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Towards an Integral renewal of systems methodology for futures studies

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Abstract

This article considers the use of systems methodology in futures studies and foresight, in relation to Slaughter's call for Integral methodological renewal in futures studies. The diversified methodologies that have developed within the systems practice field over the past twenty-five years are examined for their potential to address concerns about the field's reduction of interior realities to epiphenomena of systemic processes, articulated by Habermas in the 1970s, and more recently by Wilber from the perspective of his Integral Methodological Pluralism. It is argued, though, that Integral methodology requires more than methodological pluralism: some understanding of the structures of consciousness within which methodologies are conceived and applied is needed. Drawing on the work of Dr Susanne Cook-Greuter, capacity to understand 'system' itself is explored, looking at the ways that humans make sense of reality and the stages through which this sense-making develops. It is argued that systems methods and tools used with sufficient practitioner awareness of epistemological biases have an essential role to play in improving the quality of our futures perception and knowledge.

1. Introduction: systems thinking in futures studies

The rise of systems thinking during the twentieth century, as a response to the limitations of Descartes's analytic reason, has brought about 'a profound revolution in Western scientific thought' [2] (p. 29). This shift in emphasis from "seeing the parts" to "seeing the whole" has transformed perspectives in areas ranging from biology to business management. Particularly since the arrival of von Bertalanffy's General System Theory in the 1960s, systems thinking has seen knowledge once associated with highly specialised fields propagate outward to influence previously disparate domains of inquiry. As an approach to grappling with complex, transdisciplinary problems, a strong systems thinking influence in the futures studies field might be expected.

Such influence is reflected both in the literature and practice of futures studies. For instance, Ervin Laszlo, editor of *World Futures: The Journal of General Evolution*, describes a lifetime of futures-oriented endeavour during which his "intellectual home" shifted with developments in the systems field, including his own significant contributions [14]. Hjorth and Bagheri have recently examined the application of System Dynamics to sustainable development in a futures context [12]. Hayward (pers. comm.) notes that the approach to futures methodologies practiced by three of Australia's pre-eminent corporate foresight practitioners—Richard Hames, Susan Oliver and Gary Saliba—is underpinned by systems thinking. Hayward's work is itself strongly influenced by systems thinking, exemplified by the introduction of Beer's Viable System Model to foresight facilitation in an organisational context [11]. Considering just one example of more subtle evidence for the influence of systems thinking on futures thinking, an inherently systemic outlook can be detected in much of Sohail Inayatullah's work, particularly in the development of Causal Layered Analysis and

introduction of Sarkar's Progressive Utilisation Theory into futures thinking and practice [13].

1.1 The case for methodological renewal

In making the case for methodological renewal in the futures field, Slaughter finds that 'there are huge gaps between the complex, embedded, nature of futures problems and the capacity of the human and methodological resources...devoted to dealing with them' [19] (p. 844). As a response to the need for deep renewal, Slaughter [18] (part 4) has spearheaded the development of Integral Futures Studies, founded on the principles of Ken Wilber's [20] Integral Theory and influenced by a range of other integral theorists. This article responds in turn to Slaughter's call for both methodological renewal of futures studies and for the introduction of Integral perspectives to this process.

The incorporation of systems thinking and practice into the futures field can be seen as a response in its own right to the need for deeper approaches to deal with complex, human-related problems. Within their particular fields of inquiry and action, existing systems methodologies offer important paths for generation of futures knowledge and for the guidance of futures-oriented action. Why, though, should systems methodologies in particular be subject to Integral renewal? Foundational here is Habermas's argument, first articulated in the 1970s, that systems theory as a basis for understanding the world and acting in it leads to the 'colonisation of the life-world' by those who own the power of society's steering mechanisms [15] (pp. 96-97).

