

KNOWING DIFFERENTLY IN SYSTEMIC INTERVENTION

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ABSTRACT

This paper makes the case for extended ways of knowing in systemic intervention. It argues that the deployment of formal (even reflective) thinking and dialogue methods are inadequate, on their own, to the critical tasks of comprehending larger wholes and appreciating others' viewpoints. Theory and techniques need to go further and access other forms of knowing, held in experiential, practical or symbolic ways. This could offer a better basis to incorporate marginalized people and other phenomena that are affected by interventions but do not have a voice, such as ecosystems and future generations.

Keywords: *Systemic intervention, systems philosophy, ways of knowing, boundary critique, critical systems thinking, epistemology.*

1. Systemic Intervention

Systems thinking as a field is often described as transdisciplinary because its ideas can be applied across several disciplines (e.g. Francois, 2006; Rousseau and Wilby, 2014; Mingers, 2015), much as statistics can be. It includes a vast body of theory, methodology and practice, ranging from systems philosophy to methods for systemic inquiry and intervention. It can best be described as the application of systems concepts to *frame our understanding* of the world, and it is also about possible future action - what ought to be or could be (Ackoff, 1981; Checkland, 1981; Ulrich, 1983;; Midgley, 2000; Cabrera et al, 2008). There are many systems methodologies within the field of systems thinking that aim for an adequate (rather than comprehensive) understanding of phenomena, informed by critical reflection (Ulrich, 1983; Midgley and Ochoa-Arias, 2004). These seek to produce widely acceptable transformations that minimize unwanted side effects (e.g. Ackoff, 1981; Checkland, 1981; Mason and Mitroff, 1981; Senge, 1990; Flood and Jackson, 1991a; Forrester, 1994; Vennix, 1996; Anderson and Johnson, 1997; Midgley, 2000; Christakis and Bausch, 2006). For an introduction to the broad canvas of systems thinking, see Midgley (2003).

However, with such a diversity of methodologies, which embrace different (often contradictory) philosophical and theoretical assumptions (Jackson, 1991, 2000; Midgley, 1996, 2001), systems thinkers face a problem: it becomes necessary to find ways of organizing the diversity in order to preserve some coherence. Hence, there have been strong calls for methodological pluralism: the development of frameworks and/or theories that can explain and rationalize the variety of methodologies available to us (e.g., Jackson and Keys,

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1984; Jackson, 1987a,b; Flood, 1989, 1990; Flood and Jackson, 1991a,b; Midgley, 1992a; Flood and Romm, 1996a,b; Gregory, 1996a,b; Mingers and Gill, 1997).

In a development called *systemic intervention*, Midgley (2000) attempts to provide a new approach to systems philosophy and systemic social theory that can underpin the pluralistic use of the various strands of systems thinking. He first argues that the concept of 'boundary', distinguishing what is included in or excluded from analysis (Churchman, 1970; Ulrich, 1983, 1986), is at the heart of systems thinking. Next, he advances a perspective that he terms 'process philosophy' (different from Bergson's, 1911, and Whitehead's, 1929, perspective of the same name). With this approach, he shows that both the objects (under consideration) and the subjects (researching them) are identified in terms of an identical process of judgment about their boundaries (Midgley, 2000; Midgley and Ochoa-Arias, 2001; Midgley et al, 2007). He thus claims to overcome a key philosophical riddle: the problem of subject-object dualism.

Midgley then builds on this methodologically in terms of an approach he terms the theory of boundary critique (Midgley et al, 1998; Midgley, 2000; Midgley and Pinzón, 2011). Essentially, this is a conceptual treatment of how boundaries should be reflected upon in systemic interventions. The essence of the argument is that boundaries and values are closely connected (Ulrich, 1983, 1986), so exploring different possible values and boundaries give rise to multiple understandings of the system in question. The more exploration is possible, the more likely it is that the likely negative effects of taken-for-granted boundaries will be revealed, challenged and revised (Ulrich, 1983, 1986; Midgley, 2000).

The theory of boundary critique also seeks to explain social processes of marginalization, whereby some stakeholders and/or issues may be devalued and even made invisible (Midgley, 1992b, 1994, 2000, 2007; Midgley et al, 1998; Midgley and Pinzón, 2011). Midgley explains that, when there is conflict among stakeholders as to where the boundary for defining a problem situation should be set, two groups of stakeholders may identify different boundaries: a narrower (primary) and a wider (secondary) boundary. Such a social process then spawns a liminal space between these two boundaries, which holds marginalized elements (peoples and the issues that concern them). This conflictual process can maintain a dynamic stability through the attribution of a 'sacred' or 'profane' status to the marginalized elements, reinforcing the primary boundary when marginalised elements are regarded as profane, or the secondary one when they are viewed as sacred. The whole situation is then overlaid with social ritual as a way of symbolically expressing and solidifying the stereotypes of sacredness and profanity imposed on marginalized stakeholders and the issues that concern them.

Midgley (2011) defends the philosophical soundness of his approach by explaining how it escapes the paradox of creating a single foundational epistemology as the basis for theoretical pluralism. Previous epistemological approaches postulate a generic model of the 'knowledge generating system' (the agent producing knowledge) as the single point of reference for the application of multiple theories to generate knowledge of the world. If this 'theory of the knowledge generating system' is foundational, then other forms of

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knowledge come to be selected for consistency with the foundation, thereby limiting theoretical and methodological pluralism. By recognizing that the *process* of making boundary judgments always impinges on our understanding of both our ‘knowledge of knowledge generating systems’ and our ‘knowledge of the world’, Midgley’s (2000, 2011) perspective provides room for an iterative deepening and enriching of both of these with multiple theoretical lenses. He calls this a systemic approach to epistemology, and it is illustrated in Figure 1.

