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Fernando Rojas
Northumbria University

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Enhancing structured reflective practice to complement the “Design Praxium” vision

Fernando ROJAS*

Northumbria University

Abstract: *This paper suggests that an Enhanced Reflective Practice model, as part of a structured reflective practice discipline, supports the vision of an initiative known as “Design Praxium”. This initiative aims to fulfil: (i) a need for a new type of design practice; (ii) a deeper design educational experience; (iii) a new generation of designers that are able to shape new contexts through design. Design Education would benefit from the inclusion of practical ways to cultivate values that may develop hand in hand with design theory and technique. If mental training disciplines that aim to ultimately foster cooperative human qualities can be inserted within existing structured reflective disciplines in an educational context, then rising design students may progress into professional endeavours with higher potential of making more sustainable and socially responsible choices. This paper presents the theoretical context for a developing study that will investigate if the techniques of Enhanced Reflective Practice stimulate mindfulness and promote cooperative human qualities. It is argued that developing these qualities within a design education environment holds the potential to move ‘Design’ towards the vision of ‘Design Praxium’. Moreover, it is concluded that the significant value of this approach is the seamless integration of the disciplines of mindfulness and that of structured reflective practice.*

Keywords: *Enhanced Reflective Practice; Mindfulness; Stillness; Meditation.*

* Corresponding author: School of Design | Northumbria University | USA | e-mail: fmrojas.com

Introduction

Young et al. (2001) coined the term “Design Praxium” as an exhortation to a new way of thinking that may support a new ideology for the future of design education. They suggest that the current focus of design is on tangible, aesthetic elements disregarding wider social implications. In this light, they establish that:

The designer’s engagement with both intangible and tangible levels of designing requires new understanding modes of investigation and new methods of assessment. The virtue of this challenge will be in re-aligning the designer’s values, to broaden the remit of design to move beyond our immediate sphere of influence and address our sphere of concern. (Young et al. 2001)

“Design Praxium” advocates a new approach to design education that contends with the current world-view that separates ethics and values from rational and logical thinking. This paper introduces the idea that an Enhanced Reflective Practice (Rojas et al. 2012) discipline can be a significant part and support of this new proposed approach to design education.

Action research through the structured application of reflective practice models is part of current design education and aims to develop reflective design practitioners (English 2009). Blaiklock (2010) proposes a structured critical reflection teaching and learning framework to cope with student’s difficulties in understanding and articulating relationships between design practice, processes and research. Ultimately, the goal of such approach is to train students to “build, apply and disseminate new knowledge from their practice” (ibid). This paper suggests that a structured reflective practice model can be enhanced with synchronous mindfulness-based techniques to complement and illuminate the research component, cultivate attentive awareness, and to promote cooperative human qualities. Design literature reflects the need to include the promotion of such qualities. This document reviews literature concerning values and desirable human qualities in Design; the concept of mindfulness; and details the structure and rationale of the Enhanced Reflective Practice model. Moreover, this paper aims to serve as a base for a developing study seeking to validate the impact of this model on the fostering of such qualities to support the “Design Praxium” initiative.

Values and design

Schön (1987) explains that when “professionals fail to recognize or respond to value conflicts, when they violate their own ethical standards, fall short of self-created expectations for expert performance, or seem blind to public problems they have helped to create, they are increasingly subject to expressions of disapproval and dissatisfaction”. Lawson (2006) states that design inevitably involves subjective value judgement and explains that questions about which are the most important problems, and which solutions most successfully resolve those problems, are often value laden. He further suggests that designers may be seen to prescribe and to create the future, and thus their process deserves not just ethical but also moral scrutiny.

