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■ *Research Paper*

A Unifying Theory of Systems Thinking with Psychosocial Applications

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Systems thinking is a field characterized by a baffling array of methods and approaches. We posit that underlying all, however, are four universal rules called DSRP (distinctions, systems, relationships, and perspectives; each containing two co-implying elements). We make distinctions between and among things and ideas, each implying the existence of an other. We identify systems, which are composed of parts and wholes. We recognize relationships composed of actions and reactions. We take perspectives consisting of a point (from which we see) and a view (that which is seen). We argue that DSRP offers a unifying and organizing principle for the field of systems thinking and an indispensable analytical tool for solving complex problems. At the same time, the metacognitive practice of applying these rules has significant psychosocial implications, such as increasing self-awareness, empathy, and a sense of belonging, while decreasing stereotyping and self-harming and other-harming orientations. As such, DSRP has the potential to create advanced analytical thinkers with prosocial orientations. Copyright © 2015 John Wiley & Sons, Ltd.

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The field of systems thinking contains an immense diversity of methods, approaches, and specialties (Schwarz, 1996; Midgley, 2003; François, 2004). Any thorough exploration of this pluralism can be as discouraging as it is impressive for the newcomer to the field. This extreme internal differentiation poses challenges not only for the newcomer but for the field as a whole. What is universal to systems thinking? Is there a common metric by which we can measure the disparate contributions in this area? How can we speak across increasingly reified boundaries of theory and practice to cumulate knowledge in and advance our field? How can we evolve existing methods and practices to be more robust, grounded, and systemic?

The answers to these questions lie in meeting complexity with simplicity: we posit that there are four universal patterns or rules that undergird systems thinking of all kinds (Cabrera, 2006).

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These rules, which go by the acronym DSRP, do more than describe or categorize the practices and frameworks within the field. We argue that they provide not only a unifying theory but also an organizing principle for systems thinking as a whole.

There are many advocates of methodological pluralism within the field [see, for example, Jackson and Keys (1984) and Flood and Jackson (1991a,1991b) for some early, influential works], and this pluralism is quite popular [widely cited authors include Mingers and Gill (1997), Jackson (2000), and Midgley (2000)]. Indeed, pluralism (the process of diversification, specialization, and differentiation) is a natural outgrowth of scientific innovation over time. Furthermore, some have offered classifications of systems thinking methodologies (e.g., Jackson and Keys, 1984; Jackson, 1987; Flood and Jackson, 1991a; Gregory and Jackson, 1992a,1992b), while others have opposed this kind of rationalization of the field (e.g., Mingers, 1992, 1993; Tsoukas, 1992; Gregory, 1996a,1996b; Midgley, 2000; Boyd *et al*., 2007; Zhu, 2011). Whichever approach is taken, however, the fact that the diversity of methodologies goes hand in hand with increasingly diverse interpretations of the term 'systems thinking' challenges us as a transdisciplinary practice if we lack underlying and shared principles (Cabrera 2006, p. 7). What we are proposing with DSRP, then, is a vision of the field of systems thinking that embraces the plurality of methods but, critically, espouses a unifying underlying structure to all those methods (Cabrera, 2014). DSRP enables universality and pluralism to coexist.

There is extant work on distinctions, systems, relationships, and perspectives in systems thinking—some of which we cite later when considering each rule in turn—although none have offered an all-encompassing, complete theory that explicates the structure, dynamics, and function of systems thinking. Beyond this, however, there is an impressive amount of scholarship in other disciplines showing the theoretical and practical universality of these rules. In isolation, these cross-disciplinary examples show very little other than consistency with the theory, but in the aggregate, they provide a convincing pattern of consistency across a broad swath of disciplines.[1]

DISTINCTIONS, SYSTEMS, RELATIONSHIPS, AND PERSPECTIVES (DSRP)

We hold that DSRP is the essence of systems thinking: four cognitive patterns that are universal to our various subfields and methods but more generally to human thought. DSRP involves distinctions, systems, relationships, and perspectives. *Distinctions* can be made between and among things and ideas; things and ideas can be organized into *systems*, in which both the parts and the wholes can be identified; *relationships* can be made between and among things and ideas; and lastly, things and ideas can be viewed from the *perspectives* of other people, things, and ideas.

