowledge production is to underscore the larger point about the dissolving university. The university has dissolved in a double sense. Firstly, we can no longer understand the university as a unity in itself: it has dissolved into segments, many in which in turn are interpolated in a wider society. Secondly, Knowledge has dissolved into knowledges. The inner sense of there being available a single story of its knowing efforts- captured under such descriptions as objective knowledge or propositional knowledge *or anything else* – can no longer seriously be entertained. Now we are faced with knowledges, plural, sustained through different complexes of knowledge processes (Barnett 2000:17).

Barnett (1996:21 -24) makes the claim that higher education is in crisis because it can no longer continue to occupy the constellations of production, emancipation, critique and democracy that it traditionally occupied. Critically, in the face of the supercomplex challenges that it faces (and which are largely of its own doing) and the post-modern situation in which it finds itself in, university must take on board, in the most fundamental way, new conceptual coordinates; those of “uncertainty, unpredictability, changeability, contestability” (Barnett 2000:63). According to Barnett (1996:39 -44), because of the changing nature of knowledge itself, the university is forced into a situation where it cannot just continue to simply produce knowledge, transform existing identities, engender freedom, and instill a culture of critique. Rather it must provide *insight into the condition of supercomplexity itself* and at the same time play the critical role of producing it. This requires a radical rethinking of both the traditional and modern forms of the university which I later contend design thinking has a great deal to offer.

It makes sense for an institution such as the University of Johannesburg to develop a 'teaching philosophy' that attempts to be responsive to the shifting landscape of higher education because, as Barnett points out, the very concept of higher education is in a crisis of "responsiveness" (Barnett 1996: 20 -24), "dissolution" and "attenuation" (Barnett 2000: 20). The shift from an industrial to a post-industrial society has meant that knowledge, knowledge production and by extension learning itself has become "dispersed". Because of this, the university can no longer claim to be the sole custodian and/or disseminator of knowledge. However, this is not only a problem of knowledge dispersal. The very foundation of knowledge is in question. As a result the university cannot lay claim to either monopolising knowledge or employing knowledge or understanding as a catalyst for the transformation of existing identities (whether professional or other). However, this is not to say that its role as a knowledge producer has been reduced. The university must now also assume the "responsibility" (Barnett 2000: 78) of facing its "fragility" (Barnett 2000: 65) and accept its function as a vital organ in ensuring the survival and functioning of the "learning society" by regulating, monitoring and producing the very conditions of supercomplexity that it played a role in making in the first place.

Barnett (2003: 45) suggests that the post-modern university has, by and large, *not* risen to the challenge of the learning society and the societal shift to supercomplexity. It has responded to this shift by simply becoming an institution "in society and not an institution of society" (Barnett 1996: 22). As a result of an unwillingness to engage seriously with the new epistemological condition of uncertainty, the higher education institution has found itself in a position where it has mostly lost its autonomy and, given the vacuum of value in its own institutional culture, it has become increasingly regulated and controlled by external agencies such as the state, the workplace and the market. These external agencies seek to make higher education accountable to its own interests under the veil of those of 'society' (Barnett 1996: 43).

But what is supercomplexity? The term can be understood in both a superficial instrumentalist sense and a more serious hermeneutic sense. Superficially, supercomplexity seems to suggest, on the one hand, that information, data and knowledge can be conflated. A more substantial and radical claim is that post-modernity (putting supercomplexity aside for a moment) has effected a dramatic change in the very status and character of knowledge. In the first, more superficial understanding of supercomplexity, the university must now accommodate the dubious claim that knowledge 'doubles' every few years, it 'grows exponentially', becomes 'outdated', it 'multiplies' and 'proliferates' and so on. How does the traditional, academic university assimilate the view that knowledge is perhaps nothing but information or data that can be commodified, measured, bounded and parcelled out when traditionally it has taken the view that knowledge and truth were stably related? Within the view knowledge-as-information, the role of the university is not so much to conserve and transmit stable bodies of knowledge or to facilitate the pursuit of truth but rather to build the student's capacity to control and manage the proliferation of information and data. Concepts such as the 'knowledge society', the 'information age' offer a model of human understanding that departs radically from the university's deeper conception knowledge as a pathway to critique, emancipation, understanding and greater consciousness. Knowledge is reframed, within the information age, as something that is both quantitatively objectifiable -'out there', fixed, attainable an exchangeable commodity, "educational/cultural capital" (Bourdieu & Passeron 71 - 106), largely instrumental- and as a qualitative essence -a capacity, a relation, a construct. The point is that in the more superficial sense, supercomplexity, knowledge is understood within narrowly technicist and instrumental terms (knowledge as 'know-how'). However, the more serious challenge comes from the post-modernist view that the very frames under which knowledge is recognised, constructed and apprehended are themselves contestable which results in the conditions of supercomplexity. What is clear from both definitions of supercomplexity is that knowledge as a path to disinterested truth is no longer the source from which the university can claim its legitimacy. So where can it find its legitimacy?