Inácio & Gerardo (2006) illustrate clearly the moral dilemma faced by the design practitioner by differentiating between application of a “better action” to support the demands of a design problem, and the “moral action” which could, upon analysis, be obviously beneficial to a larger good. They establish that the designer can only be akratic in almost every action, and define akrasia as incontinence in moral actions. This could be also understood as acting in a way contrary to one’s sincerely held moral

values. Furthermore, they utilize a “table of torture argument” as an experience of thought. The “better action” is a design that considers “construction with resistant and beautiful materials, with an enhancement of the tormentor usability, inflicting the most possible amount of pain to the victim without letting him pass out” (ibid). The “moral action” in this case is obviously not to commission such project. Of course, our day-to-day moral decisions may not be so extreme and can have wide room for moral opinion and debate. An example that is more accessible is the one where they describe a graphic designer’s decision between the uses of sustainable paper as a “moral action” as opposed to non-sustainable paper as a “better action” because it will grant better results. The pragmatism that is inherent to the striving for subsistence of course has an impact on a designers’ dilemma of balancing values with actions. Inácio & Gerardo refer to this as dilemmas of two wills, the internal and external dilemmas of the designer.

In the internal dilemma, the designer could be confronted with two wills, between reason and pathos; both interfere with the internal rational capacity of creating intentions. In pathos we can subdivide it in two categories: first, is what we may call immediate necessity, the basic needs of the quotidian, like the necessity to earn a living, to eat, to have a job, etc; second, what we may call of pathosmania, or selfindulgence, the need of recognition and ambition, to excel in the better action. In the external dilemma there is the will of the designer and the will of another agent exterior to himself. In this case the will of the client. (Inácio & Gerardo 2006)

To avoid a general assumption of what is or is not universally moral, it is important, that within the scope of this document, values are considered very individual and defined only by what the designer holds to be meaningful and dear. Having said that, it could be argued that the promotion of valuable human qualities such as compassion, empathy and eco-centrism, could make for a purposeful aspiration to establish worthwhile common ground in the experience of design practice value choices.

Cooperative qualities as contemporary design demands

The Design Industry is moving towards bigger participating roles in improved ways to contribute to sustainable global solutions. Young et al. (2001) propose that there is “an irony to design”; they state that:

The activity of creating the new is stuck in an out of date orthodoxy. How is it that we can produce so many wonderful looking artifacts yet utterly fail to create real connection, peace, harmony, balance with each other and the world we stand on? (Young et al. 2001)

Scharmer (2009) declares that we live in a time of massive institutional failure, collectively creating results that nobody wants. Inácio & Gerardo (2006) point to the fact that design has an impact in the world yet, most of the time, “...it is a negative one, not only in social-cultural aspects, but also in an environmental perspective”.

The last few decades have been bursting with calls for change to the way we relate to the world and to each other. Young et al. (2001) suggest that design “can and will act as a catalyst for positive, sustainable change to the economic, political, ecological and social future of our countries and their societies – now and in the future”. It would seem reasonable to assert that as designers, it is necessary to rethink our relationships

with the Earth and our fellow living beings, and consider the impact of our design choices. It is also important to merge the evolution of design practice and education with the exploration and development of cooperative human attributes. Words like balance, harmony, sustainability and the considerations of others, and of the well-being of the world, continue to expand topics of profound academic research and professionally sound applications. And it would seem as if meaning and fulfilment are found in actions that have at the heart of it, the intention of benefiting others and perhaps in a future that we may not see. Much like the definition of the true meaning of life offered by Henderson (1986) to be: “to plant trees, under whose shade you do not expect to sit”. In this light, Young et al. (2001) introduce a new idea of success that is, design that “operates with full awareness of context, honouring a world we would want for our children”. They further state:

We could use the Native American definition of longevity that takes into account not just our succeeding generation but a total of seven generations. This would mean two new challenges for design, greater awareness and holism in meeting real needs, and longevity and sustainability in practice. (Young et al. 2001)

It is obvious that beyond the technical and theoretical aspects of design, there are contemporary demands that call for evolving human qualities to meet with attainment of practical skills. This calls for attributes such as empathy and compassion, which allow taking into one's view the considerations of larger groups of people. Thus perhaps kindling design behaviour that is socially responsible and sustainable. Furthermore, the educational setting offers the opportunity to study and cultivate design behaviour within a fertile environment where new disciplines could potentially be inserted as part of future components within basic design education and practicum settings.