It is useful to consider each rule in greater depth. Take distinctions (see Young, 2005; Peterson and Sko-Grant, 2003). Sometimes we define a thing or idea with conscious reference to what it is not. For example, systems thinking is not reductionism, not bivalent logic, and the like (Fuenmayor, 1991). However, when identifying a thing, the other is not always consciously considered. The practice of identifying the other increases our awareness, enlarging our thinking (Fuenmayor, 1991; Midgley and Ochoa-Arias, 2001). While making distinctions is innate to our thinking processes, the distinctions we make are often not without practical and moral implications (e.g., an 'us' presupposes a 'them'). We will discuss this further later; for now, let us remember that making distinctions is an exercise in defining boundaries, demarcating what something is from what it is not (Ulrich, 1983). And we all know defining the problem and the question, including what is *not* included in it, is a critical part of

[1] We have collected thousands of cross-disciplinary examples from the last few decades. For instance, on distinctions, see Davies (1982), Clark (1994), Durand and Calori (2006), and Ferry *et al*. (2015). On systems, see Wertheimer (1923), Ackoff (1971), Tversky and Kahneman (1981), and Anderson (1991). On relationships, see Piaget (1974), Cook and Campbell (1979), Schulz and Gopnik (2004), and Greene (2010). Lastly, on perspectives, see Marvin *et al*. (1976), Neale and Bazerman (1983), Schober (1993), and Batson *et al*. (1997).

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addressing any practical issue or research question (Churchman, 1970; Rochefort and Cobb, 1994).

There is considerable scholarship within the systems thinking tradition on this (e.g., Goguen and Varella, 1979; Ulrich, 1983; Glanville, 1990; Midgley *et al*., 1998; Midgley, 2000; François, 2004). But distinguishing boundaries is more often than not construed as defining the boundaries of the system under consideration or identifying what stakeholders think ought to be done (e.g., Ulrich, 1983). The distinction rule explicates that every thing or idea represents a boundary decision and is therefore fractal in its use—occurring at every level of scale. Therefore, the distinctions rule applies to the systems, relationships, and perspectives rules as well. Demarcating boundaries, distinguishing ideas and things from the other, occurs when we recognize and identify systems, relationships, and perspectives both internal and external to the system under consideration.

Now let us consider the part–whole structure of all systems. The systems rule incorporates the best practices of the proverbial two types of scientists: the splitters and the lumpers.[2] At the same time, it offers a way out of the tired practice of pitting holism against reductionism (also see Bunge, 1977). In reality, a part without a whole is an absurdism, but a whole that has been stripped of its internal differentiation is equally impossible. So the systems rule makes the coimplicative relationship between part and whole explicit; one cannot consider a part without considering its whole, and yet, one cannot consider the whole that encompasses every system *ad infinitum*. Thus, distinctions are inevitably drawn (Ulrich, 1983). Recognizing systems involves breaking things down into their constituent parts and also grouping parts into larger wholes (e.g., Angyal, 1941; Bertalanffy, 1956, 1968; Hall and Fagen, 1956; Marchal, 1975; Kosko, 1993; Latimer and Stevens, 1997, 1998, 1999; Hoffman, 1998; Mortensen, 1998; Rakover, 1998; Opie, 1999). Only through taking micro-level and macro-level perspectives can we understand complex phenomena.

No matter what the object of our analysis is, we can profitably consider its constituent parts and the larger whole of which it is part (and in a fractal manner, the parts of parts and the progressively larger wholes that constitute every system). Finally, remember that a thing or idea is almost invariably simultaneously a part and a whole: your morning lecture is a whole composed of your scholarly observations, perhaps some Socratic questioning, possibly a quiz. Yet, it is one part of a class on systems thinking. Obviously, the more complex the phenomenon under consideration, the more enriching it is to identify the parts and the whole that constitute a system (that is likely composed of multiple systems itself).

