

Embodied Cognition as a Methodological Framework for Normative IR

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Tahseen K. Kazi

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Approved By:

Dr. Molly Cochran, Advisor

Dr. Edward Keene

Dr. Peter Brecke

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PART I:

Underspecification of Intersubjectivity in Normative International Relations and the Need for New Methodological Analysis

Introduction

Intentionality in human beings connotes an inherently subjective character to our interactions. We believe, desire, hope and fear, experience shame, pride and joy, and direct these and more mental states to our intentionality¹, yet in the past decades we have clung to the application of a scientific ideal for sociality drawn from Newtonian concepts of the mechanical interaction of unconscious particles. Social theorists from John Gerard Ruggie (1998) to David Campbell (1994) have called attention to the limitations of studying social dynamics to brute facts and objective realities. Quoting John Searle (1984, 61), Ruggie argues that intentionality cannot be reduced to material structural factors, but requires a nonmaterial epistemological framework because a mental state can bring about “the very state of affairs that it has been thinking about.” For Ruggie (1998, 95) the primary problem with predominant positivist thought² in IR today is that its “epistemology contradicts ontology.”

¹ I speak of intentionality here in the phenomenological (Husserl, Merleau-Ponty) and analytic (Frege, Russell) context of having a thought *of* or *about* something.

² Ruggie refers here to positivism as separating subject from object first, before doing anything else, and then focusing on objective forces. Ruggie (1998, 95) adds that in this way “regimes become external constraints on actors, not intersubjective frameworks of meaning.” In this paper I follow Hayward Alker

A subset of social interactions, described by Freidrich Kratochwil (1989) as institutional facts, can be further distinguished from brute, purely physical interactions because they consist of both constitutive rules and regulative rules, and therefore have meaning only within an intersubjectively understood context. Regulative rules are the more readily recognized constraining rules such as “Thou shall not kill” which order us to adopt a certain behavior. Constitutive rules are the conventions and acknowledged rule-structures that allow a move, such as announcing ‘check’ in a game of chess, to signify a threat to the opponent’s king. Before actors in social institutions can take any action, the social rules of the game must be defined. Before a quarterback can score a touchdown, a judge can declare a mistrial, or a teenager can play hookie from school, just what it means to do these must be agreed upon in the constitutive rules that make up the institutions of football, our courts and our educational system. Even once the constitutive rules have been established, the interactions that comprise institutional facts only make sense within the community of people having an intersubjective knowledge of their rule-structures.

It is precisely because international regimes are seen as institutional facts that constructivists posit (Ruggie 1998, 95) international regimes “rest on a core element of intersubjectivity.” It is through the consideration of international regimes as institutional facts that Ruggie brings the debilitating problem described above of ontology contradicting epistemology directly home to the study of international relations. Ruggie

(1996, 207) in his interpretation of positivism “as a shorthand way of conveying several meanings, including the optimistic/naturalistic/social engineering sense ... as well as ‘prediction and control oriented,’ ‘preoccupied with seeking independent explanatory causal laws,’ and claiming to be scientific in a data-based, value neutral way.” As noted by Alker, this does not imply that there is no merit to positivist IR, but that something can be gained by seeking an approach that incorporates its critics’ concerns.

adds that in a climate of such contradiction in IR even straightforward but primary empirical questions lead to strong disagreement, an important example of which would be, did the Soviet Union collapse because of U.S. policies aimed at drying out Soviet coffers or did the state implode due to changes in identity and intentions among its leadership?

Such disagreements explicitly challenge predominant neorealist and neoliberal concepts of material capabilities as the only significant component of international political structure, and through the challenge reveal both strengths and weaknesses of normative research programs. While neorealism considers the international structure as largely static, “the residue left behind by long-ceased historical processes” (Ruggie 1998, 133), normative theories hold explanatory power in their ability to accommodate structural transformation. However, a crucial question in this branch of political thought has as yet remained unanswered. For constructivists the question would read as, how do ideas, identity and interests result in institutional facts? A similar question asked from a postmodern perspective would be how is knowledge implicated in a dominant mode of subjectivity in the knowledge/power dynamic? More generally, what is the nature of intersubjectivity and how is it engaged between agents?

Indeed, the end of the Cold War has proven to be a predictive challenge to material interest-based neorealist and neoliberal theories, and has been influential in generating a resurgence of normative thought in international relations. However, this has deepened fractures that already existed in theoretical and methodological approaches in the field, resulting in a divide between normative and interest-based studies that is debilitating to

the field as a whole. While some normative theorists continue their scholarship from almost entirely within a subfield on one side of this divide, others find it crucial to take both sides seriously and consider an approach that incorporates both material and normative factors.

Predominant among scholars attempting to bridge the subfields is Hayward Alker, whose work on narrative modeling is a clear example of a methodological approach that is meaningful to both normative and interest-based theory. For rational choice scholars, game theory, particularly the work of Robert Axelrod, has provided valuable insights into the mechanisms by which actors' interests result in outcomes. Axelrod's most celebrated study (1984) shows that through computational modeling of iterated games among multiple actors (such as the Sequential Prisoner's Dilemma) equilibria not producible in one-round plays can be sustained, leading to emergent outcomes that are not reducible to individual actors. For Alker (1996, 323), Axelrod's evolutionary treatment of games is "impressive, but not fully formalized" because it underspecifies the ways in which games are "narratively guided, social construction and/or reconstruction exercises." Alker takes Axelrod's mechanistic models further, to more fully simulate and understand the complexity of human activities. By doing so Alker succeeds in creating models that are meaningful to interest-based scholars, while addressing the role of norms as social guides and constraints that is a central issue for normative scholars.

It is the aim of this paper to continue in the spirit of Alker's approach while focusing here on the role of intersubjectivity in normative IR. The question specifically asked in this

paper is, is there a scientific methodology through which intersubjectivity can be theorized and modeled so as to increase our understanding of the role of sociality in international dynamics?

These two questions—on the nature of intersubjectivity and methods by which it can be modeled—motivate my research and this paper. By distinguishing and applying relevant theoretical and methodological advances from biology, cognitive science and computational modeling to the action of intersubjectivity in international relations I intend to illustrate how the employment of new research in cognitive science can further our understanding of the *social*(both normative and interest-based) means by which collective institutional knowledge can develop.

I argue that the application of methods developed within the context of this new research in cognitive science, collectively called embodied cognition or second generation cognitive science, allows for a normative methodological framework that is also accessible and meaningful to interest-based scholarship. It is meaningful through the greater potential for a formulation of intersubjectivity that this framework fosters. By grounding normative theory in a deeper understanding of the intersubjective means by which societies are formed, normative theory can offer an alternative view to the rational actor model which can be formulated, debated and contested by scholars on all sides. Alker (1996, 35) reminds us that presently, at least to some extent, the rational actor model dominates the theoretical field of IR, and without a different model to challenge it a danger arises because when one theory is predominant “certain questions never get

asked, certain possibilities [are] never considered.” What is attempted here is the introduction of a methodology through which an alternative conception of social interaction, one that addresses intersubjectivity, can be developed.

Furthermore, I suggest that methods carried within this framework could themselves become for a discourse between the two fields that would allow a sharing of knowledge across the normative/interest-based scholarship divide, which has so far been difficult to accomplish. Finally, the varied methods promoted by the framework of embodied cognition offers an increased likelihood that they will be utilized by scholars whose approaches can range from language studies to mathematical models.

It should be clearly stated at the outset that what is offered here is *not* a theory, but a *methodological framework* for normative IR, particularly one that seeks to engender a dialectical discourse with interest-based scholarship. Quoting Alker (1996, 35), “A theory to challenge Neorealism must show how intersubjective conditions constitute material power and interests in the first place.” What is attempted here is not the creation of this theory itself, but of a methodology through which intersubjective conditions that constitute material power and interests can be better understood. This methodology should not be mistaken for ontology: it does not suggest one concept of what intersubjectivity *is*; that is hypothesized in theoretical normative work. What it does do is give the scholar the *means* by which one can learn more about how intersubjectivity is enacted. It is true, as stated by Alker, that legitimate methodological differences may generate different substantive conclusions. Thus the potential of embodied cognition as a

methodology to direct theory is as possible as with any other methodology, and it is up to the scholar to consider when such substantive conclusions are legitimate and when they are not.

Of course, this paper is not new in suggesting methodologies for normative IR, many methodologies including discourse analysis, process tracing, genealogy and comparative studies have already been applied to the field. What is more novel is that here one framework is offered behind the methods suggested; the framework being second generation cognitive science. Through this framework the scholar can access knowledge in other disciplines to further her own studies.

This paper is divided into three parts. In part I, I introduce intersubjectivity in greater detail and show that this concept is underspecified in normative IR literature. Rather than existing in only one form, intersubjectivity is enacted in a range of forms from weak to strong. I study Ruggie's application of intersubjectivity in international dynamics to show that normative IR literature suggests that intersubjectivity can be conceived of with varying strengths. Varying strengths of intersubjectivity are allocated to different contexts in descriptions of international dynamics, but normative theorists have little understanding of why and how this variation is enacted. Since different strengths of intersubjectivity connote different behavior, this ambiguity about the nature of intersubjectivity weakens prospects for normative theorists to develop robust constructs of international dynamics. I support the suggestion that the underspecification of intersubjectivity in normative literature weakens theoretical constructs by focusing on

one predominant work in constructivist IR that employs intersubjectivity, Alexander Wendt's *Social Theory of International Politics* (1999). Although Wendt is unusual in that he attempts to give reasons for varying the strength of intersubjectivity in different dynamics, I show that serious ambiguities exist in Wendt's conception of why intersubjectivity is rendered ultimately weak at the international level in his work. These ambiguities suggest that, given the centrality of intersubjectivity in normative theory, one cannot reliably develop a normative conception of international relations without a stronger understanding than exists today of how intersubjectivity is enacted and scaled up. I close part I with the suggestion that once a role for intersubjectivity is acknowledged in IR (as it certainly is in normative IR) one must depart from strictly foundationalist theories to allow for the possibility of strong forms of intersubjectivity to be enacted, and review directions offered by Hayward Alker (1996) and Molly Cochran (2002) that promote practical reasoning and philosophical pragmatism as methods of conducting research in a field of IR that acknowledges highly intersubjective interaction.

Having provided the motivation for developing a stronger understanding of intersubjectivity in normative international theory, I introduce the emerging field of embodied cognition in part II as a field from which a methodological framework for normative IR can be adopted. I begin this part by introducing key theories that make up the pragmatic and phenomenological underpinnings of embodied cognition, and suggest that its conceptualization of human cognition at the individual level is both complementary and convergent with pragmatic thought in IR. The convergence of the two fields is shown specifically through comparisons of *conceptual* (and not simply

perceptual) thought in embodied cognition, and in pragmatic constructs for a social science of international relations developed by Cochran. An introduction to current foundational research in embodied cognition follows, so as to supply the reader with some background of the scholarship on which the methodologies to be described in part III are based. Part II ends with a discussion of the applicability of adopting embodied cognition methodologies beyond pragmatic thought to a wider domain of post-positivist IR, following Cochran's arguments for the relevance of pragmatic methods in general for post-positivist IR.

Part III begins with a discussion of three key elements of embodied cognition offered by the foundational research highlighted in part II. It is then shown that these three elements can serve as guidelines for the development of research methodologies in IR. Several research methodologies which follow these elements and thus support an embodied cognitive view at the social level are then introduced, with the methodologies falling into three broad themes: context studies, linguistic systems and dynamic systems modeling. Finally, possibilities for direct application of these methodologies for normative IR are discussed in some cases, while in others more indirect implications for an IR methodology are offered.