Barnett argues that the crisis of knowledge in higher education makes it more rather than less susceptible to cooptation by instrumentalist reason or the logic of late capitalism. In its inability to deal with the serious epistemic threat posed by post-modernism and the learning society, higher education has fallen prey to an empty relativism that can only lead it down two roads. Either it takes the road of late capitalist instrumentalisation and operationalisation or it takes down the road where it succumbs to an internal schizophrenia. Here, the university attempts to hold on to both its own internal criteria or values (academic competence) or those values imposed from the outside (operational competence) (Barnett 1996: 159). Accepting the second road of laissez-faire relativism would mean that a gulf of value opens up: "the university has no responsibility to uphold a larger universe of value" and because

it is “unsure of its value basis” external criteria come to dominate it. By virtue of this lack it must surrender academic autonomy and the wisdom, insight and understanding associated to this to competence, skill and measurable outcomes. In other words, under the spectre of post-modernity and supercomplexity, the university is forced into a situation where it must relegate the traditional value of knowing-for-its-own-sake (Knowledge), for forms of capitalist “instrumental knowing” (knowledge); or knowledge derived from the state, the market place and the world of work (Barnett 1996: 40).

Finding its unifying traditional and modernist narratives collapsing under its feet, the university is forced into a situation where it must accept and favour forms of knowledge “that can be wrought upon the world with calculable and predictable effects, effects that are measurable” (Barnett 2000: 24)- ‘outcomes’- for want of a better alternative. However, in its surrender, it cannot entirely dispense with its traditional roles because it “fears a position in which it becomes simply a dependent variable, yielding up to an economy and to the consumer those gifts that they demand”. As I will argue in the next section, under the sign of its instrumentalisation and operationalisation and in the face of the crisis of knowledge that it refuses to acknowledge, the university comes to assume two contradictory roles. The result of a split in its personality means that the university comes to stand, in a post-modern situation, as both a reproductive and transformative apparatus which are two ethical positions that it cannot reconcile (Barnett 2000: 28).

### **The split personality of higher education: an education for insight and understanding or an education for competence?**

This value split in the personality of the university is important because it manifests itself in the teaching and learning practices that take place within it and the values that the university assigns to the learning process itself. The two value positions, set out by Barnett (2000: 40): the “dialogic-collegiality” position and the “performative-instrumental” position logically come to be manifest in both the structure of curricula and in the pedagogical strategies that educators use to realise their objectives. The two “hidden” institutional ideologies may effectively split the professional identity of the educator in two. The educator may not be able to reconcile (either ethically or conceptually) two radically misaligned approaches to human learning. Barnett terms these opposing educational positions the “understanding/insight” approach and the “competence/outcomes” approach to teaching and learning.