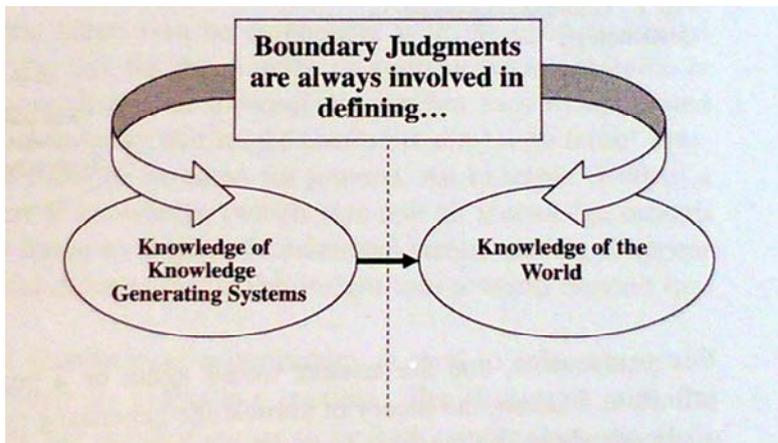


Figure 1. Systemic Approach to Epistemology (from Midgley, 2011, page 6)

In our view, this theory of boundary critique readily explains the boundary judgment process for the object, but does not provide adequate detail to explain how to explore boundaries of the subject. For instance, there is no discussion in Midgley (2011) of the internal processes operating within subjects, which might explain their preferences and choices. We will present a possible approach to this in Sections 2 and 4, after elaborating an argument for its necessity and value, and we will explore relevant theory from other sources.

It is our suggestion that the capacity for critical reflection on boundary judgments, especially those regarding our knowledge of knowledge generating systems (subjects), can be enhanced through *new ways of knowing*. Our experiences with the significance of *cultural dimensions* to the creation of meaning shows that there are possibilities both for alternate ways of knowing and for enabling shifts in attitude (elaborated later in sections 2 and 4-6). These ideas fit well with boundary critique and can help extend the application of this theory.

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2. Deepening systemic intervention through the application of an extended epistemology

2.1 A gap in the current theory and practice of systemic intervention

While the aspects elaborated in past approaches to systemic intervention (including Midgley's boundary critique, described above) are necessary, we believe they are not yet sufficient. We borrow an explanation from Bateson (1972). Worried about the inadequacy and dangers of good intentions, he writes:

“...mere purposive rationality unaided by such phenomena as art, religion, dream and the like, is necessarily pathogenic and destructive of life; ...its virulence springs specifically from the circumstance that life depends upon interlocking *circuits* of contingency, while consciousness can see only such short arcs of such circuits as human purpose may direct” (1972, p. 146).

Churchman too has written extensively about the insufficiency of rational analysis. In his characteristic style, mixing logic and polemic, Churchman (1979) posits the systems thinker as a hero, and describes his or her enemies:

“...politics, morality, religion, and aesthetics. In each case, the approach to human life is not comprehensive, holistic, or even “rational” in the sense of rationality which model builders use. ...To me, these enemies provide a powerful way of learning about the systems approach, precisely because they enable the rational mind to step outside itself and to observe itself (from the vantage point of the enemies) (p. 24).

“...The “enemy” is within us, is our being. The hero's vision always fails, because he perceives a world that never can become “reality.” If he stops there, just with the perception of eternal failure, then his powers of survival are not strong enough for surviving, and he must yield and surrender, or in today's vernacular of planning, he must “burn out.” But if he realizes that at one and the same time he is both a visionary and the enemy of his visions, then “failure” becomes objectified: it is, objectively, a feature of reality, just as is his vision. The road to survival is to be your enemy” (p. 151).

“...Once you are your enemy, you at last see yourself as you really are: a human being, wise and foolish, who has a quirk about the destiny and the improvement of the human condition, just as all the rest of humanity has its quirks” (p. 214).

Thus, he argues a case for what we think can best be termed a *meta-rational approach*, in the sense that we come to acknowledge the non-rational aspects of ourselves in addition to the rational. Churchman does not go into detail on how systems thinking can integrate

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the non-rational, and it is the purpose of our paper to explore this gap with a view to informing the theory and practice of systemic intervention.

2.2 A framework that addresses the gap

If a more comprehensive knowing requires the inclusion of relevant forms of knowledge beyond those produced through rational analysis, we can turn to the extended epistemology of Heron and Reason (1997), later amplified by Seeley and Reason (2008), for some clues as to what might constitute a meta-rational approach. We will then establish the relevance of their framework to the above gap in the theory and practice of systemic intervention.

Our application of the concepts from Heron and Reason is intended to bring in at least two additional process details: knowledge of actors that is not of a conceptual (or propositional) nature, as well as a process to apply boundary critique to the subjective understandings of the actors in any given situation.

Heron and Reason (1997), in their discussion of participatory inquiry as a distinct new paradigm, proposed the four epistemological types of knowing shown in Table 1.