This paper takes on a broad view to outline the potential for new methodologies in normative IR suggested by embodied cognition. Instead of offering one concrete methodological application of concepts from embodied cognition, I have chosen to suggest that this field itself offers us a methodological framework from which various

methods can be adopted. The advantage of the approach of this paper is that it shows the wide potential for furthering normative IR through interdisciplinary, scientific studies with fields ranging from linguistics to mathematical modeling within a larger framework of embodied cognition. Its drawback is that no one of these methodologies is applied here, or indeed exhaustively addressed. However, given the youth of embodied cognition, and the recent emergence of many of these methodologies, I believe at this time a general overview is the more appropriate direction to take.

The Meaning of Intersubjectivity and its Role in Normative International Relations

Normative thought—otherwise diverse and sometimes conflictual—shares common ground in its criticism of interest-based IR’s depreciation of the role of intersubjectivity in agent dynamics. In materialist thought, an emphasis on interest-based behavior only allows intersubjectivity to influence dynamics to the extent that it is understood as perception. A classic example of this is *Perception and Misperception in International Politics* (1976) wherein Robert Jervis finds that decision-makers’ interpretation of the political environment is mediated by their beliefs about social life, but for Jervis these perceptions of the world and of other actors, and any subsequent treatment of them, diverge from true reality in patterns that we can detect and for reasons that we can understand. He argues that the discrepancy lies between the real (objective) world and the

agent's mental (subjective) world. Elsewhere, Jervis's work on complexity takes on a different slant, focusing instead on independently rational political actors whose rationality is confounded by the cognitive shortcuts they take and by their inability to predict the consequences of their actions in complex systems.

For normative theorists deficiency in intersubjective knowledge can be described as neither the result of an objective/subjective disconnect, nor the product of a cognitive overload from competing (or imperfect) information. As Emmanuel Adler (1997) notes, "intersubjective meanings are not simply the aggregation of the beliefs of individuals ... Rather, they exist as collective knowledge ... This knowledge persists beyond the lives of individual social actors, embedded in social routines and practices as they are reproduced by interpreters who participate in their production and working."

Although it could be argued that this break from traditional IR over the relevance of intersubjectivity is the basis for a generational turn in the field, a closer look reveals significant variation over intersubjectivity's meaning within normative thought. For example, Alexander Wendt seems to conceive of a weaker definition than Adler and others (Risse and Sikkink 1999, Finnemore and Sikkink 2001, etc.), only directly mentioning intersubjectivity in *Social Theory of International Politics* in the context of "intersubjective understandings" that are equivalent to "common knowledge". He writes (Wendt, 161), "Both refer to the beliefs held by individual agents about each other ("inter"- "subjectivity"), and both explain in intentional fashion, entering into social explanation through the belief side of the desire plus belief equation."

In the absence of a clear definition of intersubjectivity in IR, I will employ cognitive research to offer a definition of intersubjectivity that encompasses its two forms: a common one that is analogous to Jervis' understanding of perception, and a continuum of intersubjectivity (from weak to strong) in an experiential form. As mentioned above, in its common form intersubjectivity is derived from a Cartesian subjectivity among isolated, independent subjects. Here, the object comes first, followed by agreement between subjects (either accurate or not) as to its nature. Intersubjectivity is only allowed in its common form (i.e. as perception) in constructs that are purely interest-based, such as the simplest rational choice model and Waltz' neo-realism.

In its experiential form intersubjectivity inhabits a continuum of meaning, superseding subjectivity at its weakest and antecedent subjectivity when strongest. In the weakest form of experiential intersubjectivity mutual interaction between subjects influences each subject's experience of participation, and the subjects undergo a shared view of an "experienced interiority", such as their beliefs about one another, in agreement with Wendt's notion of common knowledge. This is a weak form of experiential intersubjectivity because here the subject comes before the intersubjectivity itself: thus the form of a subject's cognition is only slightly changeable through interaction with others. A relatively weak notion of intersubjectivity can be found in Ernst von Glasersfeld's (1995) radical constructivist (and cybernetic) concept of second-order models of intersubjectivity.

In its strongest form, experiential intersubjectivity gives ontological primacy to the relationship of intersubjectivity itself. As de Quincey (1998) notes, “All individuated subjects co-emerge, or co-arise, as a result of a holistic "field" of *relationships*. The being of any one subject is thoroughly dependent on the being of all other subjects, with which it is in relationship.” Here intersubjectivity is antecedent to subjectivity, and the fact of a subject’s cognition is a consequence of intersubjective participation³. This formulation of intersubjectivity is correspondent with Humberto Maturana and Francisco Varela’s (1980) ideas of the emergence of knowledge through social coupling (to be further discussed in part II).

Let me illustrate the importance of establishing the strength of intersubjectivity with an example of how varying strengths of intersubjectivity in a given context would affect an observer’s understanding of the resulting behavior of interacting subjects. In a fully described (that is, fully known) situation, if only a very weak form of intersubjectivity is enacted between subjects then an observer’s knowledge of the causal dynamics underlying the interacting subjects’ behavior can be more readily settled by approximating that the interaction occurs without any intersubjectivity. This is because here the interacting subjects can be presumed to have desires and beliefs that are largely independent of the interaction, so once these are known they can be presumed to remain constant throughout the interaction. In line with Wendt’s suggestion above, here Searle’s equation of desires and beliefs forming intentionality can be fairly safely adopted.

However, if a very strong form of intersubjectivity is at play in exactly the same initial

³ From here on in this paper, by speaking of intersubjectivity I will be referring to its experiential form, and use the term perception when discussing its common form.

context, then the knowledge of behavior itself is close to entirely dependent on the changing nature of the interaction in time, since the interacting subjects' identities co-emerge through the interaction.

Therefore, all else being equal, the evolving nature of identity between subjects under strongly intersubjective interactions would lead to highly context dependent and dynamic behavior, while weak intersubjectivity among subjects would result in behavior that is less dependent on the interaction in time and more generalizable over varying contexts. In neither of these examples is there a fixed Archimedean point from which resulting behavior can be exactly grounded; for this to occur intersubjectivity would only be enacted in its common form, as perception. However, a weak intersubjectivity allows that the settled knowledge of behavior is applicable to a larger domain of "phase space" than does a strong intersubjectivity (by phase space I mean the possibly infinite dimensional space that exactly describes the particular location, time, cultures, emotions etc. of interaction). That is, the stronger the intersubjectivity, the more contingent the nature of dynamics. Thus the behavior resulting from weakly intersubjective interactions can be generalized to more (highly diverse) contexts and therefore carries a stronger predictive quality.

Given that the strength of intersubjectivity affects the contingent nature of resulting behavior, once we know how strong the intersubjectivity enacted in international relations is, IR theorists will have a better understanding of what methodologies can be used to inform theories. However, normative theory uses varying strengths of

intersubjectivity to describe international dynamics. This variance is exemplified below in a review of Ruggie's application of intersubjective dynamics to IR.

It is clear from current IR literature that no consensus has been reached among scholars as to what strength of experiential intersubjectivity a normative IR theory should afford. Additionally, if this strength of intersubjectivity should be understood as context dependent, then it is certainly not clear from normative IR why certain contexts call for a stronger intersubjectivity while others do not. As an example of the varied strengths of intersubjectivity applied in IR, I briefly review two articles by Ruggie to show that he applies different levels of intersubjectivity to different contexts.

Varying Strengths in the Application of Intersubjectivity: Illustrated in Two Essays by John Gerard Ruggie

In "Territoriality at Millennium's End," Ruggie (1998, 172-197) illustrates his argument about the power of intersubjectivity through historical analysis of the structural transformation from the medieval to modern system. He employs the epistemic dimension of social life as one of three "raw materials" (along with material environments and strategic behavior) that were drawn upon to construct the modern system of states after the Peace of Westphalia. Historians have long noted the impact of changing views of the natural world to "autonomous bodies-in-motion in a field of forces

energized solely by scarcity and ambition” (Ruggie, 185) as having a significant impact on the emerging self-image of European territorial rulers during this time. For Ruggie the most significant of these changing views occurred with the invention of the single-point perspective in the visual arts. He states,

But of greatest significance is the fact that this was precision and perspective from a single point of view: a *single* point of view, the point of view of a *single* subjectivity, from which all other subjectivities were differentiated and against which all other subjectivities were plotted in diminishing size and depth toward the vanishing point ... The concept of sovereignty, then, represented merely the doctrinal counterpart of the application of single-point perspectival forms to the spatial organization of politics. (186)

Ruggie’s appreciation of the single-point perspective readily acknowledges the material forces (such as increases in population and migration to cities) that would have contributed to its invention; he clearly states that a purely ideational explanation for structural transformation of regimes would be insufficient. However, Ruggie considers ideas of individuation as being constitutive to a new social episteme that in turn enabled the transformation to a state system.

Let us first look at Ruggie’s argument for the constitutive role of two levels of collective knowledge in the transformation to the modern state system: in territorial formation and the collectivity of territorial units. At the unit level, the sudden move toward strong centralized administration of territories governed by states occurred, according to Ruggie, because “a fundamental shift was occurring in the purposes for which power could be

deployed by rulers and be regarded as socially legitimate by their subject” (187). In other words, changes in the views of rulers to a consideration of their rule as spatially distinct from that of others’ generated the need for a centralized administration, and not the other way around. Collectively, state societies participated in a recognition of reciprocal sovereignty among themselves, projecting their newly acquired collective understanding of statehood to the interstate context. Ruggie stresses that reciprocal sovereignty did not happen overnight, but was actualized following sequential periods of “constitutive” and “configurative” wars, respectively signifying wars in which the nature of states as units and their territorial configuration were contested.

Ruggie does not explicitly mention intersubjectivity in his discussion of structural transformation to the modern state system. However he does write that the constitutive nature of social epistemes in state formation, the ideational developments that generate new social epistemes, and the influence of states as institutional facts on ruler’s decisions to employ new forms of domestic power, speak to a causal interdependence of these three kinds – individual and collective knowledge, and state constitution.

Ruggie adds, “material transformation may have awakened both a need and a desire for this broad transformation in the prevailing social episteme, *which produced fundamentally new spatial forms* ... the modern state did not *evolve* from [ancient and medieval] experiences; it was *invented* by the early modern Europeans” (190-191, my italics). And the new forms of societal consciousness that have developed (of being, say, American, a patriot, a citizen) was instrumental in the formation of this invention: “The

domain of social epistemes, the mental equipment by means of which people reimagined their collective existence, played a critical role [in the creation of a modern mode of political differentiation]” (193).

Here we see that Ruggie describes the interactions that resulted in state formation in Europe as being strongly intersubjective. As central governments were established in Europe, Ruggie argues that the emergence of state self-image occurred through highly intersubjective dynamics in configurative and constitutive wars. This strong intersubjectivity is not limited to group dynamics. For Ruggie, individuals themselves gained a new self-awareness as citizens through the process.

However, Ruggie readily admits that societal dynamics do not always result from such strongly intersubjective interaction. In “Interests, Identity and American Foreign Policy” Ruggie (1998: 203-228) describes how three generations of U.S. Presidents, Wilson, FDR, and finally Truman and Eisenhower, employed multilateral principles to affect change in the international order. Ruggie states that in all cases the administrations’ sought to satisfy material interests, but because of America’s power each had a substantial freedom of choice in how to achieve these interests.

Unlike Theodore Roosevelt who lost an election because of unilateralist principles, these presidents chose to employ multilateralist principles because they “enjoyed a particular resonance with the American public that other ideas would not evoke” (217). In this way, Ruggie adds, these presidents were able to institute sustained U.S. international

engagement. Ruggie suggests that their methods were successful because they resonated with America's self-image *as* an imagined community, willing itself into existence. Thus American nationalism, he argues rest on core values that bear a striking affinity to the multilateral principles invoked by the presidents: individual over group rights, anti-statism, the rule of law, etc.

In this situation Ruggie employs a weaker form of intersubjectivity to describe the interactions between U.S. citizens and their presidents. Here, the "core values" or identity of the citizens remains largely static through the interactions. Rather, a subjective conception of the other is at play throughout the interactions. Thus, Ruggie does not propose that the intersubjective interactions that constitute international dynamics are of any one strength, but focuses instead on the wider argument that intersubjectivity in normative IR is stronger than the simple perception theorized by purely interest-based IR.