Meditation, mindfulness, stillness & awareness

Extensive empirical evidence supports the notion that meditative and/or mindfulness-based disciplines improve overall human well-being and predict less cognitive and emotional disturbance (Kabat-Zinn 1990; Lynch et al. 2006; Shapiro et al. 2006; Brown & Ryan 2003). A wide range of cooperative human qualities is claimed to derive from such practices including: empathy (Shapiro et al. 1998; Krasner et al. 2009), equanimity (Spencer 2008), spontaneous non-egocentric action (Rosch 1997); social connectedness (Hutcherson et al. 2008); compassion & eco-centricity (Austin 1999). Terms like “meditation”, “mindfulness”, “stillness” and “awareness” are used interchangeably in literature as both, techniques and also as qualities of being. Such techniques are non-analytical mental exercises that range widely from breath, body and emotion awareness, to various other forms of active and passive meditative activity (Ekblad 2008; Lazar et al. 2005; Kabat-Zin 2002).

Meditation has been referred to as “living in the present moment” and as a family of techniques that attempt to focus attention in a non-analytical way, and not to dwell on ruminating thought (Austin 1999). Wallace (1999) describes it as methods “to train the attention”. Spencer (2008) suggests that, through meditation practice, a design practitioner learns how to develop attentive awareness and to be connected fully with the present moment. He further states that it can promote experiencing the design process with equanimity, calm and clarity.

Mindfulness is referred to as both, a form of meditation and as a result of it. Lazar et al. (2005) call it a mental capacity, which is “a specific non-judgmental awareness of

present-moment stimuli without cognitive elaboration”. Nhat Hanh (1976) uses the term “mindfulness” to refer to keeping one’s consciousness alive to the present reality. It is further suggested that:

Although attention and awareness are relatively constant features of normal functioning, mindfulness can be considered an enhanced attention to and awareness of current experience or present reality. (Brown & Ryan 2003)

Spencer (2010) describes meditative activity as a “gentle effort to be still”, and refers to “stillness” as a letting-go of attachment to the flow of thoughts. He further explains that “acceptance” is central to the experience of gradual stillness. Scharmer (2009) speaks of an “inner place of stillness where knowing comes to the surface”. Furthermore he suggests that when a shift in awareness is recognized, it involves an essential quieting of the mind that Buddhists call “cessation,” wherein the normal flow of thoughts ceases and the normal boundaries between self and world dissolve. The concept of “stillness” was introduced as competence of design intelligence and described as:

An ability to access a range of mental states that are characterized by: considerably reduced habitual reaction and non-attachment to uncontrolled streams of thought; and by mindful awareness and acceptance of a designer’s inner condition, and of perception of the present circumstances. (Rojas et. al 2012)

These and other similar disciplines and terms are inspired by Wisdom Traditions, and a common thread or purpose can be established. In this sense, it can be stated that these disciplines aim to enhance and cultivate attentive awareness and acceptance of the present moment and of one’s current inner-condition. Ultimately, as part of the philosophy of Wisdom Traditions, they seek to foster desirable human qualities such as: loving kindness, compassion, joy, and equanimity (Kraus & Sears 2009). Vyas et al. (2012) allude to these disciplines as “awareness development practices” and relate them to particular qualities of attention such as: being fully present, empathy, compassion and non-judgement. Austin (1999) says that a highly compassionate being enters into what he calls the ultimate human equation: “self equals other”, and states that:

Once compassion issues from this ground level of being, the whole person becomes free to relate, ecologically, to the entire environment. Where is the old egocentricity? It has turned inside out. Eco-centricity prevails (Austin 1999).

In the spirit of clarity, this document will refer to “mindfulness”, as both the quality of attentive awareness and acceptance, as well as to the techniques that cultivate such mental state. Furthermore, this paper describes the way to enhance structured reflective practice with mindfulness-based techniques with the aim of cultivating mindfulness as a quality of being; and ultimately to foster cooperative human qualities in a design student, in support the “Design Praxium” vision.