We find also in Wilber's work itself, partly influenced by Habermas, a powerful critique of inherent shortcomings in systems theory [20] (pp. 115-157).¹ This critique is founded on the assertion that genuinely valid knowledge involves our attunement with "what is real". Wilber holds that seeking freedom through such attunement is the basis of our quest for knowledge. Creation of such knowledge requires inclusion of four distinct but mutually correlative aspects of reality, associated with objective, subjective, intersubjective and interobjective perspectives. Each of these perspectives generates knowledge based on specific validity criteria: truth; truthfulness or sincerity; justness; and functional fit. Truth and functional fit provide access to *exterior knowledge*. Truthfulness and justness provide access to *interior knowledge*. The perspectives are characterised by language emphasising "I" (subjectivity), "we" (intersubjectivity) and "it" (objectivity and interobjectivity), referred to by Wilber as "the Big Three" and corresponding to Habermas's three validity claims of truth, sincerity and justness [20] (p. 149). The heart of the problem described by Wilber [24] is that systems theory facilitates the development of knowledge only in the interobjective domain, and then only via an act of observation in this domain, rather than participation (it is an *outside* perspective, rather than an *inside* perspective). Systems theory is one of eight methodologies that Wilber proposes for an Integral Methodological Pluralism—his proposed framework for generating an Integral understanding of any situation—and as such, it will create an incomplete perspective if privileged above other methodologies [24]. In particular, Wilber identifies the problem of *subtle reductionism*, in which Habermas's life-world, the domains of experience in which sincerity and justness form the basis for validity, are explained away as (or *reduced to*) mere epiphenomena of objective processes. For example, an attempt to explain my experience of a flower's beauty as inherently valuable and real, in terms of neurological or chemical interactions in my brain, would be an act of subtle reductionism.

¹ Wilber's critique of systems theory is extended further in a series of excerpts from the forthcoming second volume of the *Kosmos trilogy* (of which *Sex, ecology, spirituality* is the first volume), available online at <http://wilber.shambhala.com>.

Subtle reductionism, at its heart, is the exclusion of the subject, of the self, from our attempts to understand the world.

Wilber's examination of systems thinking and theory extends beyond the three broad domains of knowledge creation into Integral Theory's other principle dimension. This is the depth dimension, through which the emergence of human understanding of reality develops. Within this framework, understanding unfolds through growth hierarchies of increasing complexity, where all perspectives are in turn differentiated and integrated by more encompassing perspectives. In various works, Wilber traces the emergence of systemic thinking capacity in the individual as cognitive complexity evolves [20,21,22]. For instance, he discusses Kramer's research identifying worldview unfoldment in men and women from early *preformism*, with a simple lack of differentiation, to mature *dynamic dialecticism* in which 'multiple contexts are seen to be mutually interactive over both space and time, constituting an organic order that emerges from the nonpredictable play of its parts' [21] (citing Kramer) (p. 3).

The mental models through which individuals' perception and understanding of "system" emerges will be examined in greater depth later in this article, via Cook-Greuter's detailed elaboration of Torbert's Leadership Development Framework and its *action logics* [7].² The principle point for now is that different people will have different capacity to *see* system and will think differently *about* system. This has a key role to play in renewal of systems methodology.

1.2 Systems thinking, systems theory, systems intervention

An important focus of this article is the differentiation between systems *thinking* and systems *theory*. Checkland highlights that systems thinking is first and foremost an epistemology [4] (p. 318). Flood notes that systems thinking has shifted recently from a perspective in which the world is seen as consisting of real systems, to one in which the world, whatever its underlying reality, is understood in terms of 'systemically organised conceptions' [8] (p. 5). This involves a change in perspective from regarding systems as representational tools to regarding systemic metaphors as an appropriately useful way of shedding light on situations as we encounter them. The distinction here is between, on the one hand, systems as things recovered as objective features of the world, and on the other hand, systemic thought as a means of conceptual engagement that arises when subjects interact with the world using particular processes of cognition.

Systems theory, as the term is used in this article, tends to emphasise the idea of systems as representational tools founded on 'four basic ideas: *emergence, hierarchy, communication, and control*' [4] (p.318). In this view, systems theory is a set of abstract conceptual frameworks or models for describing a world that arises when we perceive the reality underpinning that world in terms of systemic relationships. Systems theory gives us a set of artefacts for communicating systemic perspectives, and in doing so involves a process of abstracting concrete features of our experiences from the direct experiences themselves. It tends to convert subjects' experience to concrete, objective entities. This creates the potential that these objective entities and derivative methodologies might be utilised by subjects who perceive the world through cognitive frameworks significantly different to those within which they were originally created—they might be taken out of context, or interpreted in ways other than those intended by their originators. For instance, systems theories might be

² The reference for Dr Susanne Cook-Greuter's work used in this article is a prepublication book chapter available at <http://www.harthillusa.com>, cited here with permission of the author.

taken as literal representations of a concrete reality, if they are applied from an objectivist representational perspective.

This article is written from the perspective that systems thinking *as* epistemology *gives rise to* theories of system. These theories of system in turn form the conceptual basis for a group of methodologies (described collectively here as *systems intervention methodologies*), for understanding and developing responses to complex problems related to collective organisation of human individuals within natural and social environments. The concept of *intervention* is introduced to address problems relating to the role of observation in systems theory [15] (p.5). The term acknowledges that the subjects applying systems methodologies play an active role in what is seen and understood, and in what is done as a result. This has important implications for Integral renewal of systems methodology for futures studies, and emphasises a view of the practitioner as participant-observer.