Table 1. Ways of Knowing

EXPERIENTIAL	PRACTICAL
PRESENTATIONAL	PROPOSITIONAL

(Heron and Reason, 1997, adapted for presentation in table form)

To elaborate, Heron and Reason (1997) argue that there are four basic forms of knowing, which are interdependent. They describe these as *experiential*, *presentational*, *propositional* and *practical*. We will come to their explanations of these terms in a moment. First, a moment of caution. These distinctions may initially seem abstruse and appear to be needless hair-splitting to Western audiences, many of whom have long since regarded only propositional knowing as of any consequence, and have been suspicious of other forms. We invite systemic thinkers to reflect on this issue and reconsider the importance of the idea that there are forms of knowing other than propositional, after having listened to our complete argument. In discussing these four forms of knowing, we provide lengthy

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quotations from Heron and Reason (1997) below, as paraphrasing and condensing their words could result in the loss of important meaning.

- “**Experiential knowing** means direct encounter, face-to-face meeting: feeling and imaging the presence of some energy, entity, person, place, process or thing. It is knowing through participative, empathic resonance with a being, so that as knower I feel both attuned with it and distinct from it. It is also the creative shaping of a world through the transaction of imaging it, perceptually and in other ways. Experiential knowing thus articulates reality through inner resonance with what there is and through perceptually enacting (Varela et al, 1993) its forms of appearing” (Heron and Reason, 1997, pp. 280-281).
- “**Presentational knowing** emerges from and is grounded in experiential knowing. It is evident in an intuitive grasp of the significance of our resonance with and imaging of our world as this grasp is symbolized in graphic, plastic, musical, vocal, and verbal art forms. It clothes our experiential knowing of the world in the metaphors of aesthetic creation, in expressive spatiotemporal forms of imagery. These forms symbolize both our felt attunement with the world and the primary meaning embedded in our enactment of its appearing” (Heron and Reason, 1997, p. 281). Heron (1992, p. 168) captures the significance of such knowing: “There is one overall point about presentational knowledge which is important for our understanding of the world. It reveals the underlying pattern of things”, and, we may add, our place and relationship in and with that pattern.
- “**Propositional knowing** is knowing in conceptual terms that something is the case; knowledge by description of some energy, entity, person, place, process or thing. It is expressed in statements and theories that come with the mastery of concepts and classes that language bestows. Propositions ...are carried by presentational forms – the sounds or shapes of the spoken or written word – and are ultimately grounded in our experiential articulation of a world” (Heron and Reason, 1997, p. 281). This is the kind of knowing produced through the application of most systems methodologies, as well as the more traditional sciences.
- “**Practical knowing** is knowing how to do something, demonstrated in a skill or competence. We would argue that practical knowledge is in an important sense primary (Heron, 1996). It presupposes a conceptual grasp of principles and standards of practice, presentational elegance, and experiential grounding in the situation within which the action occurs. It fulfills the three prior forms of knowing, brings them to fruition in purposive deeds, and consummates them with its autonomous celebration of excellent accomplishment” (Heron and Reason, 1997, p. 281).

According to Heron and Reason (1997), experience forms the ground of all knowing:

“The experiential encounter with the presence of the world is the ground of our being and knowing. This encounter is prior to language and art—although it can be symbolized in language [propositional knowledge] and art [presentational

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knowledge]. Our world, or the I-thou encounter with a living tree or person, cannot be confused with our symbolic constructs. In terms we use later in the article, while propositional and presentational knowledge are grounded on and symbolize experiential knowledge, experiential knowledge cannot be reduced to either of them. This, we argue, is not a dissociated metaphysical statement; rather, it is an expression of radical empiricism that can be tested through experiential inquiry... It is unrestricted experience of the “lived-through world,” which Merleau-Ponty insisted is misrepresented and distorted by the limiting canons of the “objective thought” of positivist science and “dogmatic common sense” (Merleau-Ponty, 1962)” (Heron and Reason, 1997, p. 276; text in brackets added by the authors for clarity).

“...Experiential knowing is subjective-objective and so relative to the knower. It is also relative to the given cosmos, but with greater immediacy, lesser mediation, than propositional knowing. Experiential knowing is thus a ground, albeit not an absolute ground, for the symbolic frameworks of conceptual, propositional knowing”. (Heron and Reason, 1997, p. 278).

“...Propositional knowing can only give mediated — subjective and intersubjective — relativistic accounts. The participatory paradigm goes further and asserts that we cannot have any final or absolute experiential knowing of what there is; in the relation of knowing by acquaintance, the experiential knower shapes perceptually what is there. And this is still so when the perceiving mind is relatively free of conceptual labels imposed on its imaging of reality” (Heron and Reason, 1997, p. 278).

“However, the point about experiential knowing is that the very process of perceiving is also a meeting, a transaction, with what there is. When I hold your hand, my tactual imaging both subjectively shapes you and objectively meets you. To encounter being or a being is both to image it in my way and to know it is there. To experience anything is to participate in it, and to participate is both to mold and to encounter; hence, experiential reality is always subjective-objective” (Heron and Reason, 1997, p. 278).

It is important to note that Heron and Reason (1997) describe *practice* as consummating the prior forms of knowing, and also as being grounded in them. They make the case for a “critical subjectivity” that attends to both the grounding and the consummating relations between these four forms of knowing. They say this is very similar to Torbert’s (1991) “consciousness in the midst of action”, and elaborate that an awareness of our perspective – its authentic value and its restricting bias – echoes Torbert’s (1987) “refraining mind”, Bateson’s (1972) “Learning III” and other similar ideas in the literature (Heron and Reason, 1997, p. 282). It must be noted that, in their participatory paradigm, they give primary importance to practical knowing, treating it as of central intrinsic value, whereas most other paradigms only acknowledge propositional knowing as being of intrinsic (or instrumental) value.