Enhancing structured reflective practice

Stemming from a pilot study, Rojas et al. (2012) introduced the “Enhanced Reflective Practice Reporting Template” (Figure 1), which incorporated non-analytical mental training techniques inspired by Wisdom Traditions. They highlighted the value, within the context of professional practice, of improving a designer’s professional inner

self-awareness through reflective practice enhanced with techniques aiming to enhance attentive awareness. It was further claimed that improving a designer's inner self-awareness through enhanced reflective practice can: "promote dynamic self-awareness to include previously tacit elements of a designer's inner-environment", and "aid the access to, and recognition of, mental states of stillness" (ibid).

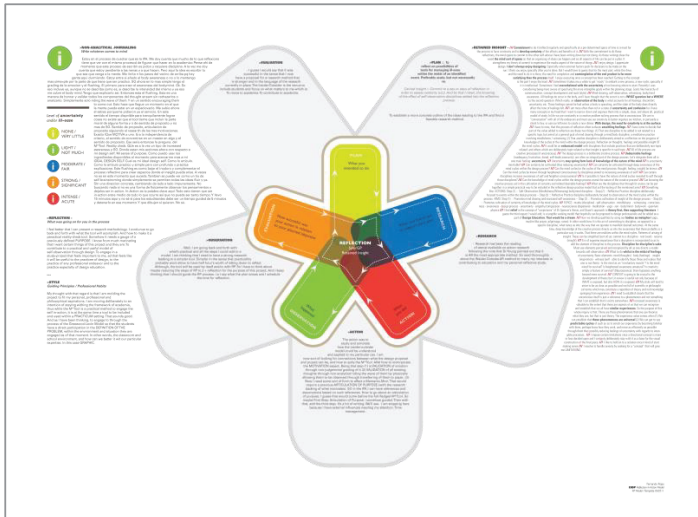


Figure 1. Example of an "Enhanced Reflective Practice Model Template". The model incorporates mental training techniques inspired by Wisdom Traditions. Source: Rojas et al. 2012.

The Enhanced Reflective Practice model is a modification of the action research reflective model that is part of a Master of Arts program that encourages design students to develop a structured reflective practice discipline (English 2009). This model, in turn, is an adaptation of the typical action research moments: plan, act, observe and reflect, as described by Zuber-Skerritt (1992). The mindfulness-based enhancements, which aim to help practitioners learn to "concurrently hold, observe and consider multiple points of view with non-attachment to their reactions" (Rojas et al. 2012) are outlined as follows:

The original reflective moments as presented in the structure of the MA are: plan, research, action, observation, evaluation, and reflection. These are all analytical. The meditative techniques incorporated are: (1) Non-analytical journaling; a cathartic approach to quickly writing whatever comes to mind, and, (2) Self-observation of the perceived level of emotional fluctuation as an effect of uncertainty before and after reflection. (Rojas et al. 2012)

Moreover, they propose that the Enhanced Reflective Practice template was conceived as a base for evolving models that can be further developed to "focus and elicit reporting on of self-assessment and self-transformation" (ibid). Yip (2007) proposes that in the process of self-reflection within reflective practice, the self is turned into an observable object, a process that can "gradually release individual's deep-seated feelings, cognition, memory suppressed in the unconscious". This focus on

self, adds the element of critical reflection as part of the analytical aspect of a reflective cycle, to be further synchronized with the non-analytical attentive awareness techniques. This point of view, as it relates to a reflective design practice, was explained as follows:

This approach is concerned with unconscious habitual reactions that may inhibit exploration and investigation. It is an inclusive acknowledgement of: a) the details of a design situation; b) the designer's value judgments of such facts, and; c) the third element, the witness who observes from a space in-between. Therefore, the environment of design, and a consideration of the multiple perspectives of a design situation, should include a designer's dynamic awareness, assessment and potential transformation of their own inner environments. (Rojas et al. 2012)