There is nothing necessarily wrong with this; just because one accepts that experiential intersubjectivity is enacted in interactions, it does not mean that one expects the strongest form of intersubjectivity to always be at play. However, what is of concern is that by allowing varying forms of intersubjectivity to be enacted, Ruggie and other normative theorists underspecify what they mean by intersubjectivity when they make such claims as "institutional facts rest on a core element of intersubjectivity." In turn, this underspecification inhibits methodological advances in normative study and weakens their usefulness in building theoretical constructs. Furthermore, by underspecifying intersubjectivity, normative theorists are rendered incapable of understanding why agent

dynamics sometimes result in international transformational change, but not at others, suggesting that this underspecification of intersubjectivity speaks directly to the agent-structure problem.

By contrast, Wendt does attempt to address how and why social interactions can be enacted with varying intersubjectivity, by scaling up ideas in representational cognition to create a system that incorporates ideational factors, but limits their operability at the international level. However, as is shown below, the manner in which he scales up intersubjectivity is ambiguous and, in some ways, arbitrary.

A Critical Study of the Social ‘Scaling Up’ of Intersubjective Interactions: Alexander Wendt’s Construction of Self-Organizing States

Although Wendt only explicitly refers to intersubjectivity in the context of intersubjective understandings that are equivalent to common knowledge, following his discussion of common knowledge in *Social Theory*, Wendt does imply that another, apparently stronger, form of intersubjectivity exists in collective knowledge. He states, “The relationship between collective knowledge and the beliefs of individuals is one of supervenience and thus multiply realizability [allows more than one path to any given outcome]. This means, on the one hand, that a collective representation cannot exist or have effects apart from a “sub-stratum” of individuals’ beliefs ... On the other hand, the

effects of collective knowledge are not reducible to individuals' beliefs" (162). It seems that Wendt is speaking of a stronger sense of intersubjectivity here, one that imputes collective memory into "the myths, narratives and traditions that constitute who a group is and how it relates to others" (163), without being reducible to the level of the individual.

However, he stops long before suggesting that collective knowledge has ontological primacy over subjectivity. Wendt writes, "Some Durkheimians or Foucauldians might go farther, and dismiss altogether the study of individuals' mental states, and with them common knowledge, as either illicit or spurious. If this 'de-centered' view of subjectivity is intended as an empirical claim that the beliefs in people's heads do not help explain their actions then (I argue later) it is false" (164). He does indeed return to this issue within a few paragraphs, arguing that in order to have causal effects from culture, agents "at some level" must be independent of culture, and by extension of other agents. It is through this view of agents as self-organizing entities, Wendt argues, that individualism retains a "kernel of truth" and cautions that agent independence serves as a "reality constraint on holistic inclinations" (167).

Wendt conceptualizes a bottom up theory for international relations in the sense that, although not reducible to individuals, his argument is built up from constructs of individual agency. The bottom up formulation of his theory seeks to illustrate how interactions between people can be 'scaled up' to describe the international culture between states, and thus commands that careful attention be paid as to how Wendt

conceptualizes this scaling up from the individual to the international level. I will review his construction of the state and state dynamics below, and show how these are ‘scaled up’ from a model of humans as intentional, self-organizing beings. I will then suggest that there is a weakness in the way Wendt scales up to the international level; a weakness that further illustrates the value of developing a methodology for researching intersubjectivity in post-positivist IR.

A Review of Wendt’s Conception Self-Organizing States

In building his theory, it is important to remember that Wendt conceives of the state *as* an ontologically emergent, embodied, living agent. That is, the state *is* an agent, but with three caveats that distinguish it from individual humans: it is itself comprised of social agents (individuals, organizations) who have their own intentional capacities; the ‘mind’ of the state is easier to read than the human mind (the structure of which is written in charts, the ‘thoughts’ of which are available in statements and public debates); and states have alternatives to interactions not available to humans (divisions, growths, mergers, etc.).

As autonomous agents, states have subjective interests but also self-organize through four types of objective interests (or ‘national interests’), according to Wendt, where the latter are defined as “functional imperatives which must be fulfilled if an identity is to be reproduced” (232). These objective (national) interests are physical survival, autonomy,

economic well-being and self-esteem. Objective interests are objective in the sense that they are pre-social characteristics of the state and therefore are not directly dependent on inter-state influence, but even these interests are susceptible to change through changes in the state's corporate, type, role and collective identities. Objective interests act as pre-social constraints on a state's subjective interests, thus "The state is not a tabula rasa on which any interest can be written" (234). In this way, states are homeostatic structures predisposed to define their desires in terms of self interest following Neorealist thought, but contrary to Neorealist thought Wendt contends that self interest can be transcended through change in identity. Under Wendt's thesis transcendence is not easy, and depends on the extent to which states have internalized the international culture (such as the ideal type Hobbesian, Lockean and Kantian cultures described by Wendt).

Wendt tells us that he builds his ideas of the processes by which structural change can occur from George Herbert Mead's concept of symbolic interactionism. Changes in state 'traits' are culturally selected through imitation and social learning (Wendt offers the dyadic example of dynamics between Alter and Ego as an illustration) through processes of role-taking and altercasting, allowing a strong role for power relations to influence results. Like rationalist game theoretic models, social learning involves actors revising their definitions of the situation based on new information that they learn during the process. Additionally, Wendt says that the process involves seeing oneself from the standpoint of the Other, as with iterative games which involve understanding the Other's reasoning for their move (Wendt is quick to point out—rightly, if it is to be compatible with rational choice models—that this perspective-taking is not empathy, which involves

experiencing the Other's feelings as if they were one's own). Two characteristics of social learning distinguish this process from game theory, one causal and one constitutive. The causal effect stems from the acknowledgement that in social dynamics who the agent is is at stake in the interaction, and it is here that Wendt releases constraints on interaction enough to allow for a very strong form of intersubjectivity to be enacted. The second, constitutive, difference from rational choice is that through interaction agents create role-identities through which they understand each other's actions. This is distinct from game theoretic models because, as mentioned earlier in this paper while describing Jervis's view of perception, rationalists allow for the existence of role-identities which can be perceived (correctly or not) but do not allow for mutually constituted role-identities to exist. Thus this constitutive difference does incorporate a weak form of experiential intersubjectivity.

According to Wendt, the changes in traits described above occur at the unit (state) level and evolve to structural change at the system (international) level through a change in collective identity, fighting the inertia of reproductive national interests which serve to conserve the present structure, as well as the international culture which also has a self preserving nature. Again, the mechanism for structural change is through social learning. Wendt offers four 'master variables' which could allow for collective identity formation in a Lockean international culture: interdependence, common fate, homogeneity and self-constraint. I will not describe each variable here in detail, but it is interesting to note that two of these variables, interdependence and common fate, must be objective variables (as in the national interests described above) to cause collective identity. Thus, the collective

identity here at least begins by only being weakly intersubjective in the form of common knowledge of an objective reality. The third variable, homogeneity, allows for a causal role in cultural change stemming from a subjective categorization of an objective homogeneity, once again restricting intersubjective dynamics.

The fourth variable, self-constraint, occurs through an acknowledgement of the Other's identity as legitimate and non-life threatening. Wendt offers three methods by which self-restraint can occur: through a deep, but gradual, internalization by the state of the international culture of a pluralistic security community; through the international externalization (or transposing) of domestic techniques (such as organizing economic relationships) through foreign policies; and through self-binding, or unilateral initiatives with no expectation of reciprocity. Once again in the case of self-restraint Wendt is very conservative in allotting mechanisms for structural change that incorporate anything more than a weak intersubjectivity. Two of the techniques offered, externalization and self-binding seemingly occur due to internal characteristics within states, quite independently of the international culture. This leaves the technique of internalization which Wendt is careful in extending; cautioning that the process by which it is enacted is slow.

A Critique of Wendt's Concept

It seems that Wendt allows for a stronger form of intersubjectivity within state action, but severely limits the mechanisms by which intersubjectivity can be enacted among states,

partly by submitting that national interests constrain state interaction, and partly by only offering techniques comprising of a weak intersubjectivity through which relationships between states can enact cultural change. Why is this so? Why does the constitutive nature of sociality play such a restricted role in international dynamics for Wendt? As we have seen earlier from previous arguments by Ruggie and Kratochwil, it is the constitutive nature of interactions that provide collective intersubjective meaning. So, while taking a giant leap toward accomplishing synthesis with Realist theory in international interactions, Wendt undermines the key distinction in constructivism that others have argued separates social interactions from brute physical ones.

An answer to this objection can be found by scaling down to the individual human level, in Wendt's description of intentionality and mental content, from which he draws his argument against strong intersubjectivity. Wendt argues for a moderate holism in intentionality, recalling and following a philosophical progression from Hilary Putnam's Twin Earth hypothesis where it was suggested that mental states "ain't in the head" but are distributed in relationship with the external world. Wendt agrees with this, but in an effort to preemptively address potential criticisms as were lobbied at Anthony Giddens' structuration theory, he seeks to conserve some causal interaction (and therefore independence) between agent and structure. He does so by creating a social analogy for concepts of "narrow" and "wide" content in current philosophy of mind: "Narrow content refers to the meanings in an actor's head which motivate her actions, while "broad" or "wide" content refers to the shared meanings which make her thoughts intelligible to others" (181). In sociality, Wendt suggests, this translates to the difference between

individuality *per se* and the *terms* of individuality. The former refers to those properties of an agent's constitution that are self-organizing and thus not intrinsically dependent on a social context. Some of these properties are material: individuals live in genetically constituted bodies that do not presuppose other bodies, and have minds in virtue of independent brains. Others are cognitive: agents exist partly in virtue of their own thoughts, which they can continue to have even if they marooned on a desert island." (181)

I find this social analogy to be problematic, and suggest later how some of the weaknesses in this analogy can be avoided by developing a methodology through which we can further our understanding of intersubjectivity.

The first issue that should be noted is that the very existence of any narrow content in intentionality is itself a still-debated and far from settled issue among scholars in the philosophy of mind (see Stalnaker 1990, Wilson 1994, Segal 2000, Fodor 1991, Fodor 1994, Chalmers 2002 etc.). By introducing narrow content as an attribute of individual cognition, Wendt is able to retain a rump rational actor attribute at the core of human agency, which he calls upon to disallow experiential intersubjectivity from taking place at higher social levels. So the application of this contested concept is further weakened because its only offering is to afford higher societal levels the capability to act with weak intersubjectivity.

However, even if we are to accept the existence of narrow content, it is questionable if this concept can be translated without significant dilution or even total dismantlement,

from a *single subject* (a person) to a *society constituted by multiple subjects* (a state).

Wendt offers scant support for his translation of narrow content into state identity and interests: he attributes self-organizing qualities to states, where self-organization is given as the reason for maintaining narrow content in group level cognition. Therefore, Wendt is able to use self-organization as an excuse to give selected qualities attributes of narrow content. Wendt contentiously cites state type (for example a democratic state) as such a self-organizing quality. By doing so, Wendt is coding into his theory the very attributes that he later states are resultant from his construct. That is, if one dictates that state type is a pre-social characteristic of states, one should not be surprised to find that state type does not change during interactions at the international level. Wendt's defense for describing the democratic character of a state as intrinsic (that is, being exogenous to the state system) seems to take two forms: one is declarative, in merely stating that "a state can be democratic all by itself" (226); and the other doctrinaire, when he says state identity is

a property of intentional actors that generates motivational and behavioral dispositions. This means that identity is at base a subjective or unit-level quality, rooted in an actors' self-understandings. However, the meaning of those understandings will often depend on whether other actors represent an actor in the same way, and *to that extent* identity will also have an intersubjective or systemic quality. (224, italics mine)

Such a definition gives plenty of scope for narrow content without much evidence that so much scope is deserved, given that there is little agreement that any narrow content can exist at a societal level once intersubjectivity is accepted at all at an individual level, and

that Wendt does not defend his attribution of some qualities as self-organizational. The obligation is on Wendt to defend his position, but I found little in *Social Theory* that does so.