Making part–whole identifications, when combined with seeing perspectives, has the potential to undermine the undue influence that categorization (and derivative structures such as taxonomies, classifications, and hierarchies) has generally in cognitive science and specifically in many subfields of disciplines such as biology, psychology, physiology, and education. For example, respectively, the species concept, Maslow's hierarchy of needs, the food pyramid, and Bloom's taxonomy are all influential categorical concepts that have proven to be invalid yet have influenced many in the public sphere and have led us astray scientifically (Cabrera and Cabrera, 2015).

Moving on to relationships, we can see that these can take innumerable forms, such as feedback loops, correlations, and causalities. Thinking in terms of relationships is foundational to both cybernetics (e.g., Wiener, 1948; Bateson, 1970) and system dynamics (e.g., Forrester, 1971; Maani and Cavana, 2000). Considering relationships is a natural extension of examining systems, as the parts of a whole can be connected in myriad ways, be they conceptual or more tangible (including perhaps physical) or somewhere between the two. We are all accustomed to drawing lines to denote connections (relationships) between various things. Of course, we can do this with varying degrees of specificity. We can simply note A and B as connected: we can say that A causes B, or we can specify that A and B are negatively correlated. Beyond this, we might

[2] The differentiation 'lumpers and splitters' is first attributed to Darwin. The term—separating those who make many distinctions and see greater diversity from those who make fewer distinctions and see more similarity—first appeared in print in Simpson (1945).

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describe the relationship between A and B as characterized by an entire system and identify its parts, thereby utilizing the distinctions and systems rule to further explicate the relationships rule.

There are also important problems caused by our bias toward identifying structural parts and ignoring dynamical, interacting ones (Forrester, 1971). By all accounts, it is the relationships between and among things that lead to complexity. Yet, when we deconstruct systems, we often do so by isolating structural parts but not dynamical ones. In neglecting these dynamical parts, we search for explanations without them and end up with misguided concepts of emergence that border on the magical.[3] Emergence does not mean that the sum is greater than the parts *unless we have ruled out relationships as being part of the whole*. If we were to account for all the structural and dynamical parts, the whole would equal precisely the sum of the parts in interaction.

The DSRP algorithm holds that relationships have their own identities and are interdependent. This is in contrast to the vast majority of modern network theory, where the relationship is identified only by the nodes that it relates. Instead, DSRP compels us to identify these relationships (for example, the relationship between Carlos and Jack may be Alissa) and indicate when relationships act as whole systems inclusive of subparts and perspective.

Finally, we have more to say about perspectives, which consist of a point (the vantage point or the 'looker') and a view (that which is seen or 'looked at'). Once perspective taking is introduced into the equation, it is possible to say that parts and wholes may have different *meanings* from different points of view (e.g., Churchman, 1968; Checkland, 1981; Ulrich, 1983; Checkland and Scholes, 1990; Checkland and Poulter, 2006) and therefore that human cognition is germane to the analysis of systems. Perspectives can be used to expand our thinking and include more options or to restrict our thinking and cause greater focus when necessary [here we support Ulrich (1983) and Midgley and Ochoa-Arias (2004) in their view that systems thinking does not imply only the expansion of boundaries through perspective taking]. Perspectives pervade all forms of thinking, even if they are sometimes less obvious than distinctions, systems, and relationships. Thus the age-old adage: when we change the way we look at things, the things we look at change. Indeed, Churchman (1968) offers the famous aphorism that the 'systems approach begins when first you see the world through the eyes of another' (p. 231). Perspective taking is central to a number of 'soft' systems methodologies that have been built on Churchman's insight (e.g., Mason and Mitroff, 1981; Ackoff *et al*., 2006; Checkland and Poulter, 2006; Christakis and Bausch, 2006).