Critical reflection calls for questioning of values, beliefs and assumptions (Fisher 2003; Blaiklock 2010), which is a process of "making evaluations about ethics, morals, wider social, political and cultural implications that occur throughout a design project" (Lynch 2005 cited in Blaiklock 2010). While mindfulness is a non-analytical, non-judgemental process, the enhanced awareness and human qualities that it seeks to cultivate can, not only, illuminate those aspects of the self that are being observed, but also effect cognitive change. If a discipline of Enhanced Reflective Practice can improve a designer's inner self-awareness, then it could open a space for a clear view of aspects specific to critical reflection. In this light:

The ontology of critical social science suggests that human beings, through critical self-reflection, can come to see the true nature of their existence and act to change their situation, based on this understanding. (Fay 1987 cited in Fisher 2003)

Spencer (2010) explored a point of view suggesting that continuous commitment to a rigorous process of reflection is key to be able to benefit fully from the accumulated experience of the reflection cycles, and that non-analytical disciplines complement the reflective process as tools for increased attentive awareness. Blaiklock (2010) highlights "structure" and "cohesion" in the context of design students reaching a "high level of academic literacy, writing, critical reflection and knowledge construction". He further points out that a "structured and applied critical reflection teaching and learning framework, can enhance the effectiveness of design research education" (ibid). The act of disciplined commitment may also somehow nurture our creative natures, so creativity (and any other quality of self or endeavour) may occur proportionally to the level of commitment to the practice. Vyas et al. (2012) say that the cultivation of the capacity "of becoming aware" is the "basis for human creativity and success" (Sice & French 2004 cited in Vyas et al. 2012). And further propose that a "disciplined act of cultivating our capacity "of becoming aware" of the sources of our experience and, thus, opening up new possibilities in our habitual mind stream", is needed as an alternative to reflection (ibid). They further differentiate "becoming aware" from reflection:

Action in terms of "doing" or "reflection" is an activity of the actor towards or in response to the environment. The act of becoming aware, on the other hand, is one of uniting, connecting within (to self and body) and without, i.e. being part of the environment, experiencing being part of the universe. (Vyas et al. 2012)

Ekman et al. (2005) stated that "in Buddhism, rigorous, sustained training in mindfulness and introspection is conjoined with the cultivation of attentional stability

and vividness". Disciplined mindfulness practices are further considered in literature to physically alter brain structure (Lazar et al. 2005). Wenk-Sormaz (2005) suggests that cognitive change is what Eastern practitioners have concentrated on for centuries and that meditation practice leads to a change in cognitive function. Austin (1999) offers the analogy of a "highly salient alternate state etching itself into memory" to imply how, through awareness disciplines, a "brain can become structurally different from before". This is akin to the concept of neuroplasticity. Schwartz & Begley (2003) define neuroplasticity as "the ability of neurons to forge new connections, to blaze new paths to the cortex, even to assume new roles"; in other words "footprints of the experiences we have had". Recent scientific research on the "causal efficacy of will" supports this notion:

The implications of directed neuroplasticity combined with quantum physics cast new light on the question of human kind's place, and role, in nature. At its core, the new physics combined with the emerging neuroscience suggest that the natural world evolves through interplay between two causal processes. The first includes the physical processes we are all familiar with - electricity streaming, gravity pulling. The second includes the contents of our consciousness, including volition.

(Schwartz & Begley 2003)

As a result, a reflective design practitioner with improved inner self-awareness and outer world-awareness may consciously and continuously witness the cognitive evolution of, what could be known as, his or her own "Design-Self" (Figure 2).

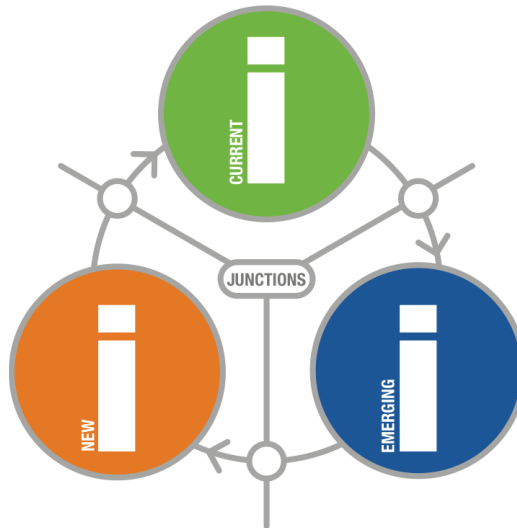


Figure 2. In this diagram the letter "i" represents the "Design-Self" in an ever-evolving cycle.