1.3 An outline for Integral systems intervention methodology

Drawing on the general principles of an Integral methodological approach to knowledge and action, the aim is to seek a systems intervention approach that explicitly meets the following criteria:

1. Recognition and honouring of the value, importance and validity of objective, subjective and intersubjective and interobjective knowledge;
2. Inclusion of participants and facilitators within the boundary of the system under consideration;
3. Seeking to create future-oriented knowledge suitable for assisting decision making, creating shared understanding and developing self-awareness in relation to complex problems involving multiple perspectives, without repressing the perspectives of any research participants, stakeholders or facilitators in the futuring process;
4. Recognition and honouring that “system” itself will hold different meanings depending on the cognitive frameworks with which individuals engage with their world; and
5. Creation of the potential for healthy transformation of self, culture and nature, as part of the navigation towards preferred futures.

At this stage it is worth noting that Integral systems intervention methodology is not intended as an alternative to Wilber’s Integral Methodological Pluralism. Systems methodologies remain focused on the generation of knowledge relating to the interobjective domain. However, while methods derived from systems theory pertain to knowledge creation *about* one particular and limited domain of experience, the process of creating this knowledge can be made more effective by engaging methods that view the interobjective domain *from* each of the other domains. This is about differentiation between the domain investigated and the perspectives from which investigation proceeds. Recognition of the need to examine the perspective from which investigation proceeds brings us again to the nature of the investigator her/him self: what is the nature of the mind(s) through which the systems knowledge is created, and how will this shape the knowledge itself? The view presented in this article highlights the importance of differentiating between enactment of Integral Methodological Pluralism, and Integral enactment of methodology: it is the latter that is being pursued here.

In attempting to define systems methodology that fulfils the criteria above, it is worth noting that Wilber's model is itself an expression of an Integral systems theory—that is, a theory of system, the boundary of which is expanded beyond the exterior domain to encompass and honour interiority as “real”, and developmental depth as increasingly significant (or intrinsically valuable) [20] (pp. 544-546). Wilber explains that vision-logic, the basic cognitive structure that generates the Integral perspective, is ‘the level through which I have attempted to write most of my works’ [21] (p.5). He points out that:

this same vision-logic would give rise to the extensively elaborated versions of systems theory in the natural sciences, and it would stand as well behind the postmodernists' recognition that meaning is context-dependent and contexts are boundless. In all of these movements and more, we see the radiant hand of vision-logic announcing the endless networks of holonic interconnection that constitute the very fabric of the Kosmos itself [22] (p.168).

So, in the critique itself, we find recognition that the problems identified are not *inherent* in systemic thought, but rather are the result of partial *expressions* of systemic thought. This is promising in regard to the possibility of creating more inclusive and effective systems methodology.

2. A survey of systems methodologies

The history of systems thinking and theory, from its origins in biology during the 1940s through to more recent applications to human social organisation, has been given much attention over the past fifteen years [1,2,8,9,15]. A common thread through the writings of these authors is their acknowledgement of the subject's exclusion from much of systems theory. They recognise, to varying degrees, the need to bring phenomenological perspectives back into systems theory in order to counter the objectivist assumptions that underpin conventional systems methodologies.

These authors draw attention to the range of systems methodologies developed throughout the field's history. For instance, Flood reviews the perspectives of six influential systems theorists, each of whom is associated with the development or popularisation of methodologies widely used in social and organisational contexts [9]. For Peter Senge, it is causal loop mapping as a business management practice; for Ludwig von Bertalanffy, General System Theory; for Stafford Beer, Viable Systems Diagnosis; for Russell Ackoff, Interactive Planning; for Peter Checkland, Soft Systems Methodology; and for C. West Churchman, Critical Systems Heuristics.

These methodologies are not just arbitrary preferences for dealing with problems from a systems view point. While several predate Habermas's critique of systems theory, a number have been developed as part of the continuing renewal of the field that has followed Habermas. Moreover, significant contributions to the systems intervention field have been made in terms of organising methodologies and their practice using principles based on Habermas's three constitutive knowledge interests that, as will be shown, align with Wilber's “Big Three” knowledge domains [1,8,15]. For example, Flood and Jackson in developing their own Total Systems Intervention methodology specifically align classes of systems methodologies with each of the knowledge interests:

[I]f we all have a technical, a practical and an emancipatory interest in the functioning of organisations and society, then a management science which can support all these

various interests has an important role to play in human well-being and emancipation ... It is clear that “hard” and cybernetic systems approaches can support the technical interest, soft methodologies the practical interest, and critical systems heuristics can aid the emancipatory interest [8] (p. 49).