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Unlike the tortuous problems that a solely rational (propositional) philosophy presents in attempting a more holistic understanding (see, for example, discussions of various philosophical perspectives in Ulrich, 1983, p. 24, pp. 26-30 and pp. 41 – 105; and Midgley, 2000, pp. 21-28), the above extended epistemology provides a natural basis to attain a critical subjectivity. The significance is in realizing that *the differing perspectives or modes of knowing are not patterned in an oppositional relationship, but are mutually supportive and can come into play simultaneously.*

It is due to a culturally situated limitation in self-understanding (especially prevalent in modern Western cultures) that we are usually only consciously aware of one or two of these modes at any single moment in time. This is why traditions such as yoga, certain action research approaches (e.g., Reason and Bradbury, 2006) and some communities of practice like the *Sumedhas* in India (Sumedhas, 2015) specifically promote a conscious increase in simultaneous awareness, and the capacity for alignment and a conscious cycling flow across the four modes of knowing.

It is particularly training in arts, crafts and other bodily practices that promote attunement to, and reflective regulation of, the different ways of knowing. This involves fostering the ability to attain a temporary suspension between the *process* of experience and its crystallized *content* of knowing. All too often, our practical, calculating mind rushes to immediately classify, ‘name’ and organize our sensual experience in terms of what we already know or recognize, denying the immediate newness and rawness of the experience-in-the-now. Our description of the experience (e.g., ‘another sunset’) is then robbed of any vitality and originality that it could have held for us. Yet, once we have made that automatic jump, there is little to recover of the original wonder, fragrance and freshness of each such encounter, which in the hands of an artist, poet or a child, is depicted magically. Such an automatic crystallization appears as an unassailably solid, definitive knowing to our over intellectualized ways, yet it can be bereft of new learning and deprive us of the possibility of an original response.

2.3 An epistemology of presentational knowing

These aspects are examined in great detail by Seeley and Reason (2008), who wish to increase awareness of presentational knowing. They attempt to generate an epistemology of presentational knowing, which they title as “Expressions of Energy”. They identify the stages in our relationship with reality that could substitute for our commonplace jump from encounter to propositional description. They describe this process as involving the progressive interlinked stages of *sensuous encountering, suspending, bodying-forth and being in-formed*. To quote Seeley and Reason (2008, p. 43),

“...Doing presentational knowing is an experience in itself, informing experiential knowing as well as being informed by it. If we perceive through experiential knowing, and we create through presentational knowing, we are interested in how this perceiver-creator interplay is imperative if we are to care for ourselves, our societies and our planet”.

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In presentational knowing, a ‘space’ to ‘occupy’ liminal zones in between contradictory ideas (or ‘knowings’) is generated. The contradictions take multiple forms: what we seem to perceive as opposed to what is expected or ‘normal’; between various sense perceptions reporting seemingly different things; between various levels of knowing that we are more or less conscious of (such as when a discussion with a colleague appears unremarkable on the surface, but one experiences an inexplicable tension in one’s jaw, indicating an emotional undercurrent); etc. Practicing engagement in a conscious liminality through presentational knowing therefore involves an existential tension, the creative resolution of which can facilitate the move to a more comprehensive view.

2.4 ‘Knowing Differently’: Methods for an Extended Epistemology

To recap, we first established the need for knowing differently in systemic intervention with reference to Bateson’s view that “rationality unaided by such phenomena as art, religion, dream and the like, is necessarily pathogenic and destructive of life” (1972, 146). Next, we discussed the usefulness of the extended epistemology of Heron and Reason (1997) to the development of an understanding of what it means to know differently. We will now touch briefly upon the extensive application of these ideas in certain intervention settings brought together in Liamputtong and Rumbold (2008). They signify the growing body of work reflecting the ‘reflexive turn’ in methodology, and situate their theorizing in what they refer to simply as “arts-based and collaborative methods”. Following the discussion of Liamputtong and Rumbold, we will finally return to the topic of systemic intervention.

Liamputtong and Rumbold (2008) are not using these two labels of “arts-based” and “collaborative” research methods in the spirit of academic territory marking. They seek to use the most open and easily understood of the various labels available and employ these to embrace a plurality of approaches, the bridging of gaps between disciplinary boundaries, and the bridging of gaps between researchers and participants. ‘Autoethnography’ is another term used for arts-based methods, and various action research approaches are identical to the perspectives they label as “collaborative”.

Liamputtong and Rumbold characterize arts-based inquiry as a “mode of research, reflective practice, education, therapy, art-making and community-building” (2008, p. 10). While the collaborations they have reported take many forms, our specific interest is in the projects they discuss that address ‘cultures of silence’ surrounding oppressed, marginalized and derogated social groups (also see Friere, 1972). An obvious concomitant process is the examination of the subjective boundaries of the inquiring agents who deal with these cultures of silence. This kind of analysis is integral to boundary critique (Midgley et al, 2007); so, if Liamputtong and Rumbold (2008) have already demonstrated that methodologies explicitly embracing ways of knowing beyond the propositional are useful for addressing the culture of silence, then there is a strong rationale for bringing ideas and methods from these into systemic intervention.

As Liamputtong and Rumbold have reported, these new methods

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- access experiential, practical and presentational learning;
- are suitable for non-literate participants (the fact that almost all Western systems approaches are dependent on literacy is a significant obstacle to systemic practice in many developing countries);
- provide a rich way to blur the researcher/practitioner boundary (see Boyd et al, 2004, for the relevance of this blurring to boundary critique and systemic intervention); and
- constitute a “radical ethical aesthetic” that enhances the potential for ethical relationships and social change (Liamputtong and Rumbold, 2008, pp. 3-4).