Even accepting that the translation of narrow content to the societal level can occur, a further problem arises when the reader is led to understand that Wendt's concepts of objective (or national) interests serve "in some way" as narrow content at the state level. Given the forms that make up national interest—physical survival, autonomy, economic well-being and self-esteem—this conception is problematic.

Let us briefly look at the first (least problematic) one, physical survival. Wendt concedes that "states still sometimes decide that it is in the national interest to allow peripheral territories to secede, as did the Soviet and Czechoslovak states" (235), but says that this merely indicates that what counts for survival varies historically. Arguments that the dissolution of the Soviet Union amounts to much more than "ceding peripheral territories" aside, what is at issue is not *whether* the Soviet Union dissolved or changed, but *how* it did so regardless of the way in which the change is categorized. That is, physical survival cannot be considered an "in the head" intrinsic characteristic of the state if international dynamics can compel elites to reconceptualize their understanding of the nature of the very state within which they live⁴. Wendt's theory does not address state

⁴ Several post-positivist theorists argue that revised conceptions of the international structure among the leadership served as a significant influence in the fall of the Soviet Union. This argument has served as a compelling alternative to Realist explanations for the USSR's demise (see Kulbalkova and Cruickshank 1989; Jackson 1989; Koslowski, Rey and F.V. Kratochwil 1994).

dynamics which develop *from* the causal or constitutive influence of international culture *onto* sub-state subjectivity. Indeed, if it did, his constraints on the strength of intersubjectivity at the international level would be relaxed because his objective interests could not be objective, and his thesis would lose its power because it would be unable to counter criticism of agent-structure relations.

What is needed in Wendt's thesis is an explanation of why sub-state agents are so restricted in their interactions with the international culture, and so what is missing in his thesis is a description of the manner in which national interests, which give states their self-organizing property, can be considered to contain dimensions of narrow content.

Wendt admits that "the notion of pre-social interests sits uneasily with my overall argument," (234) but, given the *centrality* of this concept in his overall argument, the means by which aspects of national interests comprise narrow content need to be clearly explicated for his thesis to sustain criticism. Wendt exploits arguments from the philosophy of mind and applies narrow content to social levels, but this application is done in an arbitrary manner. The problem is that Wendt attains his objective of establishing constraints in the intersubjectivity of international level interactions by coding in those constraints.

It is important to balance criticism of Wendt's thesis—criticism that I believe is highly relevant to furthering normative IR thought—by acknowledging the distance he has traversed toward offering a detailed, successive (from individual to international), bottom up theory of international relations. Wendt creates a social model for international

relations that responds to criticism of ambiguity in relations between agent and structure in non-material interest based IR theory, and the widely held belief that structural change is rare and difficult. Furthermore, not only does Wendt make a case for a role for intersubjectivity in IR but he also acknowledges that varying strengths of intersubjectivity are enacted in interactions. But I think that the magnitude of Wendt's accomplishment only further emphasizes our need for developing a methodology for addressing intersubjectivity in IR.

In Search of a Methodology: A Post-Positivist Approach for Addressing IR's Underspecification of Intersubjectivity

The wider message to be taken in normative theory's underspecification of intersubjectivity, and Wendt's ambiguous application of intersubjectivity, is that when normative IR theorists try to conceptualize an international structure, the methodology by which they enact intersubjectivity must be fully addressed. Hayward Alker, in his discussion of narrow and wide content (termed by him as passion-internal and passion-external intentionality), states something similar; that these types of intentionality must be formulated through practical reasoning to be incorporated into a theoretical IR construct. He says (1996:411, my italics), "the actual content of identities and interests, the complex mix of passion-internal and passion-external reasons governing, and enacted

in our lives, *can only be discovered by concrete investigations of criticizable, intersecting, identity-linked and transformable chains of practical reasoning.*”

By practical reasoning, Alker (1996: 412) refers to reframing observation from an isolated, abstracted interactions to “concrete, linguistically and historically described, heteronomous, social and political” contexts. Here, it is not only the observation that is reframed but also the observer. For Alker the shift that occurs with practical reasoning is from a presumed economic man to a contextually located, discursive, historicized, social and political observer, “capable, with some degree of autonomy and responsibility within porous, bounded political societies, of *practically arguing for, or enacting* his passionate commitments, beliefs, loyalties, principles and interests” (412).

Alker’s view is post-positivist in that it is interpretivist and looks beyond independent, explanatory causality. As with practical reasoning, any methodological framework that makes up the chains in Alker’s “chains of practical reasoning” must also take into account the nonfoundational nature of strong intersubjective behavior. Since strong intersubjectivity is highly context dependent, misinterpreting it to be weak intersubjectivity may give its resultant behavior causal structure that is unfounded, and instill it with predictive qualities that are undeserved. Therefore it is better to apply a methodological framework from which social interactions can be studied which tends to presume that interactions are highly intersubjective. By assuming that a given interaction may be strongly intersubjective, the observer is sensitive to changes in identity that can

emerge through the interaction, and is also able to judiciously apply causality to resultant behavior.

Alker's call for practical reason in normative theory is highly compatible with Molly Cochran's efforts to attain post-positivist synthesis in IR. Cochran's (2002) approach is the application of pragmatic theory following John Dewey as a "tool for understanding and responding to problematic situations." In a sense, Cochran's application of Deweyan pragmatism to post-positivist thought goes further than Alker.

Cochran's interpretation of Deweyan pragmatism unpacks some of the concepts described in Alker's practical reasoning. We can begin to see what a methodological framework for studying intersubjective dynamics would look like in Cochran's review of how Dewey interpreted experimental inquiry, objectivity and explanation in the sciences. Dewey offers three characteristics to the process of experimental inquiry: that all processes of experimentation are overt doing, that is, the process itself affects changes in the environment; that all experiments are conducted to address a problem that is considered significant and therefore are directed by ideas that meet the conditions that make the problem significant, and; empirical activity results in a new situation where relations within the interaction studied are seen to have changed, and the dynamics that resulted in the changed relations are known.

According to Cochran, Dewey viewed social science as observing the relations in the interactions studied. In human interactions, both subjective and objective elements of the interactions observed are studied in a unity in the context of the specific problematic situation. Objectivity in observation is attained by understanding what is observed as embedded in the context in which it is observed.

For Dewey, explanation is understood as being concerned with the “prospective use of an idea”. Cochran tells us that “it is the practical activity, practical knowing, that leads to understanding and comprehension rather than explanation for explanation’s sake” (533). Additionally, explanation is a process; a process of justification that is dynamic in that it always involves change. Explanation in the construction of knowledge is an ethical practice, conducted democratically through the participation of a “curious and critical public or community of inquirers.”

Finally, the complexity and rate of change of society require that knowledge, for Dewey, is always temporary and contingent in the sense of its predictive quality. Therefore the pragmatic notion of truth is not absolute, but merely a situated settlement through transaction, and comprises an inherent fallibility. Just as situatedness of truth signifies contingency, so an observer by her situatedness cannot be objective but intervenes simply by the act of inquiry. Objectivity can therefore only be accomplished through shared ideas or understandings within a particular context, and so is always changeable.

Through Cochran's work we begin to see what a methodology that incorporates the sometimes highly intersubjective nature of human interaction in IR studies should look like. As with Alker's suggestions, this methodology should stress the contingent nature of behavior and should recognize that knowledge, especially in social dynamics, cannot be considered absolute but at best as stably settled.

Summary

IR literature underspecifies intersubjectivity by discounting how its strength affects behavior. In the absence of understanding when and how weak or strong intersubjectivity is enacted in interactions, observations can be misapplied to other situations. This has been shown in Wendt's work; by applying concepts of intersubjectivity ambiguously, he loses strength in his argument because the outcome of his theory can be accused to have been "coded in" during its construction.

In the absence of knowledge of how stronger or weaker intersubjectivity is enacted, normative scholars must treat interactions as if they are significantly intersubjective, so as to avoid their misapplication. Highly intersubjective dynamics dictate a post-positivist outlook because the deeply contextualized behavior observed challenges causal explanations. As mentioned earlier, the fully described phase spaces of interactions that

can reliably lead to the same behavior are so few under strong intersubjectivity that their ability to provide causal explanations or have predictive value is very limited.

Following Alker and Cochran, a practical, pragmatic outlook is needed to develop an understanding of intersubjective interaction in IR. Through the application of practical reasoning, a greater understanding of intersubjective social behavior can be developed. Their outlooks promote empirical studies that seek to understand behavior in its context. Following Dewey, rather than just look at causal explanations, the observer would benefit from gaining an understanding and comprehension of the social interactions observed.

The basic problem illuminated in part I is this: given that interactions can be highly intersubjective—and that at present normative theorists do not know why and how the strength of intersubjectivity changes with different interactions, and so must treat almost social interactions as if they were significantly intersubjective—how can we cumulate the knowledge gained under a methodological framework to build on normative theory in international relations? Alker and Cochran have offered us an outline of how this methodological framework would look. In the next part I introduce embodied cognition (or second generation cognitive science) as providing a framework that complements Cochran's proposal for a pragmatic approach and from which methodologies can be applied to help build normative IR.

PART II:

Embodied Cognition and Its Philosophical Foundations

When the manipulation of symbols is automated, neither the cognitive processes nor the activity of the person who manipulated the symbols is modeled... That is good news, if those things are considered unimportant, because they are a nuisance to model anyway... The mathematician who was a person interacting with a material world is neither modeled by this system nor replaced in it by something else. The person is simply absent from the system that performs automatic symbol manipulations. What is modeled is the abstract computation achieved by the manipulation of the symbols.

The physical-symbol-system architecture is not a model of individual cognition. It is a model of the operation of a sociocultural system from which the human actor has been removed.

Edwin Hutchins 1995, 362-363

How can we increase our understanding of the way in which intersubjectivity is enacted in a world that is both material and social? The work done by Alexander Wendt and John Ruggie has shown us that the interactions of agents as humans capable of intersubjectively constituting societal norms can no longer be abstracted away if we are

to gain a better understanding of international politics. However, by focusing on Wendt's conceptualization of international relations, we have also seen that weaknesses in the treatment of intersubjectivity need to be worked through before it can be confidently incorporated into new theoretical constructs. Specifically, as we have seen from Wendt's work we still do not understand whether and how restrictions on the strength of intersubjective dynamics can be imposed as we scale up in societal groupings. There is a need for a new methodology through which studies of intersubjectivity and the dynamics it engenders can be implemented, but any methodology we apply should be constructed to accommodate contingency and without a marked point of origin for the observer or analyst. In this part I will introduce recent developments in cognitive science and suggest that these developments would work well as a basis for such a methodology.

Although my goal here is specific—to make a compelling argument for developing a new methodology in IR through practice with interdisciplinary research already underway in new cognitive science—it is important to recognize that such work would implement philosophies appropriate for a post-Kuhnian age; philosophies that are gaining growing recognition in both the natural and social sciences, and that could radically change our views on knowledge, science and sociality. New research in cognition shares two related underlying precepts with post-positivist IR: neither presumes subject/object relationships in their constructs, and both recognize the contingent nature of cognition. This interplay of contingency and subjectivity recalls, once again, Cochran's and Alker's call for pragmatism and practical reasoning in international relations scholarship. Alker has already shown us how to approach enacting practical reasoning, "through situationally

specified, pragmatically oriented, language games” (Alker 1996, 420) that knowledgeably consider past scholarship in Game Theory, systems theories and other computational models along with normative techniques such as discourse analysis. Alker adds, “In this way the *Verstehen-Erklaren* controversy can at last be productively transcended, when appropriate, experientially grounded syntheses of these approaches result” (421).