This establishes a precedent for creation of an Integral approach to systems intervention. By using methodologies corresponding to each knowledge interest, it is possible to ensure that subjective and intersubjective perspectives are explicitly involved in any intervention process, in addition to the well established objective and interobjective perspectives. Attention will now be given briefly to three specific methodologies that could be integrated in futures work to facilitate Integral systems intervention.

2.1 Causal Loop Mapping & System Dynamics: The “it” of Integral systems intervention

The systems field has typically created methodologies with a strongly objectivist stance: those studying the system of interest have been located squarely outside the system boundary. Critiques of systems theory have largely arisen in the wake of extension of these conventional methodologies from the fields of biology and cybernetics to sociology. In this domain, systems are characterised in terms of quantitative variables. There is often an emphasis on mathematical modelling and high regard for empirical verification of these models against the “real world”. Direct correspondence is sought between the model and the world. These systems methodologies are differentiated from the conventional analytic methodologies of the natural sciences largely by the focus on relationships between parts, the effect of complex interconnections and feedback between objective components. They are not designed to take account of the relationship between those studying the system and the understanding that their study creates [15] (p.5).

Checkland refers to this as the domain of ‘real-world problem-solving’ [4] (p. 126). This is the domain of “hard systems methodologies”, and the “engineer’s perspective”. We find located here methodologies such as System Dynamics, Viable Systems Diagnosis and General System Theory [8] (pp.36-38). These methodologies provide users with instrumental advantage. Particularly by accounting for feedback effects, they improve predictive capacity and hence extend technical control. They also facilitate the identification of hidden causes to old problems that remain hidden to analytic investigation.

The methodologies grouped in this domain cover a spectrum of technical rigour ranging from highly technical modelling that attempts to provide exact representation via strictly reductionist methods through to more light-weight Causal Loop Mapping (CLM). In a recent issue of *Futures* Hjorth and Bagheri discuss use of CLM in sustainable development [12]. CLM is particularly useful as a futures studies method due to its scalability: it can be used as a communication tool for graphical illustration of scenarios for example, or as a starting point for developing the structure of System Dynamics models that can then be implemented with simulation software. It is a useful method for sharing of ideas about objective relationships amongst groups of investigators, and so can be particularly valuable in participatory processes. In an Integral systems intervention process, the local context of the exercise will suggest the most appropriate methodologies to use. CLM and System Dynamics are likely to be accessible and effective methods for providing the objective view point for a futures-oriented Integral systems intervention.

2.2 Soft Systems Methodology: the “we” of Integral systems intervention

Soft systems perspectives are based on a phenomenological stance characterised by ‘a readiness to concede primacy to the mental processes of observers rather than to the external world’ [4] (p. 315-316). Peter Checkland’s Soft Systems Methodology (SSM) is a response to the shortcomings he perceives in hard systems approaches. SSM starts by *undefining* problems: the very definition of social problems is seen as problematic. Those who define a problem are seen as complicit in the problem itself. A basic idea here is that those involved in the problem situation, and those likely to be affected by any solutions, should define the problem to be addressed [9] (pp. 55-56).

SSM shifts systemicity ‘from the world to the process of inquiry into the world’ (Checkland & Haynes 1994, pp. 193 & 196). SSM is primarily ‘a process used to structure coherent debate’ [5] (p. 195). The essence of SSM is encapsulated by Checkland and Haynes in the following passage:

[A]fter an explicit process of finding out about a problematical situation...a number of models of purposeful activity systems, based on different worldviews, would be built. These models are thought of as relevant to exploring the situation; they do not purport to be models of any part of the real world...They are epistemological devices, intellectual devices in terms of which what counts as knowledge concerning the problem situation and how to improve it will emerge [5] (p. 193).

Checkland’s principle interest is in facilitating shared understanding between people about complex situations, with a view to reaching negotiated *accommodation* rather than *consensus*. Rather than getting all parties involved in an intervention to reach a shared worldview, the point is to allow those with differing perspectives to understand each other sufficiently that they may act in the world in a way that all parties can live with. Here we find alignment between SSM and Habermas’s communicative knowledge interest. The focus here is on the domain of intersubjective knowledge and the validity claim of justness. This is systems methodology by which *we* can create shared understanding together, and as such is a key methodology for inclusion in Integral systems intervention.