Clearly, for Barnett, the competence approach is patently inappropriate to the task of higher education in an age of supercomplexity for a number of reasons. Barnett (1996: 69 - 82) criticises a competence approach to higher on both an ideological and practical level. Ideologically speaking, an education for competence makes serious assumptions about human nature and indeed the nature of learning and the character of knowledge itself. The mechanistic nature of outcomes and competence statements threaten individual autonomy (subjectivity) and collective agency (intersubjectivity) in their closure. Outcomes negate a “genuinely open, interactive forms of reason and engagement [...] in which there are no outcomes” (Barnett 1996: 78). Pragmatically speaking, it may be asserted that because we live in a world where the status of knowledge is rapidly changing the kind of competences that the university and the workplace requires from students “cannot be specified in advance” (Barnett 1996: 75). Aside from the inappropriacy of outcomes for dealing with the contingency and contestability of professional knowledge, competence education tends to valorise observable skills without entertaining the fact that even the most rudimentary skilfulness or technical ability requires deep understanding. Even the lowest order competence must be developed on a foundation of understanding and further through the situational application of knowledge and reflection-in-action. An education centered on technical rationalism or ‘skills development’ thus ultimately debases both knowledge and understanding. In competence education, knowledge is instrumentalised and valuable only in so far as it can be embedded in “skill” that is relevant only because it can serve the interests of capital. What counts is not that which functions to further human understanding for its own sake but that kind of ‘embedded knowledge’ which can be instrumentalised and put to work. Competence or “know how” thus represents, for Barnett and others (Lum 1999), an “impoverished view of human action in which individuals are caused to perform against external standards”, where the human individual is “no longer the author of their own action” (Barnett 1996: 77) . With this in mind, competence can only be practically imagined as the most mechanistic and superficial form of learning that cannot meet *either* the needs of the post-industrial workplace (flexibility, transferability, critical thinking skills) or traditional academia. More pertinently competence education can be criticised as essentially anti-democratic

and insidiously authoritarian because it claims a certain universalism for the outcomes at the core of its curricula (Barnett 2003: 75).

For Barnett (1996: 99- 111), “understanding” (a traditionally academic competence) is far better attuned both to the traditional values of the university and the new operational pressures placed upon it by a supercomplex, post industrial economy. The development understanding, insight and wisdom must remain the paramount virtues for the project of higher education because these *values* are better equipped to produce insights into supercomplexity and the means to produce it. An education centered on understanding can achieve this because it embodies the paradox of learning and thus resonates strongly with the key qualities of an age of uncertainty. Understanding is paradoxical because although it strives for closure it has no end. It is uniquely individual- “there is no understanding only *an* understanding”. However, at the same time understanding is both intensely individual and inherently social. Understanding, given its interpersonal/interdiscursive/intersubjective nature is thus simultaneously bounded and unbounded (Barnett 1996: 105) and because of this it “is active, it is an engagement, is a form of agency and self expression. It is an expression of individuality and it strikes against the conventionalisation of competence. For Barnett, understanding becomes political because it challenges convention: “developing understanding is a subversive activity” (Barnett 1996: 105). An understanding approach is invaluable to higher education and the world of commerce and society because its dialogic potential presents students with the cognitive, appreciative dispositions and resources that are required not so much to deal with knowledge per se as with the changing character of knowledge itself. If knowledge does not exist, in a post-modern situation, understanding can provide students which insight derived from “knowledge processes in different knowledge settings, exploiting knowledge possibilities” (Barnett 2000:18).

This tension between competence and understanding, for me, lies at the heart of the problem of UJ's *Learning to Be Philosophy*. It strikes me as ironic that an institution can promulgate *at the same time* an education centered on competence (in its operations) and education based understanding (in its philosophy). Educators, are encouraged, through the institutional philosophy, on the one hand, to attend to the tremendous importance of understanding and wisdom in preparing students for a world of supercomplexity but are also required to realise this ambition through a competence approach to the curriculum. If higher education, generally, clearly suffers from the disorder of split self how can it realise itself amid the conflicts between instrumental reason and hermetic/critical reason?

## **An epistemic affair? Design thinking a new universal/university paradigm?**

In what sense, if at all, can the dissolved university retain a sense of unity of process, self-understanding, communicative powers and purposes (Barnett 2000: 18)?

So far, I have argued that two sets of conflicting ideological interests threaten to suppress the realisation of a new university founded on “fragility” and “uncertainty” (Barnett 2000: 65, 69 -71). I have suggested that the way that the character of knowledge is understood (the episteme) lies at the heart of the problem of how the university begins to rethink its agency in an “age of uncertainty”. It is here that I contend design thinking can be of critical importance in moving beyond a simplistic competence model of learning in higher education.