The pragmatic quality of the methodology proposed here connotes a very different role for the international relations scholar from her counterpart in rational choice methodological analysis. As with the rational choice scholar she will gain some familiarity with probability theory, Bayesian statistical analysis and other mathematical tools, but she will also know something about semantics, historicity, discourse analysis and, most importantly, her own ability to affect the models she creates. There are undoubtedly unforeseen challenges to such a methodology, but I hope this paper also reveals something of its promise.

Part II is divided into three sections. In the first section I summarize key interdisciplinary ideas that have influenced the development of what is considered the second generation of cognitive science⁵, which carries a new view of cognition, one in which the situatedness and embodiment of agents are primary. Through the introduction I show that these ideas are complementary to and convergent with normative IR thought about cognition, particularly Cochran’s pragmatic approach. The influences I describe for this turn in the discipline certainly do not comprise an exhaustive list of the influences of principal scholars in the field. But I seek to show that embodied cognition is a viable

⁵ I use this term following Lakoff and Johnson, 1999.

methodology for post-positivist IR theory, and so just to include sufficient background to accomplish this. If the overview appears cursory, my only response can be to agree given my particular objective, and the complexity and changing nature of the subject. Because of this, I have taken particular care to cite references from my research.

In the second section I take a closer look at two philosophical studies that enhance our understanding of embodiment in cognition. First, I describe how enactive cognition applies neuroscientific research to suggest a type of cognition that is continuously emerging through coupled interactions with the environment, and second, how embodied realism stresses the embodied nature of conceptual thought through metaphor in language. By focusing on two studies I seek to show how embodied cognition is conceptualized in higher level thought and sociality. These two fields of study draw heavily from developments in neuroscience, linguistics and computation (and of course cognitive science itself), and have wide applications for computational modeling, artificial intelligence and for the behavioral and social sciences. The studies are reviewed here to lay groundwork for the empirical research discussed in part III. This section also includes a brief look at how the notion of embodiment is affecting computational modeling. I show that new models increasingly focus on the dynamic characteristics of interactions and try to avoid representational coding. Advances in computational modeling are addressed here to also provide groundwork for their discussion for studying social dynamics in part III.

Finally, in the third section I argue that the methodological framework of embodied cognition makes for a practicable platform upon which to build normative IR methodologies. Starting from an understanding that embodied cognition converges with pragmatic concepts of conceptual cognition, I follow Cochran's argument for the application of pragmatic methods (here, embodied cognition) in a wider post-positivist context.

This part of my paper carries the crux of my thesis in that it demonstrates the convergence and complementarity of normative IR and second generation cognitive thought. What is left in the next and last part is to sketch out possible ways in which cognitive IR modeling can be applied.

Influences Underlying Second Generation Thought in Cognitive Science

The turn to embodied cognition⁶ in cognitive science was motivated by growing dissatisfaction and realization of the limitations of the classical symbolic approach to cognitive modeling, an approach that depicted cognition as formal syntactic logic software that ran—curiously unconstrained in program-level encoding that seems it could work just the same on a circuit board—on the hardware of the brain. Indeed, it was

⁶ I will use embodied cognition in this paper to describe cognitive theories and methodologies that take both situatedness and embodiment of agents into account. For the sake of social science, the differences in terms have little significance, one without the other would be insufficient.

widely held that our minds did function like computers, and thought that, given enough ‘memory’, computers could be developed into conscious cognition machines.

In classical cognition, symbolic representations of the outer world are manipulated through thought over the brain in a sense-model-plan-act sequence whereby agents, with an ideally full representation of the environment, can make logical decisions for action. What this model did (and still does) very well was describe how perceived symbols of the world could be manipulated to achieve given ends. William Clancey offers a prominent example of successful implementation in classical cognitivist thinking in Mycin, a program designed to diagnose and prescribe antibiotics against infectious diseases (Clancey 1997, 29-36). Clancey adds other accomplishments of classical cognitive thinking, “the descriptive modeling approach has revealed how people relate words and meaning when reading, how problem solvers opportunistically and strategically relate goals to plans and limited resources, how decision makers sort through ambiguous, uncertain data, and so on” (Clancey 1997, 2).

Dissatisfaction with classical cognition models arrived on several fronts, many of the arguments actually predating cognitive science as a discipline. John Dewey argued against stimulus-response theories of action, suggesting instead that cognition was differentiated and co-organized in the brain in dynamic interaction with the environment. John Searle’s much discussed Chinese Room Argument⁷, and Stevan Harnad’s Symbol Grounding Problem (1993) have questioned classical cognition’s symbolic representation

⁷ Not to be further discussed here if only because simply sorting through the purported weaknesses and strengths of it would be a paper in itself! For the original see John Searle 1980

of the world, presenting the problem that in computational systems representation is done by the programmer (and program reader) who applies meaning to the symbols, but this is clearly not the case for human minds, so classical cognition models and computer systems cannot describe the cognition that occurs in people. Humberto Maturana and Francisco Varela questioned the inferential role of thought in classical cognition, and developed concepts of structural coupling resulting in closed systems of agent and environment in which perceptual representation is not encoded into the nervous system but is described by the perturbed structural state itself.

This section explores two of these arguments, focusing on how they gave direction to a re-evaluation of cognition as an embodied and situated process. Particular attention is paid to convergences between these influences and ideas that have directed normative IR.

Maturana and Varela: Autopoiesis and Cognition

Autopoiesis and Cognition, by biologists Humberto Maturana and Francisco Varela (1980), synthesizes work begun by Maturana to create a cybernetic-biological approach to the issue of cognition. The concept of autopoiesis, created over years of study of new research in biology and neurology, has proved to be a groundbreaking and powerful method for understanding living organisms as autonomous agents⁸.

⁸ The concept of autopoiesis has influenced Beer, Clancey, Clark, von Foerster, Noë, Thompson, Winograd and Flores, to name just a few scholars working on cognition

Autopoiesis (“auto”-“poiesis”, as in self-producing or self-creating) describes the self-organizing qualities of regeneration through interactions and transformations that are always found in living systems. A living system is organized as a (holistic) network of processes of transformation and destruction that constitutes the system as a unity in space (no vitalistic or mystical connotations are necessary here; the living systems we know of so far are biological systems made up of cells of organic molecules). That is, organisms are profoundly embedded in their environment *to continuously (re)make themselves up* as homeostatically self-organizing living systems. Human beings are autopoietic multicellular systems that have a nervous system that couples sensory and motor surfaces, so behavior, in humans as with other organisms containing nervous systems, gives the observer “an outside view of the dance of internal relations of an organism”(1987, 166). Our nervous systems maintain our structural changes through circuits of neuronal activity structurally coupled to sensory and motor surfaces, and so are said to have operational closure (or operational circularity). It is the operational closure of the nervous system that informs us about cognitive processes; the nervous system

enriches the operational closure that defines the autonomous nature of the human being. We begin to see clearly the ways in which every process of cognition is necessarily based on the organism as a unity and on the operational closure of its nervous system; hence it follows that all knowing is doing as sensory-effector correlations in the realms of structural coupling in which the nervous system exists. (166)

Maturana and Varela tell us that the embodiment of the nervous system as organism-in-its-environment discounts cognition as representations of the outside world built up from

information received by the sensory organs and passed to the brain through connectivity lines, as in the classical view. On the other hand, it also negates cognition as a solipsistic activity formulated entirely in the head. Rather, the nervous system in its environment continuously undergoes perturbations through interactions that trigger its own structural changes, which in turn modulate the dynamics of the structural state of the autopoietic system. This suggests a direct, strongly phenomenological character to our processes of observation and knowing. When an observer perceives perceptual behavior in an organism what she *sees* is an organism “that brings forth a world of actions through sensory motor correlations congruent with perturbations of the environment” in which she sees the organism to conserve its adaptation (Maturana and Varela 1983, 60). What she *is doing* in observation is a process of creating possibilities for action, in a circular system with no origination point between observer and observed. Observation does not begin with an objective external reality, but is a process of learning in interaction.

Similarly, knowledge is better understood as a process of knowing; the authors write

knowledge, then, is necessarily always a reflection of the ontogeny of the knower because ontogeny as a process of continuous structural change without loss of autopoiesis is a process of continuous specification of the behavioral capacity of the organism, and, hence, of its actual domain of interactions. Intrinsically, then, no absolute validation of knowledge is possible, and the validation of all possible relative knowledge is attained through successful autopoiesis.” (Maturana and Varela 1980, 119)

Thus knowledge is not absolute but contingent to change as its value is tested as the organism continues to interact in its world.

While humans are unities made up of structurally coupled components, the authors say that societies can also be considered unities, but have operational closure in the social (third order) structural coupling in language. However, coupling through language is different from the type of coupling we see between cells and in the nervous system because the components of social systems have a much higher degree of plasticity. Whereas the organism restricts the individual creativity of its components to maintain self-organization, “[t]he human social system amplifies the individual creativity of its components, as that system exists for its components” (Ibid. 199). This allows an observer to behold much greater plasticity in the behavior of a social unity than in an organism. The self-organizing nature of human social systems has similarities to Wendt’s conception of states as self-organizing unities. However, it should be noted that Maturana and Varela make no claims of human societies being autopoietic, and imply looser restrictions on the behavior of societies than those imposed by Wendt.

Since linguistic behavior occurs, for the authors, as the form of social structural coupling in humans, a very strong form of intersubjectivity through language is implied. Social coupling through language is very different from the social coupling, for instance, that occurs in insects where a flow of chemicals between individuals (trophallaxis) results in their observed coordinated behavior. Trophallaxis is a form of instinctive communicative behavior “whose stability depends on the genetic stability of the species” (Ibid. 208), but

linguistic behavior depends on the cultural stability of the social system. Linguistic behavior allows for a multiplicity of possibilities for structural coupling—the word “table” suggests a multitude of actions that can be performed when we manipulate a table—so words are not “ontogenetically established coordinators of behavior”.

This multiplicity of behavior, allows for a “cultural drift’ which occurs over generations, similar to the (more restricted) natural drift that has occurred in human evolution.

However, natural drift is purposeless, with no reason for occurring other than that it is just “a product of the conservation of autopoiesis and adaptation” (which the authors tell us occurs non-competitively, leaving as a woeful misconception the conception of competitiveness in evolution).

This idea of social structural coupling through language calls for the strongest form of intersubjectivity by giving ontological primacy to social coupling in the emergence of individual consciousness, consciousness not only as awareness of activity, but as awareness of being. The authors write

it is that the appearance of language in humans and of the whole social context in which it appears generates this (as far as we know) new phenomena of mind and consciousness as mankind’s most intimate experience. Without a whole history of interactions it is impossible to enter into this human domain ... At the same time, as a phenomenon of languaging in the network of social and linguistic coupling, the mind is not something that is within my brain. Consciousness and mind belong to the realm of social coupling. That is the locus of their dynamics. (Ibid. 234)

Thus, unlike natural drift which is undirected, cultural drift is directed by the mind and consciousness as part of human dynamics. As this would suggest, the authors add that that this has implications for individual adaptation: “since we exist in language, the domains of discourse that we generate become part of our domain of existence and constitute part of the environment in which we conserve identity and adaptation.”

That the influence of Maturana and Varela’s concept of autopoiesis has had a significant impact on new thinking in cognitive science will be evident when the current environment of the field is discussed in the next section. However, I would be remiss to suggest that the authors’ formulation of autopoiesis is accepted by all second generation cognitive scientists today in its entirety. Firstly, the question of what it is that makes us conscious constitutes a primary field of philosophical inquiry in our time⁹, and while debate over this issue continues, researchers in cognition fall in varied positions over the topography of views on the subject. For IR purposes, the dependence of consciousness on social coupling can be left with others for philosophical debate. Less arguable is the notion that conceptual cognition arises from strong intersubjective dynamics, and that is certainly found following autopoiesis.