Perspectives are often embedded in some of the most wicked problems we face as a society (Rittel and Webber, 1973), creating the need for systems thinking based on simple rules. A perspective can be seen as a lens through which we view the world, its objects, and ideas. True awareness of our perspectives is akin to unmasking our mental models of reality, which ideally enables us to better approximate that reality (and this view holds that the product of systems thinking, our mental models, is always tightly coupled with, and inseparable from, our actions/behaviors). Our wicked problems result from the mismatch between reality and our perceptions of reality (Bateson, 1972, 1979), so perspectives are truly critical to systems thinking and problem-solving of all kinds.

D, S, R, and P Contain Two Co-Implied Elements

An important feature of DSRP is that each rule co-implies two elements. For example, with respect to distinctions, the existence of a *thing or idea*[4] automatically implies the existence of an *other* and vice versa. Table 1 illustrates the co-implication involved in the systems, relationships, and perspectives rules as well. As you can see, *part* implies the existence of a *whole*, an

[3] Cabrera (2006) isolated three different uses of the term emergence and posited that two were invalid and magical-leaning and the third was semantic around the mathematical definition of the term 'sum'.

[4] In previous work (Cabrera and Colosi, 2008), we labeled the reference thing or idea as the 'identity'. Whichever word is used, the salient feature is the co-implication of thing/idea (or identity) and *other*.

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Table 1 Four DSRP rules, each with two co-implied elements

Simple rule	Element 1	Element 2
Distinction (D)	Thing/idea	Other
System (S)	Part	Whole
Relationship (R)	Action	Reaction
Perspective (P)	Point	View

action implies a *reaction*, and a *point* implies a *view*. We argue that the four DSRP rules and their co-implying elements are the essentials of systems thinking. While the underlying rules are simple, their combination and repetition can produce outcomes of near infinite complexity.

THE SIMPLICITY UNDERLYING COMPLEXITY

While we enumerate D, S, R, and P separately, the reality is that they co-occur. For example, while distinguishing a thing from an other, we can also note that it exists as part of a system and in relationship with other parts, which can all be seen from a particular perspective. Let us take an example. Perhaps we are considering an assistant professor and making that distinction, which implies the existence of other(s), or 'not-assistant professors'. We can simultaneously see the assistant professor as part of a system, say an academic department. Within this department, we can identify relationships between the assistant professor and other parts, such as graduate and undergraduate students, senior colleagues, department chair, post-docs, and office and research staff. Note that we can specify these relationships (e.g., mentor/mentee or boss/subordinate). Finally, we can take a perspective on the assistant professor, for example, viewing her or him from the point of view of students or staff or even more abstract perspectives such as salary or publication record.

Although we are fond of calling DSRP 'systems thinking made simple' (Cabrera and Cabrera, 2015), we do not mean to suggest that we are simplifying the field of systems thinking. Rather, we consider systems thinking as a complex, adaptive, and emergent phenomenon that has four underlying, universal, and simple rules. Indeed, the operation of these rules serves to demystify the idea that systems thinking is an emergent property. It is well understood that complexity emerges from the collective action of agents following simple rules (Couzin *et al.*, 2002; Gell-Mann, 1996). DSRP explicates the underlying formalism for these simple rules and interactions, as seen in this equation:

$$ST_n = \bigoplus_{\text{agents}\, j \le n} \bigotimes \left\{ : D_o^i \bigcirc S_w^\rho \bigcirc R_r^a \bigcirc P_v^\rho \; : \right\}_j$$

The equation explains that autonomous agents (information, ideas, or things) following simple rules (*D*, *S*, *R*, and *P*) with their elemental pairs (*i-o*, *p-w*, *a-r*, and *ρ-v*) in nonlinear order (:) and with various co-implications of the rules (○), the collective dynamics of which over a time series *j* to *n* lead to the emergence of what we might refer to as systems thinking (*ST*).

What emerges from the use of DSRP is an adaptive, evolving mindset—something that closely resembles complex and adaptive systems thinking. If accepted, these rules would serve to make the field more unified and broadly accessible and as such would enable better carpentry or parenting as much as more robust network and system dynamics modeling. In keeping with this goal, our research lab has developed systems thinking and modeling software that enables everyone to visually map their ideas in a way that makes them better systems thinkers and learners. We have taught systems thinking to groups of students from PreK to graduate school and to professionals in and outside academia (Cabrera and Cabrera, 2012b). This is because DSRP is content agnostic, so it can be applied to any topical domain or existing methodology. The simplicity of the four rules and their broad application makes DSRP inherently democratic. We are constantly increasing our evidence base with case studies and statistics showing that systems thinking serves to boost learning across a host of disciplines and activities.