In addition, see Garman and Piantinada (1996), Barone and Eisner (1997) and Seeley and Reason (2008) for a deep mine of resources based in an explicit, extended epistemology that could also usefully inform systemic intervention practice.

2.5 ‘Knowing differently’ and systemic intervention – the scope for additional research

The case for the application of an extended epistemology (after Heron and Reason, 1997) to systemic intervention can now be elaborated further. Ulrich (1983, 1993, 2001) and Midgley (2000) have both argued for the centrality of boundary critique to systemic intervention. While this makes sense in terms of analyses of boundaries in the wider world, Midgley (2011) also claims that boundary critique can be applied to ‘knowledge generating agents’ (i.e., those applying the boundary critique to the wider world). There is only one case study in the literature of detailed, collective self-reflection on the identity and agency of the researchers using boundary critique (Midgley et al, 2007), and it is our contention that further work is needed on processes for examining the boundaries of agents and/or knowledge generating systems.

Moreover, Midgley’s (1992b, 2000) contribution to boundary critique borrows from the language of anthropology to propose the systems theory of marginalization, which can be used in understanding some types of power relationship between stakeholders in interventions. Bateson (1972), among others, has argued forcefully that a purely rational analysis in such matters is bound to mislead. The first author’s experiences confirm Bateson’s writings, and show that other ways of knowing (e.g., using arts-based methods) can open new dimensions for our understanding of phenomena like marginalization. They can give rise to counter-intuitive and often seemingly paradoxical insights.

Hence, firstly, some new approaches are needed for the application of boundary analysis to the subject, or knowledge-generating agent. Secondly, we need to go beyond purely propositional models. This is particularly important for intervention in many developing countries, where there are commonly high levels of political and social marginalization, stabilized sometimes over centuries of social habit and ritual, which can neither be appreciated nor resolved through propositional analyses alone. Indeed, the languages of many indigenous people facilitate meta-rational understandings of their (human) conditions, but

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Western science has historically labeled these ‘primitive’ and has made them (in Churchman’s, 1979, terms) into the enemies of rational analysis (also see Smith, 1999). Indeed, the very use of literacy-based tools, and a recourse to fluency in analytical language, can exclude the central stakeholders from participation in any engagement to improve deep-seated marginalization in developing countries.

In our view, these arguments constitute strong reasons to explore the expansion of systemic intervention (theory, methodology and practice) in terms of an extended epistemology.

3. Knowing differently in other traditions – an exploration

We have outlined in the preceding section a set of theoretical arguments, which constitute a case to further explore the extended epistemology. In order to do so, we have elected to study two Indian traditions, which the first author of this paper (Raghav Rajagopalan) was already somewhat familiar with: handicrafts and classical music. While many traditions, including Eastern traditions in crafts and the performing arts, have long recognized the validity of alternate ways of knowing, these are also now the subject of much qualitative research, as evidenced in several recent books (Minkler and Wallenstein, 2003; Irwin and Cosson, 2004; Finley 2005; Hesse-Biber and Leavy, 2006; Reason and Bradbury, 2006; Greenwood and Levin, 2007; Knowles and Cole, 2008; Liamputtong and Rumbold, 2008).

The possibility of finding answers from these kinds of arts and crafts that might assist in reducing the current limitations in Western thought is a growing refrain in contemporary studies on traditions of knowing. For example, Sennett (2008) has built a nuanced and painstaking argument to show that handicrafts hold special promise to reorder meanings of work, productivity and sustainable development in an era of critical global challenges to these concepts.

4. Ways of knowing in Indian handicrafts

This section and a portion of the next are narrated in the first person by Raghav, as they relate to a part of this research that he carried out alone (Gerald Midgley, the second author, met with Raghav electronically for reflective conversations, but played no direct part in the hands-on work in India).

I offered myself as the subject upon whom research was to be conducted. I took an apprenticeship under a Crafts Master in India for 6 months, learning sculpture, followed by dialogues with him and another traditional teacher of classical Indian music. Contemplating the full rigor and discipline of the teaching practices in these traditions, and employing arts-based research methods, I tried to access the underlying aspects of the development of general, transferable knowledge and skills, especially the value of the experiential, practical and presentational aspects of knowing.

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The attempt has been to reverse the long gaze of the researcher in the Western tradition upon his subjects (Smith, 1999) and recover some of the sacred ethic of knowledge seeking as it is in Eastern traditions. It is my speculation that an orientation to ‘receiving’ knowledge might perhaps enable a more holistic understanding to emerge; in contrast to an attempt to tease and tear it out with logical discourse alone.

I selected to apprentice under Rajasekharan, an accomplished master sculptor, who, for the most part, creates idols for installation in temples in the strict Indian tradition. He also produces modern sculpture. His work is in granite, and I could have perhaps chosen an easier medium, such as wood. However, I wanted to learn under someone who was comfortable with both the traditional and the modern, and who would see the effort as a collaborative inquiry; I had earlier listed a number of artisans and eventually narrowed down on him for this reason.

My apprenticeship was preceded by several lengthy preliminary dialogue sessions about our respective questions regarding the place of his sculpture in contemporary times, his own role, and how his vocational practice had informed his ways of knowing, doing and being. I asked him to initiate me as he would any other learner, and after I had completed my first learning task (carving a small pillar ornament), we went into an extended set of discussions on what I discovered through that process and where we were in relation to our common questions and exploration.