Additionally, while the primacy of embodiment that they ascribe nervous system functions is accepted by many, their notion that this embodiment can be scaled up to higher level thought meets with tough resistance, as we shall see at the end of this

⁹ See Chalmers’ (1996) outstanding contribution to the subject challenging the predominant materialist view.

section. Related to this, Clancey finds that the authors conflate into representation two distinct forms: “description or encoding”, which Clancey says is properly rejected, and the conceptualization of a subjective image in the head. He says of the latter form (1997, 92), “Here representing involves recurrent transformational processes over time and space between different sensory systems; higher level coordinating processes are categorizing these correlations and thus representing inner state”, a construction that should not be regarded as encoding, or the mere internalization of an external reality. That is, while Clancey accepts the importance of embodiment in higher level cognition, he feels that a subjective representation does occur here. We will see further that this view is not actually incompatible with current positions on embodied cognition.

Even accepting its criticisms, what autopoiesis offers new cognitive science is crucial: a scientific method of viewing cognition as the result of continuous phenomenological interaction of a profoundly embedded organism in its environment. As we shall see below, although autopoiesis is most closely related to phenomenological philosophy, there is much overlap between it and American pragmatic thinking at the turn of the last century.

John Dewey and Experiential Transactionism

With the overview of autopoiesis setting the context, I summarize below aspects of John Dewey’s work as it has influenced the recent turn in cognitive science. In its widest

reading, Deweyan philosophy can be seen as a response to contemporary epistemology based on Descartes' contradictory worldview between the autonomy of the thinking mind and the intrusion of the perceptual body. As stated by Michael Anderson (2003) in his guide to embodied cognition, in Cartesian dualism "the body must be part of the causal order to allow for perceptual interaction, but is therefore both unreliable (a cause of the senses' deception) and, as it were, *too* reliable (driven by physical forces, and so a potential source of unfreedom). Thus, the body is for Cartesian philosophy both necessary and unacceptable, and this ambivalence drives mind and body apart in ways Descartes himself may not have intended." As stated by Bredo (1994), for Dewey manifestations of this dualism in theory of cognitive activity, from sensorimotor engagement to conceptual thought, are artificial impositions on the processes of cognition; dualism loses its contradictory significance when the body is seen to act as part of the process of inquiry, where conscious problem solving arises during blocks in activity cycles.

Deweyan transactionism has strongly influenced models of interactive systems-in-its-environment that describe embodied cognition. Dewey contrasts transactionism to what he terms interactionist models of science, where in the latter the role of theory is to expose how a given subject and object interact (Dewey and Bentley 1973). In transactionism Dewey puts primary emphasis on the field of interaction before characterization of subject or object can be undertaken. This focus of the field of interaction has pronounced meaning here in light of the biological theory of structural coupling as conceived by Maturana and Varela.

Dewey applied transactionism variedly in the natural and social sciences, but, following William Clancey in *Situated Cognition*, I will introduce his theory with a discussion of his critique of the stimulus-response interpretation of the reflex arc of neural circuitry that was prevalent in turn of the century psychology, which directly addresses the biology of cognition. His criticism foreshadowed changes in the understanding of neural circuits that would not occur until almost a century later.

Dewey argues that separating sensorimotor coordination to stimulus and response imposes artificial division on a system that should be viewed as an interacting whole. As mentioned earlier, for Dewey what is at stake here is that by this artificial separation of stimulus and response the process of coordination falls into the confusion of Cartesian dualism. He says (1896),

The older dualism between sensation and idea is repeated in the current dualism of peripheral and central structures and functions; the older dualism of body and soul finds a distinct echo in the current dualism of stimulus and response. Instead of interpreting the character of sensation, idea and action from their place and function in the sensory-motor circuit, we still incline to interpret the latter from our preconceived and preformulated ideas of rigid distinctions between sensations, thoughts and acts... What is needed is that the principle underlying the idea of the reflex arc as the fundamental psychical unity shall react into and determine the values of its constitutive factors. More specifically, what is wanted is that sensory stimulus, central connections and motor responses shall be viewed, not as separate and complete entities in themselves, but as divisions of labor, function factors, within the single concrete whole, now designated the reflex arc.

William Clancey adds that the artificial separation of stimulus, idea and motor processes in computational models—a separation created only because we perceive these as occurring in series—forces scientists to develop mechanisms to relate them. Clancey writes (1997, 94),

For example, this is precisely what the blackboard architecture, a common control mechanism in descriptive models, seeks to do. Such a central posting or pipeline requires that the results of modules be packaged as “messages” in some sort of encoding so that the constructions can be compared, combined and decided among. Thus the separation of functionality itself forces on the theoretician the very idea of descriptive encoding, by which modules may communicate. Such a formulation to some extent fits sequential, inferential reasoning, but it doesn’t fit sensorimotor coordination.

What Dewey suggests instead is that the response depends on how previous activity is coordinated, as part of a coordinated sensorimotor activity, and not an isolated motor activity. In Clancey’s interpretation of Dewey, “We may distinguish an experience as being a stimulus because, in the sequence of our acts, it leads to a problematic situation. But the response will define what the stimulus is, it will give meaning to it, it will interpret it” (1997: 95). So the meaning of the stimulus is not recorded as a stored fact, but it is the subsequent act, the response, that categorizes and gives meaning to what was experienced before, creating an ongoing sequence of interactions. Clancey argues that these coordinated transactional processes occur in higher level cognition as well: “conceptualizations, as kinds of categorizations, have the same dynamic, nonlocalized character as sensorimotor coordinations” (96). These categorizations are not stored inferentially as descriptive schemas in the brain, but are “dynamically reconstructed from

previous coordinations” and are therefore relational within the history and transactional, conceptual context of the experiencer.

Dewey directly addressed the importance of situated interactions as fields (eventually to be termed the transactional field by Dewey and Bentley) to the subject of cognition at the neural scale in his paper on the reflex arc, but for him this notion was just as relevant at the conceptual and even social level. At the conceptual level Dewey argued against imposing a discontinuity between empirical, unreflected thought of everyday life, and abstract reasoning. For Dewey, the separation of fact and idea, like that of stimulus and response, has been given an ontological status that makes up the structure of being, ignoring the simultaneous distribution of the two within inquiry. Dewey suggests that scientific inquiry should follow the same transactional stance as empirical inquiry, which is similar to the transactional processes of sensorimotor activity. He says that the empirical process depends on the *context* of activity,

The distinction *between* each attitude and function and its predecessor and successor is serial, dynamic, operative. The distinctions *within* any given operation or function are structural, contemporaneous, and distributive. Thinking follows, we will say, striving, mid doing follows thinking. Each in the fulfilment of its own function inevitably calls out its successor. But coincident, simultaneous, and correspondent *within* doing is the distinction of doer and of deed; *within* the function of thought, of thinking and material thought upon; within the function of striving, of obstacle and aim, of means and end. We keep our paths straight because we do not confuse the sequential and functional relationship of types of experience with the contemporaneous and structural distinctions of elements within a given function. In the seeming maze of endless confusion and unlimited shiftings, we find our way by the means

of the stimulations and checks occurring within the process in which we are actually engaged.” (Dewey 1916, 95-96)

This historicist, transactionist, evolutionary method can be extended to sociality, where the determination of objectivity in social inquiry depends on the experience of reality to the observer and her social context. These experiences do not just constitute approximations to reality, and are not phenomenal representations of reality, but objective reality is condensed in ongoing transactions of variation and agreement between different realms of experience. As we are reminded by Molly Cochran (2002, 533), for Dewey it is in these ongoing transactions in social interactions that explanation occurs in a “process of justification as practical doing and understanding.”

Dewey also proposes that the empirical inquiry described above be used in social science, through which new knowledge can be attained by directed changes in existing knowledge, in a process of interactions designed to measure the relationships between changes. Cochran adds (2002, 530) that for Dewey,

This process of inquiry has three characteristics. Firstly, ‘all experimentation involves overt doing, the making of definite changes in the environment or in our relation to it’; secondly all experiments are ‘directed by ideas which have to meet the conditions set by the need of the problem inducing the active inquiry’; and finally, ‘the outcome of the directed activity is the construction of a new empirical situation in which objects are differently related to one another, and such that the consequences of directed operations from the objects that have the property of being known’.

What we find is that Clancey’s application of Deweyan transactionism in cognitive science is in remarkable accord with Cochran’s conception of Deweyan pragmatism as an

alternative methodology for IR. There are two dimensions in which a “meeting of the minds” is occurring here between applications of Deweyan pragmatism in cognitive science and in post-positivist IR: the first I will refer to as complementary and the second convergent. The complementarity between IR and embodied cognition is self evident. As detailed above both Clancey and Cochran, through Deweyan pragmatism, are concerned with the experience in its context, and both are sensitive to epistemological distinctions between stimulus and response, thought and idea, subject and object.

The convergence of these cognitive and social theories imparts significance to the complementarity. We have seen that embodied cognition is concerned with the distribution of representation in its relational context. In the case of low-level sensorimotor engagement, few would argue that this is a more accurate description than classical cognitive model. Clancey (and, as I will show, many others) believes this relational distribution can be scaled up to conceptual cognition, where the distributed representations extend beyond the person to include the physical context that constitutes the transactional environment. He conceives that cognition at this level occurs through the structural coupling of perception and conception, following Deweyan transactionism. He says (1997, 215), “The context in which problem solving occurs – what constitutes the situation for the agent – is arising in activity itself. Viewing the brain as a system itself, this means that the perceptual, conceptual, linguistic and motor processes in the brain don’t strictly control each other, but arise together: Conception is the context for perception and vice versa.” He wagers (176), “My scientific bet is that understanding the mechanisms at work here [in situated cognitive modeling] – the effect of structural

coupling, feedback, topological projection, and emergent structures – will provide a basis for understanding how human conceptualization and intentionality are possible.”

In fact, following Clancey, we can scale up to an ecological level of person-in-its-environment where the transaction field includes thoughts and actions between people, allowing for external influences including those in the form of social feedback. In the ecological system, human representation and therefore the creation of knowledge “is a pragmatic activity, oriented to further action and interaction”. Clancey adds (223), “The mechanism of internal coupling and feedback-in-action means that categorizations [the formation of conceptual relationships] are indexical (not based on *correspondence* with reality), inherently modal (differentiated by actuality, possibility, and necessity), action based (arising within coordinated experience), and adapted reconstructions.” Cochran reads Deweyan pragmatism at the level of the person-in-its-environment in much the same way (2002, 539): “Dewey regarded the practical arts to be fundamental sources of knowledge. By practical arts, he was referring to the common sense gained through everyday experience ... Dewey regarded this point for knowledge as implicit knowing based on habits, a background from which conscious knowing occurs.”

In this way, Cochran’s conceptions and Clancey’s views on applying Deweyan pragmatism as a model for understanding the development of knowledge *converge at one level of cognition*, at the level of person-in-its-environment. This is significant: the complementarity and convergence of their theoretical constructs signifies that both computational and conceptual modeling currently being undertaken by cognitive scientists can be implemented at the social level, where instead of developing expertise in

the structural coupling that makes up sensorimotor and conceptual functions, social scientists will research the characteristics of social structural coupling and (for IR theorists) its meaning for international dynamics. This idea makes up the bottom line (so to speak) of this paper. I do not propose a single unified theory; my goal is not so lofty, it is to illustrate a pragmatic framework for implementing a methodology that can be widely applied to the varying strengths of intersubjective interactions found in normative IR. I will later apply Cochran's arguments to show how this methodological framework would apply to post-positivist IR beyond pragmatic thought, and in part III I will look into what methods arise from it.

This convergence is significant, but on closer inspection, its also tricky. Arguments for the importance of embodiment in higher level cognition are strong and supported by both neuroscience and computational modeling. But they are also faced with tough challenges, two of which are summarized below in closing. The debates continue, and neither of the arguments below can be considered decisive in the least. I include them here in closing to put the debate between classical cognition and embodied cognition in context.