English (2010) proposes that design happens simultaneously in both the designer and the thing designed. In this sense, a "Design-Self" can be viewed as an ever-evolving entity that is created anew through reflective designing in a process that transforms our self-perception and even our brain structure. As we examine a "Design-Self" that seeks to honour meaning as well as practicality, an attempt at establishing context is

helpful. Cognition of a “Design-Self” can be understood, for the purposes of this document, as the result of the degree of intersection between: (i) a designer’s set of evolving values and world views; and (ii) a designer’s behaviour and actions. Disciplines advancing attentive awareness can potentially help designers reach inner places of aware stillness and prospectively allow them to witness the extent to which such elements meet and define their current “Design-Self”.

These inner-places of stillness are junctions where a designer can dwell within a space of awareness that is contained in-between the end of an old, and the beginning of a new, cycles of process and/or of being. This place is, at the same time the end of one cycle, and the beginning of another. It is a gap of alert attention in which mindful-perception occurs. A place of stillness that “operates in that moment between the facts of experience, and a designer’s perception and value judgment of such experience” (Rojas et al. 2012). And as such, designers can realize and become familiar with what could be known within the design process as: (i) a Current, (ii) an Emerging, and (iii) a New “Design-Self”. The latter, for the next cycle would be an enhanced Current “Design-Self”, in an ever-evolving development.

Mindfulness-based enhancements

As established, the mindfulness-based techniques integrated to enhance a structured reflective practice template consist of: (i) a form of Non-analytical Journaling, and (ii) a form of Self-Observation. These techniques are inspired by the vast array of mindfulness-based means to cultivate attentive awareness and acceptance of the present moment. Yet, their compelling value is in their seamless inclusion within a structured reflective practice model and thus, making the cultivation of mindfulness a part of the reflective process itself, as opposed to a peripheral annex.

Non-analytical Journaling

The process of recording narrative in a structured reflective practice template can be seen as a form of directed or guided journaling. English & Gillen (2001) offer a general definition of it as “writing focused on learning from daily experience”, and consider it a form of reflective practice that allows for “puzzling through” and extracting meaning from events and experience. This refers to the analytical component of journaling and/or reflection. In contrast, Non-analytical Journaling is a cathartic stream-of-consciousness. English & Gillen refer to this non-analytical process as a way of suspending all judgement and ultimately fostering creativity. While this is still an act of generating output within the reflective template, its purpose is to empty the current unfiltered mind contents as they become available. Such a goal is comparable to a concept in Buddhism known as “emptying your cup”; a process that aims to unfetter the mind of opinions, ideas and speculations, and increase “non-verbal awareness” (Hyams 1982; Kodish 1998). The directive is of “quickly writing whatever comes to mind” (Rojas et al. 2012) as fast as possible and for a specific number of words¹. This technique is used in higher learning schools such as RMIT University in Australia (2012), which includes it as part of a course on creativity concepts. The

¹ The original process, as conceived by Cameron (1999) and known as the ‘morning pages’, consists of three pages handwritten on a notebook. No more, no less. Since reflective practice templates can be approached in different ways, it was estimated that the section pertaining to non-analytical journaling should be of approximately 700 words.

inspiration for this step is a discipline that Cameron (1999) introduced and described as private meanderings where “nothing is too petty, too silly, too stupid or too weird to be included”. It is a meditation that gives us “the light of insight and the power for expansive change”, and a way to “separate our login brain that works on known principles, from our artist brain, that is our inventor” (ibid). The purpose of the practice is to cause a “brain-drain” of sorts where excess ruminating thought is “transferred” to the recorded words and thus create a sense of “mind-purging”. In the end, the purpose of the practice is to reduce ruminating thought and cultivate the “qualities of mental non-attachment and mindful awareness” (Rojas et al. 2012).