2.3 Critical Systems Thinking: the “I” of Integral systems intervention

According to Flood, the major criticism of Checkland’s work is that ‘he has little to say about power and the way this distorts the outcome of debate’ [9] (p. 60). In terms of Habermas’s knowledge interests, Checkland concentrates on the pragmatic/communicative at the expense of the emancipatory. Flood presents the following insight in relation to a further partiality inherent in systems intervention methodology that emphasises negotiation in the intersubjective domain:

The value of diversity in personal experiences and perspectives may be reduced detrimentally if consensus or accommodation is pushed for too strenuously. Introducing the concept of dilemmas is meant to stimulate a thoughtful process of exploration of people’s *personal experiences* and possible ways in which these can be preserved and shared in a constructive manner, all at the same time [*emphasis added*] [9] (p. 89).

Flood frames the problem here in terms of two specific dimensions: neglect of subjectivity; and exclusion of the emancipatory interest. The question then arises as to whether, in

addressing these partialities, the two dimensions might be reconciled simultaneously, and if so, how?

One approach lies in recognising that the root of emancipatory knowledge is authenticity, or truthfulness, of the self. This requires that we recognise emancipatory knowledge as knowledge that ultimately transforms the self, rather than the self's environment. Such knowledge involves one's ability to critically reflect upon and examine established commitments, assumptions and biases—to see the way that one exerts one's power in the world. As Habermas writes, in relation to the seeking of laws relating to “how the world works”, such critique ‘sets off a process of reflection in the consciousness of those whom the laws are about’ [17] (citing Habermas) (p. 218).

The aim here is to make the self of yesterday the object of the self of today, with a view to setting the self of today free. This requires, above all, that one be scrupulously and painfully honest with one's self. Such a trajectory sees the inclusion of more and more of reality within the boundary of one's self, making emancipation far more encompassing than mere *human* freedom: emancipation extends concern to wider social and environmental well-being.

Churchman's Critical Systems Thinking (CST) is an intervention methodology that aligns with this approach. Flood outlines four principles of Churchman's CST, the first two of which are most relevant here:

- Systems thinking begins when we see the world from another's perspective.
- Systems thinking discovers that all worldviews are partial [9] (p. 63).³

Churchman's methodology is based on seven central concepts. These are defined as: identification of system purpose (*teleology*)⁴; critical reflection resulting in inclusion of more features in the problem context (*sweep in*); *unfolding*, a process of adding structure and meaning to experience, a critical counterpart to sweep in; temporary and partial *boundary setting* around “system clients”; *securing* sustainable improvement; thought combined with a concern for ethics (*wisdom*); and the spiritual belief in an ethical future (*hope*) [9] (pp. 63-65).

Boundary judgement is identified as an especially important consideration, involving self-reflection on the questions: ‘Who is embraced by the action area and thus benefits? Who is out and does not benefit? What are the possible consequences of this? And, how might we feel about that?’ [9] (p. 64). This perspective is emphasised by Midgley also, who observes that ‘improvement within a narrowly defined boundary may not be improvement...if the boundaries are pushed out’ [16] (p. 17).

Recognition of and advocacy for the irreducible validity of subjective knowledge in CST is an important response to the problem of subtle reductionism in conventional systems theory. CST serves two important purposes here: first, it provides an essential component for the enactment of Integral systems intervention. The significance of CST goes beyond this though: it provides an important departure point for considering how individual perspectives of system might influence methodology and hence can be considered in the development of

³ A principle that, in order to remain internally consistent, must embrace the understanding that the systems thinking worldview is itself partial.

⁴ Noting that the concept of “system purpose” is based on an interpretation made by a designer, observer or self-reflexively conscious member of the system under consideration: “purpose” is never some concrete aspect or feature, with its own independent existence, of the reality from which we abstract a systemic perspective.

better methodology. For instance, how is it that the value of CST is recognised in the first place?

Flood and Midgley advocate the importance of developing systemic epistemology that transcends conventional subject-object dualisms [10,15]. Their interest highlights the role of the development of the subject's capacity to perceive and understand system itself in the development of systemic methodology. The nature of this development will now be explored as focus is turned to considering the relationship between systems thinking and a structural view of cognitive development.