We think systems thinking made simple is extremely promising in a world that is increasingly complex, changing, and in which we are ever more rapidly inundated with information. For example, our lab is working with the University of Wisconsin—Extension on a program called

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ThinkWater, a federally funded[5] project to increase the application of systems thinking to water education, extension, and research. Evaluation results show that youth participating in ThinkWater education efforts master course content more completely when first taught a DSRP lesson; students also develop characteristics of systems thinkers. What might surprise some people, however, are some of the ethical and humanistic implications of our work on DSRP (see chapter 10 in Cabrera and Cabrera, 2015). For example, case studies (Cabrera and Cabrera, 2012a) in rural Pennsylvania involving adjudicated youth in three residential centers showed high levels of transfer from what students were learning in the core curriculum utilizing DSRP to their own therapeutic interventions. One student remarked, 'I now see the relationship between triggers, my self destructive behaviors, my victims, and my future' (Cabrera and Cabrera 2012a). We explore the ethical implications of DSRP in the succeeding text.

PROSOCIAL IMPLICATIONS OF DSRP

We believe that simple DSRP rules create not only highly intelligent systems thinkers but also emotionally intelligent, prosocial people with an ethical compass. Let us explain. Our minds are not only responsible for our cognitions, they also process feelings, thoughts, emotions, and motives. See Maturana and Varela (1987) on the link between emotions and cognition. Just as DSRP increases awareness of our own thinking, its application produces awareness of, and reflection upon, our internal landscape, our feelings, and our relationships with ourselves and others (see Gregory, 2000, for a discussion of the importance of critical self-reflection, among other things, to systems practice). Consequently, systems thinking develops our analytical and social/emotional selves in tandem.

A systems thinker is an emergent property produced by following the simple rules of DSRP. Therefore, we suggest that the best way we can create more ethical, compassionate, self-reflective and prosocial individuals is not by directly inculcating morals but by instruction in DSRP combined with opportunities for and examples of its application.

What is the relevance of DSRP in domains traditionally associated with psychology and sociology? How exactly does DSRP encourage balance between the needs of oneself and the other as well as between our emotional and cognitive natures? How does it increase empathy and understanding and general interpersonal awareness? How does it promote introspection and prosocial behavior? The answer to each of these questions is through *metacognition*, or awareness of one's thinking, which includes emotion-laden thoughts.

DSRP increases awareness that our views are mental models of reality, at best good approximations, but frequently poor ones. It promotes awareness of

- the distinctions we make—who or what is included and who or what is not;
- the perspectives we take and how they shape our understanding of events and internal processes;
- the fact that there are multiple ways to combine and recombine parts (e.g., people) into wholes (e.g., groups); and
- our interrelatedness, which is conducive to feelings of belonging and also increases cognizance of our effects on other people.

Each rule corresponds to an ethical stance. We will delve into each simple rule briefly to better illustrate the significance of DSRP for developing metacognitive, sophisticated learners, and prosocial human beings of the type needed to solve societal problems. The application of DSRP to our internal lives aptly demonstrates the interrelation and simultaneity of the four rules (i.e., one will see how making distinctions and having awareness of relationships, systems, and perspectives frequently co-occur).