Design offers an alternative “conversational” and relational (Schön 1990: 15) account of knowledge, learning and understanding. Its approach is one that is generally marginalised in the context of the university because its forms of knowing are perceived to deviate from propositional and instrumentalist reasoning which are forms that are favoured by the traditional and modern university respectively. Design is possibly a form of praxis that possesses the ability to concretise multiple reflective, experiential and discursive frames in the production of abstract models and physical artefacts that encode within it *a variety of human interests*. Design suggests a view of knowing that is “abductive” (Cross 2011: 10) rather than deductive or inductive; one that is simultaneously actionable, propositional and critical and as such provides affordance to the learner's synthesis of uncertainty, unpredictability, changeability, contestability in a material form.

Notably, complexity and indeterminacy has been frequently noted as a fundamental aspect of all design activity (Cross 2011: 12; Buchanan 1992: 10; Schön 1990: 18). I would perhaps add to this by suggesting that the ability to handle supercomplexity is the marker of both superlative design practice and exemplary professional practice in *all* domains and disciplines. Design marks a radical departure

from conventional forms of knowing because, within this paradigm, knowledge is neither 'discovered', 'understood', nor operationalised but made visible through the synthesis of competing and multiple human interests. Knowledge is seen within a design paradigm as an emergent property of the synthesis of pattern, structure and process (Capra 1997: 20). Through the reiterative process of design, higher order systems are catalysed through synthesis. There is the potential to produce living systems by pushing a solution to the threshold of equilibrium or chaos (Doll 1993) where degrees of probability are entertained by the designer rather than the pursuit of truth, knowledge or certainty. In the design process knowledge is both actionable (Schön 1995) and reflective. It does not reside in any single component of the overall design but in the sum total of a system of relations and affordances which the designer manipulates in order to produce, what the design field, terms a "solution". Reasoning, in this process is said to be "abductive", "tacit" (Polyani 2009) or "intuitive" (Cross 2011: 10), in the sense that propositional knowledge is not simply operationalised; hypothetical knowledge is not simply tested. Rather, in the conversation between designer, the "situation" and the "materials at hand" (Schön 1990: 25) a range of human interests are united in a series of provisional truths that are then subjected by the designer to further processes of conjecture, refutation and synthesis. In this sense, the activity of design, like learning is radically *indeterminate and situational*. Design, as the exemplar of the learning process itself (Dewey as cited by Schön 1992: 120) suggests that learning is always *motivated* by the interplay of a variety of human interests.

Barnett (1996: 146), drawing heavily on the work of Habermas, is able to define the interests that should shape higher education (hermeneutic and emancipatory interests as opposed to the dominance of scientific interest) but he is unable to articulate the kinds of teaching and learning practices and methodologies that would fully *realise* it. He sees three interests at play in the learning process: the scientific, hermeneutic and emancipatory interests. In his conception, only the academic fields embedded in hermeneutic and emancipatory interests are capable of critical reflection because their forms of reason are inherently open and self-regulating. In partial agreement with Karl Popper's (and Kuhn's) criticism of the scientific field, Habermas posits that the scientific or instrumental interests are the most closed and thus lack the capacity for authentic self-reflexivity. The sole interest of science as "a system of structured knowledge independent from the world" is in "predicting the workings of the environment [...] and in controlling it" (Barnett 1996: 146). In contrast to the scientific interest in closure and control, human beings also have a hermeneutic interest in "comprehending each other and communicating with each other" which places understanding of the world for its own sake above putting it under human control. Because of the autonomous nature of hermeneutic interests "circles of interpretation" are "necessarily open and never conclusive" (Barnett 1996: 146). For him, the emancipatory forms of human interest supercede both instrumentalist and hermeneutic forms of human interest because it is premised on not "just controlling or comprehending the world" but "freeing human beings from their dependence upon it". One may interpret this statement in Marxist terms as encapsulating a "science of the artificial" (Simon 1996) that dealienates human beings from society and nature.