3. The development of individuals' perspectives of "system": implications for methodology

Cook-Greuter uses the term *mental models* to describe the perspectives that individuals bring to the perception and understanding of "system". She emphasises the significance that the mental model held by an individual has in shaping that individual's understanding of reality [7]. According to Cook-Greuter, a new model is not accessed simply by choosing to think differently upon rational self-appraisal of the limits of one's current perspective. Rather, mental models evolve over time through an asymmetrical process of transformation. The mental model through which an individual sees at a particular stage of growth is literally the only way that this individual can make sense of his or her experience of reality. While horizontal expansion *within* a given mental model is readily available, shifts between mental models proceed by a stage-wise process of fundamental reorganisation, with each emergent model both transcending *and* including its predecessor. Movement from one mental model to the next involves transformation of the way that the individual experiences, understands and acts in their world. These mental models are neither chosen arbitrarily nor adopted following rational appraisal of their respective merits. Rather, they evolve through an endogenous growth imperative emerging in response to both exogenous and endogenous life conditions.

3.1 Action logics and systemic thinking

The general concept of developmentally emergent mental models is introduced by Cook-Greuter through detailed description of one particular "model of mental models", the Leadership Development Framework (LDF) created by Bill Torbert [7]. The LDF is based on a synthetic understanding of interrelated emergent approaches to doing, being and thinking. It 'provides us with one possible account of how individuals navigate the straits of human existence' [7] (p. 2). The LDF encompasses a series of nine *action logics*, that together describe 'a progression of different ways of making sense of reality' [7] (p. 3). The nine action logics circumscribe the set of mental models found to be operative within the majority of people across all stages of life, in the USA and the United Kingdom.⁵

The two least complex action logics generally correlate with childhood development and are rarely seen in professional adults [7] (p. 7). It is anticipated that application of an Integral systems intervention methodology would generally involve adults functionally capable of engaging in a professional environment. On the other hand, the action logic of greatest complexity (Ironist) is operative in less than one percent of populations where LDF testing has been conducted. This leaves a set of six action logics likely to be evident within systems

⁵ It seems reasonable to expect the nine action logics to be operative and potentially available to all people across national, ethnic and cultural groups, however the data presented by Cook-Greuter is specific to the USA and United Kingdom. It also seems reasonable to speculate that proportions of population operating with particular action logics may vary between different population segments.

intervention participants. Cook-Greuter's research [7] (p. 4) indicates that these six action logics account for approximately ninety-five percent of the US mixed adult population, and up to ninety-nine percent amongst specialist groups such as managers and consultants.

Cook-Greuter is very clear on the important interrelationship between each action logic's operative, affective and cognitive components. The present interest, however, specifically relates to the way that individuals see and understand system. On this basis, attention is focused here on the cognitive component. Cook-Greuter correlates the action logics with the cognitive stages of development of Commons and Richards [6], and with a general *state of being*. The cognitive aspects of each action logic are summarised in table 1 with their ontological phase, and described in detail in table 2. The perspective that arises with each cognitive approach is described in table 3.

Action Logic	Cognitive stage [7] (citing Commons & Richards)	General ontological phase
Magician	6a cross-paradigmatic, unitive concepts perceived	Post conventional, first "Unitive Stage"
Strategist	5b metasystematic operations, general systems thinker	Post conventional, "General Systems Stages"
Individualist	5a systems theory concepts perceived	
Achiever	4b formal operations	Conventional
Expert/technician	4a abstract operations	
Diplomat	3b concrete operations	

Table 1: Summary of action logic cognitive stages and corresponding ontological phase (adapted from [7]).

Action Logic	Cognitive style
Magician	‘only the creation of a new way of knowing can hierarchically supersede and integrate all previous knowledge and epistemologies’; ‘first action logic that looks at all experience in terms of change and evolution’; ‘capable of perceiving the structure of their own thinking processes, comparing them to that of others and discovering the fundamental limitations of all rational thought and the limits of language’.
Strategist	‘time frame and social context again expanded. Capacity to see and embrace some paradox and contradiction. Toleration of ambiguity. Broad scope of thought. Perception of self as regulator of a self-system with interdependent parts within a larger context.’
Individualist	‘people come to realize that the meaning of things depends on one’s relative position in regard to them...on one’s personal perspective and interpretation of them. Although the objects themselves are seen as permanent, their meaning is seen as constructed’; ‘The same object/event can have different meanings for different observers, for the same observer in different contexts or at different times.’
Achiever	‘can think in terms of formal operations and...beginning to appreciate conceptual complexity as well as the nature of a closed system.’
Expert/technician	‘capable of abstract thought and operations, including multiple views, permutations, and careful comparisons between pairs of items’.
Diplomat	‘interested in the concrete, visible aspects of experience and tend to use superlatives and conventional clichés to describe it.’