Dennett's Defense of Folk Psychology: Daniel Dennett (1991) directs his argument for intermediate realism against embodied cognition by relating beliefs in human cognition to the concept of the center of gravity in physics, both being examples of 'useful' *abstracta*. His argument goes something like this: through the application of folk psychology we are able to interpret others' intentions (as rational agents) with some degree of accuracy in prediction, that is, that there is an assumption that the other is well-designed, with "wise" rules of thought built into their cognitive system. These rules are

formed after efficient behavior is detected as abstract patterns in mental states and are preserved over selection pressure as useful *abstracta*. Thus, the intentional stance is perceived in others because that stance is real. The patterns are not concrete images of intentions or beliefs written in an inner code, and so cannot be found by scaling up from observations of sensorimotor activity. Andy Clark (2001) proposes a modified notion of “scattered causation” to Dennett’s argument, suggesting that perhaps intentionality is caused by “a number of physically distinct influences, such as the complex underlying influences of an economic depression. Dennett’s concept of folk theory is similar to Wendt’s (2004) discussion of the “miracle argument” for state personhood (that is, that in significant ways the state is a person). Here, the basic idea is that if viewing the state as a person is so useful, it would be a miracle if the state was not, at least in some respects, a person.

Internal Representations: Embodied cognition has a strong anti-representationalist streak as we have seen in Maturana and Varela’s thesis, but has not yet satisfactorily addressed the subject of “armchair reasoning” or “armchair conceptualization”. In “Doing without Representation” Andy Clark and Josefa Toribio (1994) call attention to the *inattention* paid to “representation hungry” problem domains, such as sitting on a sofa and planning your next holiday, employing mental imagery or doing mental arithmetic. They write,

Pradigmatically cognitive capacities involve the ability to generate appropriate action and choice despite physical disconnection ... Such inner stand-ins *are* internal representations”. Clark acknowledges that this inattention does not count

as evidence that traditional internal representations are necessarily present, but “that it is dialectically unsound to argue *against* the representationalist by adducing cases where there is no physical disconnection.

An Introduction to Embodied Cognition

With our understanding of embodied cognition as a context driven, contingent process based on interactions between an agent and her environment, we can now begin to consider what all this means at the conceptual cognitive and even societal level. In other words, how does intersubjectivity constitute and create society and culture?

It is with this question in mind that I turn now to the influence of pragmatic and phenomenological thought to building a theory of embodied cognition, a subfield of cognitive science that has recently been gaining wider recognition¹⁰. Here I will focus on two studies: enactive cognition where a profoundly intersubjective nature is given to interactions, and embodied realism which sees higher order thought and language as metaphorically derived from embodied perceptual experience. I will briefly outline their philosophical foundations and research outlook before continuing on to focus on their views of sociality. A discussion of directions for applying an IR methodology presented by these scholars will close each outline.

¹⁰ See Dreyfus 1992, Dourish 2001, Winograd 1995 for discussion on the rising influence of the subject.

The brief discussions of enactive cognition and embodied realism are conducted here to lay the groundwork from which methodologies discussed in part III are developed. Common features in how embodied cognition is formalized into these two philosophies which inform our understanding of societal interaction, give social theorists key concepts upon which to build methodologies. The key concepts, and some methodologies based on them, make up part III.

Enactive Cognition

In their 1991 book *The Embodied Mind* Francisco Varela, Evan Thompson and Eleanor Rosch (VT&R) elaborate on the concepts of autopoiesis, spelling out its relationship to phenomenological thought and applying it to a profoundly embodied, *enactive* concept of cognition.

Varela, Thompson and Rosch share Maurice Merleau-Ponty's aim of revealing the interplay between science and human experience and consider their work to be directly invoked through his. Merleau-Ponty himself was largely influenced by Edmund Husserl and Franz Brentano, Husserl's teacher, and the author's trace their conceptions back to Brentano's notion of intentionality as a mental state that is *of* or *about* something.

Husserl significantly developed Brentano's idea of intentionality, trying to understand the structure of intentionality as a concept removed from the empirical world. But it is his bracketing of the everyday experience that VT&R find problematic, writing that (VT&R, 16) Husserl's difficulty generating a "consensual, intersubjective world of human experience" was due to his outlook of study as a mental philosophical abstraction. In *The Crisis of European Sciences and Transcendental Phenomenology* VT&R feel that Husserl does partially rectify his mistake through his conceptualization of a practical, everyday, social world, termed the "life-world". However, even here the authors find that Husserl continued to view phenomenology as the study of essences, leaving unanswered the troubling question of how phenomenology can presuppose theoretical activity, if the latter brings about the life-world. They write (VT&R, 18), "Phenomenology too presupposes the life-world, even as it attempts to explicate it. Thus Husserl was being haunted by the untraversed steps of the fundamental circularity."

For VT&R Merleau-Ponty comes closer to an embodied experiential depiction with his phenomenology of lived experience by turning criticism of the separation of lived experience from its background of cultural beliefs and practices directly back to the philosophy of phenomenology itself, giving voice to conscious reflection. However, the authors remind us, Merleau-Ponty himself realizes that his task is infinite, once again because he has not released his conception of philosophy from a removed, purely mental practice. The authors argue that a pragmatic view to Merleau-Ponty's constructs frees the philosophy from its Cartesian anxiety, and offer Buddhist conceptions of non dualism, particularly as found in the Madhyamika tradition of philosophy forwarded by Nagarjuna,

as complementary to Merleau-Ponty's ideas, that together form a phenomenology grounded in the pragmatic, everyday experiences of living organisms in interaction.

Concepts of self-organization, operational closure and structural coupling first developed by Maturana and Varela are retained by VT&R, who direct their non-representationalist philosophy to advances in connectionism, criticizing tacit representational aspects that sneak back into systems through assumptions that restrict the physical space allowed, or through the practice of back-propagation (to be described later). The authors feel that modeling in embodied cognition should be entirely free of representations by "treating context-dependent know-how not as a residual artifact that can be progressively eliminated by the discovery of more sophisticated rules but as, in fact, the very *essence* of creative design" (148). As with autopoiesis, enactive cognition should be understood as a non-objectivist, dynamic process of interactions from which knowledge is an emergent property.

The authors argue their nonrepresentational stance with a discussion of the current understanding of neuroscience in vision and color perception. Discussion of the attributes of color perception that are ill-explained by representational concepts are introduced by the authors, including the phenomenon of approximate color constancy, whereby an area on an object is perceived as a constant color in different light even though the wavelength of light reflected from the surface changes significantly. Other visual phenomena, including a case study of an accident victim who entirely lost color vision following an accident, and visual pathway studies by neurologists are presented to further VT&R's

argument that color must be situated within a structurally coupled system and observed as a perceived phenomenon by an embodied agent (embodied with cone cells, visual pathways and a thalamus, visual cortices, frontal lobes, etc.) to be better understood. They identify two categories of color as a cognitive process, relating it to language where syntactic arrangements in different languages give varied attributes to color, but the perceptual experience of color remains similar. Similarly, they point out studies where varied lexical classification of color in diverse cultures affects subjective judgment of similarity among colors. It is with these scientific studies in mind that VT&R formulate what is meant by enaction: first, perception “consists in perceptually guided action” and second, cognitive structures are an emergent property from the recurrent sensorimotor patterns that enable action to be perceptually guided (173).

Although VT&R focus on color in *Embodied Cognition*, other studies in neuroscience conducted before and after the publication of their book in 1991 support their conception of the nonrepresentational, distributed nature of sensory activity [need refs see Chap 8 in VT&R etc.]. In later work Thompson and Varela point to papers by several scholars that show downward (global-to-local) emergence in connectionist systems, supporting studies conducted by Varela on the role of cognitive tasks in modulating epileptic activity in patients. Studies on the F5 region of the premotor cortex of monkeys performed by Vittorio Gallese (1999) suggest that self accomplishment of certain goal directed hand movements activate the same patterns as hand movements in conspecifics. These studies all suggest that structural coupling with environments outside of the head affect higher level cognition.

The distributed nature of sensory activity suggested by VT&R is much stronger than notions of weak intersubjectivity. In enactive cognition experience of the world occurs in the interaction itself. That is, for VT&R there is no self in the experience (or in Buddhist terms, mindfulness comes from emptiness), as all experience intersubjectively emerges in cognition. Rather than independent bodies in motion, enactive cognition suggests that experience is always other-directed, allowing a great deal of scope for empathy and compassion in social interaction.

While their theory is mostly compatible with evolutionary concepts, and in fact evolution as natural and structural drift is a central premise of their work as seen in previous discussions on autopoiesis, VT&R's conception of evolution varies from the classical cognitive models which privilege optimal fitness and competitive selection in evolution. Citing the evolution of color vision in various animals, the authors show that, although structural coupling does trigger change in the range of viable trajectories for evolution, the specific trajectory is the result of "subnetworks of selected self-organized repertoires" (197). What this means is that the trajectory of evolution is underdetermined by constraints of survival and reproduction, allowing for various other factors to influence it. Thus evolution occurs not to fulfill some ideal design but simply because it is possible. They write, "adaptation, problem solving, simplicity in design, assimilation, external "steering", and many other explanatory factors based on considerations of parsimony not only fade into the background [with a non-optimal trajectory for evolution] but must in fact be completely reassimilated into new kinds of explanatory concepts and conceptual

metaphors” (96). The authors lay out three conditions that conjoin to inform evolutionary trajectories:

1. The richness of the self-organizing capacities in biological networks
2. A mode of structural coupling permitting the satisficing of viable trajectories
3. The modularity of subnetworks of independent processes that interact with each other by tinkering. (197)

Thus for the authors evolution is not allowed only in a restricted *band* of trajectories, but rather by some (any one) of *all* possible trajectories *except* for those beyond the range of possible structural coupling. So thinking of competition in evolution overemphasizes the restrictions imposed in structural coupling by the organism’s property of self-organization. There is no teleological property to natural evolution; it is a purposeless drift.

Note that this conception of natural drift can be translated to the social realm after acknowledgement of two distinctions between biological and social structural coupling. First, that the range of (social) coupling between people is much broader than that between components of organisms, and second that human consciousness influences the forms of social coupling so unlike natural drift, cultural drift can be directed by social intervention. In comparison to Wendt’s allowance of only certain behaviors that can drive cultural change at the international level, following VT&R it could be suggested that one should be looking to *only* drop those dynamics that the state system would *not allow*, leaving all other options as possibilities. As point 3 above tells us, evolutionary

processes can also be directed by sub-state dynamics interacting with the international culture. Following VT&R, rather than considering states “as people too” what the IR theorist should be considering is the modes by which states can be considered to have self-organizing properties, recognizing that in all other modes the influence of societal intersubjectivity cannot be constrained by restrictions to ensure state survivability.

Enactive cognition at the social level would suggest strongly intersubjective dynamics that are deeply reliant on the history which subjects bring to interactions. What we get from the authors is that all interactions are deeply situated, strongly intersubjective processes through which cognition emerges. The self-organizing principles discussed by VT&R suggest that advancing a theoretical construct based on Wendt’s theory of self-organization in states—but now one that assumes all intentionality has wide content—would remove the ambiguity in Wendt’s thesis, but at the same time lead to a radically different conception of international dynamics. Here, self organization would not have the same attributes as in Wendt’s conception (physical survival, autonomy, economic well-being and self-esteem), but would instead have attributes that promote the existence and continued interactions of the subjects who enact the state into existence.

Lakoff and Johnson: Cognition and Semantics

In their 1999 book *Philosophy in the Flesh*, George Lakoff and Mark Johnson’s conception of embodied scientific realism draws from enactive cognition, while focusing

on the role of embodiment in language and its influence on conscious cognition. Citing Merleau-Ponty, Dewey and enactive cognition as their philosophical precursors, Lakoff and Johnson promote a realism that rejects the Cartesian separation of body and reason, where reason is “grounded in our capacity to function successfully in our physical environments” (1999, 95). Thus their philosophy is “evolution-based” in that it suggests modes of cognition that support our physical experiences in their environments.