During my apprenticeship, I often watched him and the other sculptors in his team, and took photographs and video recordings. After completing my own task and proving myself sufficiently to enter into the fold, I interviewed a few of the other apprentice sculptors. All my dialogues were audio recorded, transcribed and translated into English. I made a few sketches, responded with a few stabs at poetry and kept journals of my experiences. These methods, where I did not attempt to make the recording of my experiences or the analysis of transcripts ‘scientific’, but rather attempted an authentic experiencing and narrating of the encounter, are part of the growing stream of arts-based research that I described earlier.

I would like to very briefly narrate one part of my experience and draw insights from it, without, just now, going into all the details of the conversations, literature search and other aspects that helped to clarify, corroborate and ratify my findings.

Most of you will have experienced the process of learning some art or craft, or will have encountered some narrative about such a process. What seems like childish ease when the teacher performs becomes nightmarishly difficult as soon as the first steps into the journey of acquiring skills are taken. Progressively, one is led through a series of planned steps of skill acquisition. At first, one is taught separate bits like an alphabet of a new language, and one subsequently learns to weave these together. Then, progressively, one begins performing the art or craft, embarking on a series of nuanced learnings about how to refine skills and infuse creativity into the performance. At many stages along the way, the average learner is confronted by his or her own inadequacies, at both the level of mas-

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tery of the physical skill as well as the mental disposition essential to its successful deployment.

In my own case, after learning to use a variety of chisels and hammers to hew down the stone to a rough shape and progressively use finer instruments to refine it, I was confronted with the key step that seemed to take a large part of the time of my colleagues: paring down the nearly shaped object, in a series of fine, quick strokes that I called ‘peeling’, to arrive at its eventual, final form. These strokes involve using a fine chisel and its corresponding hammer to run a line down any face of the object (an idol, say) that creates a very shallow channel like a rivulet that extends from one end to the other of that face. So, let us say for simplicity that it is a square, flat face that needs to be worn down a few millimeters for the final form. These strokes can then be run from the top edge right down to the bottom in one continuous flow; the chisel never being lifted, but being drummed on or tapped at a high speed by the hammer until the other edge is reached. The next stroke is then laid adjacent to this one – if the first one started at the leftmost edge, the next one would be just to the right of it, again one movement from top to bottom edge; then the next channel to its right, until that whole face of the stone was peeled like an apple, using adjacent strokes.

I could never achieve the necessary fluency. My strokes would have to cease halfway down one line, because of some discomfort or distraction. Alternatively, the rhythm might waver, producing one large cavity in place of a small chipping that would destroy the uniformity of paring and establish a new problem to solve. I would despair, hand over the bit for someone else to correct, and redouble myself to the task of mastering what seemed to be a simple next progression in skill, but which proved elusive to me and drew sympathy and smirks. I never did master this aspect, but in the effort, I slipped into what has been called the ‘zone’ – that mental state where your total attention is focused on the task and there is a heightened state of sensory awareness. I have often experienced this – many years ago in my youth, while in a game of sport or on a long distance run. However, this time, I was aware of the changes that this was bringing about to my own state of mind and body. I realized that my sense of time had changed: the duration of that period of focus seemed to dilate and make speed of response very easy. Simultaneously, the memories and knowledge of all the past hours of instruction were seamlessly flowing into the action, without conscious rational process, to inform the shifts and corrections my stroke making needed on the fly. In the same way, all the data about the final future outcome that I desired was informing and flowing into each stroke without conscious striving. So, in that ‘presence in the moment’, the ‘past’ and the ‘future’ too flowed into and informed the ‘present’. This has been described and explored in various bodies of literature, such as the Yoga Sutras of Patanjali; and for a contemporary example related to systems thinking, see Hodgson (2013).

In other sessions, I noticed that, similarly, several other things such as the normal sense of space, the sense of me-and-object, and cause-and-effect, were being blurred and remade in the context of my experience. Discussing this later, and returning to consult Sennett (2008) and Crawford (2009), I reflected on aspects of my experience that have been

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pointed to by other authors, but have not been made strongly explicit in their studies. I fathomed that practices such as these, requiring ‘ten thousand hours’ to learn, can alter one’s ontological understandings; challenging certain ‘common sense’ assumptions about reality that our culture transmits to us as children with little reflection. These assumptions might include the nature of causality (often perceived as unidirectional), the relationship of the ‘self’ to the ‘rest’ (with people variously perceiving themselves as either largely autonomous or largely constrained) and constructs of time and space (often assumed to be invariant). I became aware that all these assumptions and others (such as the relationship between continuity and change) were thrown into question by my experiences.

5. Preliminary learning outcomes

Examining the pattern of teaching that the other apprentices were being taken through, and discussing the method and rationale with Rajasekharan (and later, Ashish Sankrityayan, a music teacher), allowed me to understand that craft teachers employ a conscious and deliberate process to achieve breakthroughs and sustain the momentum towards a fuller understanding of these complex knowledge systems and practices. The teaching typically consists of stages, such as the following:

- Entry usually commences with a discussion and reflective articulation of the personal motivations and goals informing the choice of seeking to learn the craft/art/discipline. Another approach is for the teacher to prescribe exercises to be performed or to teach for just a short period. This provides a basis for the teacher to judge the learner’s propensity towards the practice (the nature of his or her talent and temperament); his or her capability and willingness to endure a long and hard apprenticeship; and whether there is a fit between the student’s approach to learning and the master’s teaching style. As an outcome, the teacher may then refuse to take on the learner; prescribe specific further training or practice towards achieving a specified minimum level of skill for later admission; recommend another master whose style of craft and/or teaching might better match the learner’s temperament; suggest that the particular craft is not suited to the skills and temperament of the learner; or proceed to discussions about the terms and conditions of the teaching.
- Sometimes there can be a ritualistic exchange of mutual commitments between student and teacher, with clarifications of expectations, especially by the teacher to the learner. In the case of certain established masters, past student experiences create a ‘folk lore’ that amply describes the teacher’s/school’s expectations; the very act of acceptance of the student automatically invokes these commitments.
- At this stage, there is an initiation into the learning, with a course of practical skill acquisition through a specific and graded series of exercises. This series of practical exercises is designed to lead to intuitive discovery of an underlying conceptual framework that informs the discipline. The symbolic language that expresses the nuances of the craft (for example, staves or other notations for musical notes) is taught.