Table 2: Detailed description of cognitive style associated with each action logic (adapted from [7]).

Action Logic	Perspective
Magician	‘start to wonder about the meaningfulness of more and more complex thought structures and integrations’
Strategist	‘Self is embedded in history and multiple cultural contexts.’
Individualist	‘Standing outside the system.’
Achiever	‘Able to see self and others both backwards and forwards in time’, hence able to discern patterns of behaviour.
Expert/technician	‘Self and others as separate persons with unique differences’.
Diplomat	Self as the centre of perspective taking, but can “see” and be “seen by” others, hence capable of making external comparisons.

Table 3: Detailed description of perspective associated with each action logic (adapted from [7]).

3.2 Stages of systemic thinking and futures studies

Table 3 suggests that the emergence from the Expert/technician to the Achiever action logic is of particular relevance to futures-oriented systems methodology. While the ability ‘to see self and others both backwards and forwards in time’ (associated with the Achiever action logic) has obvious significance in this context, what is perhaps more worthy of note is the

differentiation between those action logics from Achiever onwards and those that precede it [7] (p. 17). The implication here is that individuals who interact with one another on a day-to-day basis may have significantly different ways of seeing and hence of understanding their world. In fact, it may be more appropriate to refer here to “their respective worlds”, plural, rather than to “their world” singular. Such a distinction recognises the validity of these differences for the individuals who hold the perspectives, while acknowledging that your way of knowing past, present and future may sometimes be at odds with my way of knowing past, present and future. That is, there is a pointer here towards the role of our underlying interior capacities in shaping difficulties in understanding one another, and perhaps even in appreciating each other’s *interest* in the long-term future perspective. It is also apparent that concern for the long-term future perspective is not itself static: Cook-Greuter’s descriptions of the development of perspective indicate that sensitivity to our relationship with time and hence with “the future” continues to develop in complexity.

The central importance of our capacity to hold more encompassing perspectives, and the relevance of this to Integral systems intervention methodology, itself bears further examination. Wilber, in his most recent work, significantly extends his critique of systems theory [24,25]. For Wilber, the root of the problem exposed by his critique rests with interpretive frameworks where *perception* forms the fundamental basis of our awareness or consciousness. He describes *perception* as ‘moments of bare attention’ that we assume to be ‘the “building blocks” of a sentient...world’ [25]. He describes the problem as follows:

But there are no perceptions anywhere in the real world; there are only perspectives. A subject perceiving an object is *always already* in a relationship of first-person, second-person, and third-person when it comes to the perceived occasions...the manifest world is built of perspectives, not perceptions...Subjects don’t prehend objects anywhere in the universe; rather, first persons prehend second persons or third persons: perceptions are always within actual perspectives. “Subject perceiving object”...is not a raw given but a low-order abstraction...[25].

Developing this idea further, he writes: ‘A perception...is not really an experience but an abstraction...Perception secretly privileges abstract objects; perspective privileges sentient beings’ [25]. He proposes a shift in the current, common idea of a reality composed of systems, processes, webs, information, matter and energy to a new idea of a reality composed of *sentience*, for which feelings, awareness, perceptions and consciousness ‘are *always already* perspectives’ [24]. In light of Cook-Greuter’s detailed description of the LDF’s action logics, we see that Wilber is essentially proposing a shift from a mental model characteristic of the more complex stages of the conventional phase, to a mental model characteristic of the more complex stages of the postconventional phase. It seems likely that potential for such a shift is only now emerging with the development of the postconventional action logics within sufficient numbers of individuals.

As understanding of the context-dependence of meaning arises with the Individualist action logic, a discontinuity splits the spectrum of ways that we understand reality. The postconventional mental models are entirely incommensurate within the framework of the conventional mental models. By taking perspectives of sentient beings as the basic components of reality, rather than abstract subjects and objects, this rift can effectively be healed. From the “top down”, perceptions (or any other abstraction, e.g. “an atom”) can be framed within a system of perspectives. That is, any abstraction can be made commensurate with a given discrete set of fundamental perspectives, but any perspective cannot be made commensurate with a given discrete set of perceptions or abstractions. Within this context,

the significance of Wilber's proposed shift from a reality composed of perceptions to a reality composed of perspectives becomes clear: it allows us to include all less-complex ways of seeing the world. This is a core aim for an Integral systems intervention methodology – to facilitate inclusion of the ways that all participants in an intervention “see system”, without repressing perspectives less complex than those of the participant group's “centre of gravity”, or denying perspectives more complex than those of such a centre of gravity.