Self-Observation

Self-observation, for the purposes of this document, is understood as an act of taking account of one’s own inner-environment in an objective and non-judgemental way. Akin methods are widely researched as tangible scientific concrete processes. Beitman & Soth (2006) describe self-observation as “entailing an active scan of one’s inner landscape”. Rodríguez & Ryave (2002), propose that the ability to self-observe and report is a skill that can be cultivated, and also a way of gathering methodical data on elements of the self that are “tacit, hidden, and elusive”. Their instruction for observation of an aspect of one’s inner-environment is “not judge it or question it. JUST observe it” (ibid). It has been suggested that to promote mindfulness “we need to break through established patterns of perception and experience” (Langer 1989 and Udall 1996 cited in Niedderer 2007). Self-observation, within the Enhanced Reflective Practice model, aims to enhance attentive awareness of a reflective practitioner’s inner-condition as a way to promote such break in perception and serve as a bridge to mindful-awareness. This is achieved through a colour-coded grading scale where a practitioner can assess, in a non-analytical way, and record their perception of their current inner-condition. Thus encouraging an internally focused perspective, as opposed to a reactive situational point of view.

Conclusion and further research

There is a growing need to include meaning in our professional activities and to discover that fulfilment and success have broader definitions. While the claimed benefits of mindfulness are wide-ranging, the significant contribution of the Enhanced Reflective Practice model is that it seamlessly synchronizes mindfulness-based practices with structured reflective practice. This allows for a multiple-perspective approach to the reflective process that integrates analytical narrative and non-analytical witnessing. Furthermore, it promotes attentive inner-awareness of self as well as outer-awareness of circumstance. Reflective practice as action research promotes reflecting on what is learned and thus learning, not just about action, but also through action (McNiff & Whitehead 2006). Mindfulness promotes the fostering of valuable human qualities that support wider social views compatible with the vision of “Design Praxium” and co-design contexts. Young et al. (2001) see “Design Praxium” as a “catalyst to identify vital insights into the future of design education and to foster meaningful design”. They further suggest that:

Its time to move on! But in moving on we need to become mindful of the way we can unconsciously see the world. Every society ever known rests on some largely tacit, basic set of assumptions about which we are, what kind of universe we live in and what is ultimately important to us. (Young et al. 2001)

This paper's aim is to serve as bases for a study that will investigate if the techniques presented here to enhance structured reflective practice, stimulate mindfulness and promote cooperative human qualities. Beyond the action research component of narrative analysis, several validated methods of measuring mindfulness are being considered. The "Mindful Attention Awareness Scale" (MAAS) is described by Brown & Ryan (2003) as focusing on "the presence or absence of attention to and awareness of what is occurring in the present". This scale seeks to examine the aspect of attention of mindfulness and not the other associated attributes like empathy or acceptance. In a study, the MAAS showed that it "not only predicts well-being outcomes but also has value in the study of the temporal and situational dynamics of self-regulated behaviour and well-being" (ibid). The "Self-Other Four Immeasurables" (SOFI) scale was developed and validated by Kraus & Sears (2009) to measure the component of mindfulness that is associated with cultivation of human qualities. They describe the "four immeasurables" as the qualities that are at the heart of Buddhist teachings, namely: "loving kindness, compassion, joy and acceptance toward both self and others" (ibid). By assessing these "aspirational qualities" the value of their contribution is described further:

Whereas previous measures appear to focus on the fact that we pay attention, our focuses primarily on how we pay attention. By attempting to measure these previously "immeasurable" qualities, we facilitate study of both wings of mindfulness, attention and compassion. (Kraus & Sears 2009)

It is expected that enhancing structured reflective practice with mindfulness-based disciplines, becomes a validated method to cultivate mindful-awareness and cooperative human qualities in design students. In co-design contexts this will assist by promoting the development of "an adequate co-creative capability to allow for socially responsible action" (Vyas et al. 2012); and will also complement the "Design Praxium" vision of a new breed of creative professional that can "rise to the challenges of designing better schools, better democracies and better ways of living" (Young et al. 2001).

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