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- When these preliminary skill alphabets are mastered, and there seems to be some intuitive grasp of the conceptual framework, a theoretical exposition is provided, and the next layer of the scaffolding is embarked upon in similar manner. At this stage (and at several other stages), the student is required to demonstrate a grasp of the links between the theory and the practice. This structured approach clearly involves all the four ways of knowing: *experiential* (in the process of working the material – stone or vocal chords); *presentational* (in finding similes or metaphors to communicate with the teacher at this nascent stage; and/or, in the process, learning/discovering/formulating a symbolic language); *propositional* (in extensive dialogues that will focus more and more on the theory behind the craft); and, in the main, of course, *practical* (practice, practice, practice!).
- As alphabets lead to words, sentences and little essays, further grammar is imparted. There is a vast library of known words/phrases, rules and techniques for deployment that is assimilated at this practice stage, which can be extended and tested until the entire library (of performing skill) is available reflexively for the student to use. Thus, the learning is slowly transformed and distilled into a form of free, reflexive flowing and performance that is almost akin to an experiential mode of learning, as the learning from the other three modes are condensed and integrated.
- When essaying is attempted, some doubts and problems may be encountered. The methods to deal with these are demonstrated by the master, and this experience leads the student to work on the correction/refinement of techniques.
- The student begins to acquire an individual style. The master has already noted the student's unique talents, proclivities and weaknesses and would have shaped practice accordingly. As the student engages creatively now, the master begins to refer the student to known pieces executed by great masters throughout the ages. This however, is always done with reference to specific points in the students' exploration and struggles; he or she is pointed to those pieces or their elements that will help expand his or her grasp of the creative possibilities. The emphasis is not necessarily on emulation but on the endless possibilities for the resolution of creative problems. These forms of learning inculcate a practiced knowing, along with an automatic reflexive reference to vast libraries of practices and symbolic forms that mediate critical-creative choices of what to apply in various specific contexts. The student becomes accomplished and confident in the performance of the art. At this stage, he or she will be expected to commence teaching duties (if no students have already been signed up under his or her tutelage). The master initially supervises the delivery of these lessons. The ability to understand the struggles of a novice learner and assist him or her in overcoming them is another step in the integration of learning for the practiced student.
- In the *guru-shishya parampara* (the Indian lived apprenticeship tradition), the master teaches and demonstrates, not only the acquisition of a vocational skill, but also all the aspects involved in building a successful career or enterprise, marrying together other practical skills of client engagement, performance and time and money man-

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agement. At this stage, the ethics and larger professional aims and social roles and contributions involved in the craft are discussed.

- Sometimes, at the final stage, there is a ritual; often a public performance that announces the ‘coming of age’ of the learner as an accomplished craftsperson. However, this is implicitly or explicitly tied to a reaffirmation of the ethos and values of the craft, its professional ethics and social purpose(s). The learner is pronounced an adept practitioner and is conferred a professional name or honorific title (if deserving).

The processes at some of the above stages involve sustained, arduous practice and help the student discover a participative orientation to the cosmos, rather than a neo-positivist or phenomenological one. This shift is produced because it is not possible to pursue the vocation without attention to varying constraints and limiting factors. External constraints, such as the uncertainties involved in the nature of the material being worked or finding the problem that needs to be solved, result in diluting a phenomenological perspective. Likewise, being forced to pay attention to internal limitations reduces the slant to a positivist approach. This participative orientation is most often the underlying ethos in the Eastern philosophical traditions that informs performing art and craft traditions.

Reflecting on the above process, we see a consciously designed cycling through the four ways of knowing. This is based on the recognition that a problem – a learning barrier, paradox or impasse – in one mode can often only be dissolved by an understanding or resolution of the problem from another way of knowing. For example, the learner is completely perplexed at how to combine two separate elements of skill in a way that achieves a certain result (practical knowing is frustrated). Further elucidation of the theory (propositional learning) provides a means to communicate some kinds of insight that cannot be grasped through action alone. Alternatively, a demonstration by the teacher helps attend to the error and change the approach, leading to a new round of practice. Indeed, some masters create such a heightened tension around demonstrating the craft that the student is compelled to pay undivided attention; in effect, engaging with the demonstration experientially. So it would seem that deepening learning in one mode might sometimes be dependent, not only on the level achieved within that mode, but also on the felicity achieved in one or more of the other modes.

The conscious design that teaches in specific modes and switches to other modes is also a deliberate, built-in safeguard against the generation of an instrumental orientation. On reflection, we can see that great development in only one mode – say, excellence in theory alone, or in practice alone, can have unforeseen consequences for the value of such knowing and its deployment – both for the individual and larger systems. It appears that deliberate design across these modalities helps anchor the knowing in an overall context of its value, usefulness and limitations (Sankrityayan, 2013). For example, a mere theoretician of music may be able to pen some pieces that appear remarkable, but without reference to the practicalities of how they can be played with a specific instrument, they may turn out to be unplayable, and remain merely in the realm of muse. On the other hand, a practitioner who believes that theory is useless and impractical is constrained by the lim-

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its of what his or her approach alone can obtain, and is not informed by the learning of other practitioners (also see Jackson, 1987a; Flood, 1989).