Distinctions

Every time we make a distinction by discussing a thing or idea, we are creating an other, even

[5] Based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under Agreement No. 2011-51130-31148.

if unconsciously. It is lack of attention to this other that plagues some forms of systems thinking, be it unidentified interactions, concepts, complexities, systems, perspectives, or frameworks. Being aware of distinctions that we and others make is an important ethical skill (Ulrich, 1983), in that these distinctions can often be oppressive to the individuals classified as something (or those not thus classified). Awareness of us/them distinctions, for example, is a pivotal step in understanding the marginalization of the other. Midgley and Pinzón (2011) point out that making the other visible is not enough to promote ethical action; making the other visible can either increase or decrease marginalization depending on whether positive or negative attributes are ascribed to the other. While we agree, it is important to further elaborate our understanding of distinction making and ethical action, and DSRP as an algorithm helps to do this. DSRP identifies the other as a first step in an ethical mental process. Resultant of this identification of the other is the acknowledgement that it is a distinct entity, inclusive of unique relationships, existence in unique part–whole configuration, and, critically, possessing a unique perspective. It is ethical to acknowledge the totality of the other in this way.

Distinctions also have importance *intra*personally. Distinguishing thoughts from feelings is a critical step in developing emotional intelligence, as is distinguishing one feeling from another. The self-awareness generated by applying the distinction rule is a prerequisite to any sort of emotional control. Furthermore, distinguishing others' thoughts and feelings from our own reduces the likelihood of projection [a defense mechanism of attributing one's unacceptable thoughts or feelings to others (Quinodoz, 2005)] and the further defensive thoughts and actions that frequently result. Applying DSRP to one's emotions enables more adaptive responses, learning processes, and reductions in self-destructive behavior and associated anxiety and depression (see Kashdan *et al*., 2014, on making distinctions in the context of self-reflection). The salutary effects of making distinctions are also related to those of recognizing systems composed of wholes and parts.

Systems

Applying DSRP shows us that categorizations are really part–whole groupings from a perspective, rather than real-world distinctions. Practicing an ethic of identifying perspectives applied to part–whole systems could eventually lead to the decline of moral systems, schema, and scientific facts constructed around discrete taxonomies, categories, and hierarchies.

Identifying different parts is an important ethical skill, in particular to combat the prevalence of generalizations and stereotypes about the other. For example, being able to identify an increasing number of parts, each with their own particular perspective, can deter us from assuming there is a monolithic Muslim perspective on terrorism or Republican view on gay marriage. An appreciation of nuance and diversity would go far in healing some of our fractious political dialogue. Similarly, breaking our complex emotional reactions into discrete feelings motivated by discrete mental models can do much to increase emotional maturity and self-regulation (Kashdan *et al*., 2014).

Finally, 'lumping' things into wholes is also socially adaptive, in that it enables us to focus on our similarities, what binds us together. It is quintessentially human to need and want to be part of something larger than oneself (Durkheim, 1951). Feeling one's 'parthood' or belonging to a larger whole is conducive to cooperation and all sorts of prosocial behavior and is correlated with improved physical and emotional health outcomes (Hagerty *et al*., 1996).

Relationships

Greater understanding of the multitude of relationship types promotes a deeper comprehension of causality, which as systems thinkers know, often operates in nonlinear ways (Newton, 1687; Piaget, 1974; Strogatz, 1994; Bar-Yam, 1997; Bransford *et al*., 1999; Cabrera, 2006, p. 70–72). The relationships rule solves a number of pitfalls in traditional Western thinking, including the tendencies to think solely in terms of direct causality, to fail to appreciate the importance of

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context, and to overlook relationships as parts of a system. This nuanced (i.e., nonlinear and dynamical) understanding of causality helps us understand and analyze wicked problems in all realms. Taking a complex or nonlinear view of relationships, for example, reduces the assignment of blame or credit to individuals or groups, promoting compassion in general. Indeed, when disasters are analyzed using a systems approach, the blaming of individuals is often replaced with understanding how those individuals have interacted as parts of wider pathological systems (Fortune and Peters, 1995). Philosophically, this has implications for the idea of unadulterated free will, which undergirds much of our penal system and also several cultural tropes, such as rugged individualism and the American Dream rooted in equality of opportunity. We are not arguing against individual agency (or will) but instead for a thorough-going account of the multiple webs of causality (what might be termed structural constraints) in which individuals operate.