In *Educating the Reflective Practitioner* Donald Schön's proposes the notion that designerly thinking offers the potential to bridge a gap between propositional and actionable knowledge hinting at its capacity to reconcile multiple human interests and frames . He (Schön 1990: 15) argues that what differentiates the exemplary from the mediocre professional is their capacity to operate, in metacognitive terms, as a *designer in situations of indeterminacy*. Whether a professional is a musician, a psychotherapist, a lawyer, an architect, doctor: what defines exemplary practice in all fields is the extent to which a practitioner can show "artistry" or the the capacity to operate in situations of indeterminacy. Practitioners who possess "artistry" can solve complex problems "ill-structured", "messy" domains; or to use Barnett's term "complex" or "supercomplex" situations. Schön (1990: 13) models best practice in all professions on the activity of designers because their work foregrounds dialogue, improvisation and abductive logic. The highest form of design is where a practitioner is able to reflect on the frames of knowledge-in-action and reflect on the frames of reflection themselves (Schön 1990: 150). This is an idea that resonates strongly with Barnett's (2000: 18) notion of the importance of developing student dispositions that prepare them to understand "knowledge processes in different knowledge settings, exploiting knowledge possibilities".

Given the synthetic dimension of design, Schön (1990:18) logically places the teaching of artistry, or the designerly disposition at the center of *all* professional education. He maintains, moreover, that because learning in design is thoroughly dialogical it "cannot be taught by conventional classroom methods in terms of skills development or competence. But he does argue that artistry "can be learnt"

as a set of dispositions, in what he terms the “reflective practicum” (Schön 157 -168), a space that unites various forms of human interest within it. For Schön (as cited by Waks 2001: 44), crucially, “design is learnable but not didactically or discursively teachable: it can be learned only in and through the practical operations of frame experimentation”.

## **Conclusion: the new university and designing social futures**

Nigel Cross (2007 17- 18) suggests, in his seminal work, *Designerly Ways of Knowing*, that the university is generally split between scientific interest (the Sciences) on the one hand and hermeneutic/emancipatory interest (the Humanities and the Arts) on the other. He contends that design supplies the third missing leg or I would argue the catalyst, as it were, to establish a dialogue between these two sets of dominant interests in higher education. If, as Barnett asserts, supercomplexity, in contrast to complexity, is when we are faced with situation in which the number of variables intrinsic to it and extrinsic to it, outstrips our capacity to understand the problem, then design may offer the capacity to re-imagine the project of higher education in an age of uncertainty. Perhaps what Richard Buchanan (1992) has characterised as “wicked problems” is simply the attempt on the part of all human beings to synthesise multiple and conflicting frames in the learning process. Perhaps what “abductive” logic and wicked problem solving points toward is that fact that design is essentially the activity of learning itself: synthesizing human interests and relations within specific contexts and situations for specific purposes. What design, as a paradigm of learning, offers to higher education is that it through it the multiple and conflicting cognitive frames that produce situations of supercomplexity can become visible and thus open to contestability. Design provides the opportunities to visualize operable and epistemic frames in real time and space. In the design process, there is, so to speak, no ‘knowledge’ as such, only frames of interest and affordance which is a radically different take on the epistemological crisis facing higher education. Design is, in short, what human beings do when faced with situations of uncertainty or with intractably conflicting sets of interests. Perhaps a credible higher education for the 21<sup>st</sup> century would equip students with the wherewithal to actively “*design* their social futures” (Kress et al1996: 71).

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## Short Biography

**Brenden Gray** is a graphic design lecturer at the Faculty of Art, Design and Architecture, University of Johannesburg. He is also an art critic, arts educator and artist. Brenden holds a PGCE in Art Education and Applied English Language Studies teaching, a Bachelor's in Fine Arts and a Masters in Fine Arts and graduated in every degree with distinction. His most recent art project, Speak English To Me, conducted as part of his MAFA at the University of the Witwatersrand in 2007/2008 focused on drawing and dialogical art practice in Yeoville, Johannesburg. Brenden has published in conference proceedings and journals and his research interests' center on arts and design education and on dialogical visual practices.