Therefore, to summarize, the systematic teaching approaches in some of these traditions can equip a variety of learners with the skills to:

- deepen capacities in each of the four ways of knowing;
- remain aware of which one they are accessing or deploying; and
- learn to consciously cycle across the four ways or use them in tandem in order to deepen a holistic understanding.

The process of learning can be conceptualized as the expansion of boundaries. The teaching approaches used by Rajasekharan and Ashish in inducting me into sculpture and music can be shown to expand boundaries in at least three ways:

- Building intellectual and moral capabilities, since the comprehensive approach to skilling as a vocational enterprise, as well as its location in a theory that encompasses its social, ecological and moral dimensions (amongst others), requires a great deal of practice in both problem finding and solving. This has also been described in the literature in some considerable fine detail by Sennett (2008) and, especially, Crawford (2009).
- Deepening the capacity for abiding in liminal zones (despite ambiguity about one's own state of mind and any required response), thus increasing tolerance and inviting new learning, as my example of 'peeling' has briefly described. Although I did not overcome the problem of peeling, I could see that a resolution would have depended on some form of recasting the way I held the tools and applied pressure: it seemed annoyingly effortless and graceful when performed by more practiced sculptors. The idea of abiding in liminal zones has been described by Herrigel (1953), Sennett (2008) and Crawford (2009). Often, the process of mastering complex routines appears to be paradoxical in terms of the skills or approach to be employed. For example, a common frustration in working on many materials and practices is that of encountering a resistance that does not yield when moderate force is applied, but abruptly yields with a breakdown of the material when pressure is only incrementally increased. Sennett (2008, pp. 220-1) notes that dwelling productively in frustration depends on learning to reformat or recast the approach, to be patient, and finally to identify with the resistance rather than try to overcome it with brute oppositional force. Such learning, practiced continually, surely begins to inform the craftsperson's attitude to life in general. Thus, learning to abide in liminal zones allows for the identification/conceptualization of apparent paradoxes that can then be addressed, allowing boundaries to be crossed that might initially have appeared unbridgeable.
- Expanding awareness beyond apparently 'common sense' ontological assumptions; for example, about the nature of causality, the relationship of the 'self' to the 'rest', constructs of time and space, and awareness of continuity and change (briefly touched upon in my example) can come to be rethought. This has previously been described

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by Herrigel (1953), although not in these terms. The result is changes in intuitive, systemic appreciation, where boundaries appear to dissolve and reform in different places, facilitating changes to received wisdom when reflected on through propositional knowing.

Overall, systematically cultivating such a learning process can engender, incubate and support a move to a more participative and systemic worldview, away from a positivist or phenomenological perspective. Clearly, an enduring basis for a habitual increase in self-reflexivity, and thus an increased ability to foster a boundary critique of the self, is created by: (a) challenging commonplace ontological assumptions and philosophical orientations; (b) reforming habits; and (c) inculcating deep perceptual, sensory and performative skills through a sustained practice that ingrains these methods in the person.

6. In Conclusion

We can now summarize the trajectory of this inquiry and offer some preliminary formulations. Churchman (1970) was the first to argue that the boundaries used to delimit problem definitions are not given by the structure of reality, but are conceptually imposed and need to be reviewed. It therefore behooves us to sweep in and include as many affected people and aspects as we can think of, but without compromising intelligibility. Ulrich (1983) raised the ante and sharpened the political understanding of this issue by posing a series of questions on the justifications for our boundary choices, such as who should benefit? Who should decide? Moreover, what should be the purpose? Midgley (1992b, 2000) then built on this theory of boundaries to describe processes of marginalization in terms of social rituals that function to maintain social structures. Midgley (2000, 2011) also identified that identical processes of judgment are involved in defining the boundaries of the system in the world and that of the ‘knowledge generating system’ that creates this system description.

Taking this work a stage further, we have argued that marginalized people and cultures (especially in developing countries, where marginalization is often entrenched over generations) can remain at the fringes if solely rational means of knowing are employed in systemic intervention. What is at least equally, if not more, important to recognize, however, is the mirror side of this phenomenon: how some of the vital potential of these marginalized elements can be lost to the dominant culture and people, from amongst whom systemic interveners are often drawn. Therefore, the recognition of these forms of knowing can also provide to interveners some redemption and the opportunity to rediscover and reintegrate the shadow aspects in the dominant culture.

We fear that, unwittingly, the ‘sacredness’ ascribed to rational knowing in the systems community could generate strong taboos about other forms of knowing, keeping it forever on the margins of systemic intervention and thus preventing us from knowing and learning more about our world. Importantly, there is a danger here of a false evangelism masquerading as an emancipatory and participatory approach. Quite possibly, if perhaps

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ironically, people who possess only non-literary knowing may provide us the seeds for integrating the 'enlightened' and 'shadow' sides of our culture, at both the social and individual levels. Socially, for example, there may be clues about ways to address problems created through the dynamics of our modern economies, such as the ecological crisis; and individually, those without literacy might help to put interveners in touch with aspects of themselves that they may only be dimly aware of.

Going further from here, the intention in our future research is to deploy these findings into a new pedagogy for systemic intervention practitioners and a new approach to the design of systemic community development.

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