Looking at the elements of relationships—action and reaction—enables individuals to better appreciate the consequences of their actions. Combined with the systems rule, understanding relationships ideally makes us less likely to harm ourselves or others based on understanding that we are part of a larger whole. It can also reduce egoism (Shen and Midgley, 2007) and promote a broader definition of one's interests as incorporating the well-being of the community and its constituent members. We come to appreciate our own embeddedness as we recognize the complex forms of interdependence that mark our relationships and social structures.

Perspectives

Taking perspectives is integral to our thinking, and DSRP increases our awareness (metacognition) of the perspectives we take and those we do not take. Perspective taking builds upon distinction making (recognizing the other), enabling us to proverbially walk in the other's shoes (Churchman, 1968). It is a prerequisite to authentic understanding and empathy. Additionally, awareness that our views are merely one of many possible perspectives can inhibit prejudice and socially harmful forms of dogmatism. Communication with others who are unlike ourselves is greatly enhanced by the ability to take perspectives, as long as we do not fall into the trap of believing that we are able to understand others completely in their own terms, which can lead to a new dogmatism (Gregory, 1992). We can then follow those perspectives through in making our distinctions and recognizing systems and relationships.

Furthermore, perspective taking can lead us to examine our own cherished beliefs, see where our perspectives were uncritically adopted from social influences in our environment, and increase our mental and emotional flexibility, including self-acceptance (Churchman, 1979). We can evaluate our moral codes and personal values and beliefs more critically, which makes us less likely to blindly impose them on others (Romm, 2001). In a similar vein, we can reevaluate the 'golden rule', which is non-perspectival. Instead of 'Do unto others as you would have them do unto you', our maxim would be to treat others in a fashion analogous to how we want to be treated, given their perspectives on behavior. Making the golden rule analogous and therefore perspectival may at first appear as trite, but the implications for such a long-standing moral compass are significant.

CONCLUSION

We have posited that four simple rules underlie systems thinking of all kinds. We offer these rules—DSRP—as a unifying theory that inheres in all of the practices, approaches, and methods that make up the diverse and complex field of systems thinking. DSRP is a form of metacognition in which we consciously make distinctions (thing or idea/other) and recognize systems (part/whole), relationships (action/reaction), and perspectives (point/view). In over a decade of case study research and evaluation studies, we have demonstrated that this form of systems thinking can be taught at all levels and improves performance across multiple domains, effectively

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democratizing systems thinking (Cabrera and Cabrera, 2012b). Our concern is greater than improving cognition and analytical problem-solving, although these are absolutely critical goals in an interdependent, rapidly evolving world. We are also concerned with the moral and psychological development of prosocial human beings.

Whether considering our societal, national, global, or personal problems, both the problems themselves and the outcomes we want are frequently complex and not always susceptible to direct control. DSRP allows us to focus on simple rules that, in combination and repetition, produce the emergent properties we seek in our economic, social, political, and educational systems, and in ourselves. As we see it, these outcomes are generally more robust than ones achieved through direct, system-level manipulations. DSRP enables us individually and collectively to become more adaptive, better learners, clearer thinkers, and better humans.

As systems thinking teachers, colleagues, bosses, parents, and friends, we need to endow others with a powerful model of reflection that will bring their meaning-making processes more fully into conscious awareness. This awareness will of course increase their cognitive capacities and analytical skills, and it will also redound to their psychological and social benefit. In our experience, teaching DSRP has many positive externalities, including equipping people to better endure stressful events and situations, learn more adaptive responses, and reduce behaviors deleterious to the self and others. It creates more socially integrated, aware, and conscientious individuals. This makes for better friends, family members, colleagues, and group members.

DSRP is about much more than thinking; it is also about action. It is both theory and practice. Beset by increasingly complex political, economic, environmental, and social issues (and many which span all areas), we are first of all in need of a method that reveals the pitfalls in our mental models (Senge, 1990). DSRP offers this. Then it is incumbent upon us to explore the psychosocial effects of this form of metacognition. Even cutting-edge analytical tools like systems thinking are no match for complex, multi-system, political, economic, and social problems without the engagement of self-aware, conscientious, prosocial agents to figure out and enact solutions locally, nationally, and globally (Gregory, 2000). With DSRP, we can achieve both.

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