3.3 A spectrum of perspectives: implications for methodology

From the descriptions in tables 1 to 3, and with consideration given to the wide range of alternate “models of mental models” such as those from approximately 100 researchers and other sources collated by Wilber in *Integral Psychology* [21] (pp. 197-217), it is possible to start constructing sketches of how “system” is likely to be seen by participants in futures exercises. Note that these sketches, in order to be useful, are also very broad generalisations. There is likely to be variation from person to person even within the perspective of any particular action logic, given the unique cultural and historical context with which each individual comes to the intervention process. With this proviso, people operating with the subset of action logics examined in this article are likely to see system, in the course of a systems intervention process, in the following general ways (note that the action logics are examined in the reverse order given in the previous tables, in order to highlight the stage wise developmental progression):

Diplomat:	concrete; pre-given; one true system; we must live within the system.
Expert:	system exists in the real world, but I must find it, identify the links that are important and exploit these. ⁶
Achiever:	systems exist in the real world, these consist of dynamic elements interacting in time. By watching behaviour over time, links can be better discerned and hence exploited.
Individualist:	systems exist in the world, and their meaning is constructed by us. There are many systems of equal value; we must share our views of systems together to understand the whole better and find consensus.
Strategist:	system is the way that I see a reality that we continuously recreate, in order to exist with that reality; beginning of shift from “I am in the system” towards “system is in me”. Described by Cook-Greuter as the second “General Systems Stage”.
Magician:	starting to see reality as ‘undifferentiated phenomenological continuum’ [7] (p. 27). Systems view created as appropriate to the context of the intervention process as necessary to achieve valuable outcomes, where the term “valuable” is itself highly negotiable.

In light of this, if engaged from within the conventional action logics (Diplomat to Achiever), Checkland's definition of systems thinking as primarily *an* epistemology seems reasonable. Beginning with the transformation to the Individualist action logic, however, systems thinking starts to become integrated as epistemology *and* ontology. That is, systems thinking starts to become an intuitive part of the way individuals understand and live within their world. This distinction is important, as co-participants in a futures project may have very different appreciation of systems and hence different capacity for engaging with a systems intervention process. Furthermore, for some people, systems practices will simply

⁶ The term *exploit* is used here in its utilitarian sense (i.e. meaning “to use practically” or “utilise for profit”), rather than in the perhaps pejorative sense of “to use for selfish ends”.

present more mental tools, while for others there may be deep congruence with personal experience of the world. In the other extreme, with less-complex action logics, systems practices may just appear to be an unnecessary obfuscation. Important considerations arise from this:

1. The perspective from which Integral systems methodology is created should be examined and understood;
2. A practitioner using such methodology to design an intervention will need awareness of his/her perspective relative to that of clients/participants;
3. Both methodology and praxis will need to be reasonably transparent and accessible for people operating with the range of perspectives likely to be associated with most large-scale problems/issues/dilemmas that futures studies practitioners might expect to encounter.

The major challenge here is to develop methodology that simultaneously fosters engagement across the spectrum of perspectives. This task, though, does not arise with recognition of the differences in perspective examined in this article—such a challenge is inherent in all existing methodology, whether explicitly recognised or not. An acknowledgement of the stage-wise development of mental models, and with it, systems perspective and systems thinking capacity, holds within itself an essential key to the creation of effective methodology.

4. Conclusion

This article has demonstrated the significant scope for renewal of futures-oriented systems methodology that is available through engagement with the diverse range of methodologies already in use. By becoming familiar with the strengths of methodologies including SSM and CST that have been developed to address many of the shortcomings of more conventional, objectivist systems methodologies, futures practitioners will significantly enhance their capacity for understanding how complex systems might unfold through time. By developing the capacity to integrate methodologies designed to explore system from the perspectives of communicative and emancipatory interests as well as technical interests, practitioners, decisions and actions that follow systemic intervention will be more effective in the creation of preferred futures. An approach of this type to renewal of futures-oriented systems methodology can ensure that the first and second criteria for Integral systems methodology in section 1.3 are met.

While the appropriate selection and integration of plural methodologies is very important, an appreciation for the subject's role in creating systems perspectives is essential to implementing participatory systems intervention processes of the highest quality. Careful consideration of the way that those involved in any futures exercise might see and understand system will help address the third and fourth criteria in section 1.3.

Finally, futures practitioners who engage fully with the Integral intent of facilitating greater shared understanding and greater wholeness will pave the way for meeting the final criteria set out for a futures-oriented Integral systems intervention methodology. This is the creation of potential for healthy transformation of self, culture and nature as they navigate towards preferred futures.

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