The authors point to weaknesses in the “formal-syntax-and-semantics” paradigm of linguistics to argue against an objectivist theory of an external reality, suggesting instead that linguistic processing occurs in the cognitive unconscious, giving language a profoundly embodied ontology. The cognitive unconscious is one of three levels of truth in embodiment; the others being neural embodiment, which is arrived at through scientific investigation, and the phenomenological level, in which we feel experiences. The authors contend that by privileging one of the two latter truths, one falls into either a “science-first” eliminative physicalist dilemma where sentences like “The grass is green.” cannot be given any truth, or a “phenomenology-first” dilemma where the greenness of grass can only be experienced in a purely subjective manner, dismissing any scientific truth claims. Instead the authors adopt a physicalist attitude *without eliminative traits*, taking into account the context in which truth claims are made. By endowing the cognitive unconscious with the properties of being intentional, representational, propositional and causal (truth characterizing) the authors develop its conceptual structure in language through the metaphor.

According to Lakoff and Johnson, the metaphorical nature of reason has profound implications for philosophy, including the following: our primary metaphors provide the logic, imagery and qualitative feel of sensorimotor experiences; our abstract concepts are defined by conceptual metaphor; much of our reasoning is metaphorical; and reason and conceptual structure are shaped by our “bodies, brains and modes of functioning in the world” (128). Thus, the authors argue, abstract ideas such as events, causation, time, the self, mind and morality are largely metaphorical, with varied, often contradictory conceptualizations based on body experiences. They give examples of metaphors of the mind such as “Thought as Object Manipulation” including the phrases “toss that idea around” and “went right over my head” that impose physical body-in-its-environment relations to seemingly unrelated concepts. Their theory has wide applications and much of these are traversed in their book, but a section on the metaphorical structure of the theory of rational action is noteworthy, although it will not be expanded on here.

Much of Lakoff and Johnson’s construct is compatible with Wittgenstinian language games studied by der Derian, Campbell and others, allowing for a knowledge/power dynamic to be played out through language and the manipulation of metaphor. They are antifoundationalist in the sense that even though they believe that much of our understanding, even of abstract, “representation hungry” ideas, are body-based; they are based on dynamic coupling with the environment where Archimedean origination points for objectivity have no meaning. As with enactive cognition, they argue that truth (or “stable knowledge”) has relevance in its context, following Deweyan notions that the transactive field carries the meaning of observed behavior. Furthermore, through its

pragmatic roots, their post-Kuhnian philosophy allows for interplay of knowledge and power without falling into the dilemma of moral relativism.

Both enactive cognition and embodied realism as defined by their creators have real relevance to post-positivist theorization on sociality and the intersubjective dynamics that constitute societies and culture. I believe that these concepts should be exploited so that embodied cognition and IR can inform each other to create sturdier theoretical constructs that are continuous, or at least have understandable discontinuities, as they are scaled up from individual cognition to cognition at higher societal levels. Further studies in IR that incorporate notions of embodied cognition can inform the normative scholar about how intersubjectivity is enacted in sociality, allowing normative IR constructs to be built with deep roots in interdisciplinary conceptions of cognition.

The application of embodied cognition as a methodology in IR could take various forms, such as “field studies” following Edwin Hutchins’ 1995 book, *Cognition in the Wild*, which studies the social dynamics on the bridge of a navy ship. This and other methods based on concepts compatible with key ideas in enactive cognition and embodied realism will be discussed in part III. I will turn now to another form of methodological analysis that has been deeply influenced (and in turn has itself deeply influenced) new directions in cognitive science: computational modeling.

Connectionism and Beyond: Dynamic Systems Theory and Recent Advances in Modeling

The influence of connectionism as a method of computational modeling of embodied cognition has been discussed throughout this part of the paper, but just how these systems work has not yet been clarified. Drawing largely from Andy Clark's chapter on connectionism in his 2001 book *Mindware*, I review below key aspects of connectionist architecture and distributed representation, before introducing new work that advances connectionism's relation to our cognitive processes via dynamic systems modeling.

Connectionist systems are often referred to as neural networks, but (although there is a relation to brain functioning here where one did not really exist with symbol processing systems) it should be noted that the differences between these models and what occurs in the brain are still great.

Unlike symbol processing computation which is typically built serially, connectionist architecture is composed of several simple processors that are connected in parallel with weighted connections, hence the analogy to neural networks with neurons as processors and axons and synapses making up the connections. Like our neural networks, connectionist units (the simple processors) are generally activated only by nearby units, taking information from them (their activation value) as inputs and passing information on to a neighboring unit through the weight of the connection to that unit. What this allows is a distribution of simple information in each unit to be activated to simultaneously form *distributed* representations (where information that constitutes the

representation is spread over units). This can reduce research bias by avoiding the direct input of full semantic representations as symbols.

Clark writes (2001, 66) that the distributed architecture, when combined with “the systematic use of the distributions to encode further information concerning subtle similarities and differences,” gives connectionist systems their distinctive computational ability. Clark offers encoding that would allow the formation of the visual representation of a black cat as an example. The activation of a certain pattern of units may represent a black cat in the visual field, with “microstructural” encoding providing more detail, for example the orientation of the cat. Because the representation of the image of a black cat is built up by substructural patterns the coding is not semantic in nature. For instance, the coding at each unit may simply be featured externally by a pattern of hatch marks. Therefore, the words “cat” and “panther” will not activate overlapping patterns of unit activity but a nonrepresentational substructure of activations which constitutes the representation of a black cat may have some overlap with the substructural patterns that represent, say, a black panther in the visual field. Clark writes (66), “the upshot is that semantically related items are represented by syntactically related (partially overlapping) patterns of activation. Distributed superpositional coding may thus be thought of as a trick for forcing still more highly structured information into a system of encodings by exploiting even more highly syntactic vehicles than words.”

So as to find the correct weights in the connections between units for a given task (which determine the activation value of the units), connectionist systems must be trained. One

algorithm commonly used to for this is back-propagation. Here, weights between units are randomly set, and inputs are fed to the system to generate an output. A supervisory system, encoded with the actual output, compares the result with the correct answer (on the first try there will doubtlessly be a significant error) and interrogates a single connection to find out if a slight increase or decrease will reduce the error in the resulting activation value, and amends the weight accordingly. This is done for all the connections and the system is run again until a low error between the actual result and the system result is achieved. Once a low error is achieved, the system weights are frozen and the system is allowed to run without supervision: the training is complete. If successful, the system will now be able to deliver useful output for input that was not given to it during training.

Connectionism has been termed a “subsymbolic paradigm” because of its aim for dissociation from public language, revealing “finer grained and more subtle” features than in words. Clark adds,

The activation of a given unit (in a given context) thus signals a semantic fact: but it may be a fact that defies easy description using the words and phrases of daily language. The semantic structure represented by a large pattern of unit activity may be very rich and subtle indeed, and minor differences in such patterns may mark equally subtle differences in contextual nuance. Unit-level activation differences may, thus, reflect minute details of the visual, tactile, functional, or even emotive dimensions of our responses to the same stimuli in varying real-world contexts. (67)

Recurrent connectionist networks mark progress in this type of system by introducing feedback loops (Elman, 1991) which recycles some activity into the input at a later time, allowing for the generation of dynamic sequences of output. Additionally, on post-training analysis of the network, this added dynamic characteristic allows the researcher to better understand how the network's being in one state promotes movement to another. Further advances in introducing temporal structure in connectionist networks has led to a sub-branch of research broadly named dynamic systems theory.

Jerry Fodor and Zenon Pylyshyn (1988) have famously criticized connectionism as a model for human cognition, arguing that their lack of structured internal representations suggests that they lack systematicity (as in, for example, understanding that it would be possible to say "Mary loves John" once one is able to form the sentence "John loves Mary."), which is prevalent in human cognition. Their argument has been countered by defenses of connectionism¹¹, and at present whether there can be a connectionist account of cognitive systematicity remains an empirical question.

Dynamic Systems Modeling

In recent years the inhibition of representation and the temporal structure of cognition have been applied to connectionist systems to result in deeper structural coupling than feedback loops. These advances could mark a significant improvement in the ability of connectionist systems to model cognition as a as transactionist, dynamic process.

¹¹ For example, see Aizawa 1997, Matthews 1997, Smolensky 1991 and van Gelder 1990.

Influential proponents of dynamic systems theory include proponents of enactive cognition, embodied, realism, along with scholars in cognitive psychology and developmental psychology. Notably, the developmental psychologist Esther Thelen and Linda Smith (1994, themselves influenced by Jean Piaget) have successfully modeled theories on goal-directed reaching in infants in dynamic systems models to show that infant reaching supports a profoundly embodied view for both low level sensorimotor engagement and higher level cognition. In dynamic systems models cognition is not viewed just as snapshots of representation through coupling of body and environment, but through “time-locked” patterns of interactions across heterogeneous components. Significantly dynamic systems models incorporate two fundamental aspects of interactions advocated in embodied cognition: first, that models must be distributed so as to be subsymbolic and nonrepresentational, as are some connectionist models, and second, that models must allow a dynamical coupling of interactions, which non-dynamic connectionist systems are unable to accomplish. Thus, dynamic systems models are supported by the creators of enactive cognition, embodied realism and many others¹².

Dynamic systems theory (developed using concepts prevalent in physics) as a method of computational modeling could have significant impact on the ability of IR theorists to model interactive, context driven societal behavior in the future. Broadly, the concept behind dynamic systems theory is to understand not just the outcome of interactions, but how the interactions are enacted and evolve. At each moment the system can be described in a particular way (mathematically speaking, the state of the system at one moment is called the state space and describes the coupling of agent and environment and

¹² Supporters of dynamic systems modeling include van Gelder (1998), Kelso (1995) and Beer (2004).

everything else in the system in terms of differential equations) and has a set of possible trajectories by which to “move” to another state. The art of designing a dynamical system well is in the designation of variables that uniquely characterizes the behavior of the processes, and their distribution.

In order to gain some understanding of the state of the art in dynamic systems theory I summarize here one (highly applauded¹³) recent project by Randall Beer. In his study of the dynamics of an agent in a simple computational environment, Beer (2004) seeks to increase our understanding of coupled brain-body-environment system dynamics. The agent is developed using a genetic algorithm (a system that simulates a designed evolutionary process to “evolve” an agent well suited to a given artificial environment) before introduction to the studied environment. Here the agent has been evolved to “visually” discriminate between circles and diamonds (catching the diamonds and avoiding the circles). The agent has a nervous system consisting of an eye and sensory and motor neurons that allow it to move horizontally when triggered by the “sight” of a circle or diamond. Beer’s aim here is not to ascertain the resultant dynamics, but to understand how the agent and environment interact and “the underlying neuronal properties responsible for agent dynamics”. The agent is dropped into an environment where objects (circles and diamonds) fall straight down from above in a two dimensional space.

Through post-run interrogations of the system Beer studied the agent’s dynamics, such as how it discriminated between a diamond and a circle and how and when it decided to act

¹³ See Clark, 2004

based on this discrimination, as well as the coupled system dynamics including a characterization of the broad and detailed dynamical structure of the entire system. He also studied how the dynamical structure of the system arose, asking such questions as “Why is object width the determining factor in discrimination?” “What underlies the misclassification of falling object that occasionally occurs?” and “Why is the moment of decision to catch or avoid so difficult to pin down?”

Beer’s findings of agent’s perceptual behavior support several of the concepts discussed above about embodied cognition, including Maturana and Varela’s view of understanding perception as a perturbation on an agent, marking his research as an outstanding advance for proponents of embodied cognition. But as IR theorists I think it is the questions that Beer asked of his model that should be particularly revealing. These questions do not presuppose folk theoretical constructs of perception as internal representations of an objective reality, and show that the modeler cannot and should not presume that the “how” questions have already been answered by these folk conceptions. Comparisons to modeling of sequential prisoners’ dilemma (SPD) games strikingly illustrate the progress made in Beer’s model: in a game of SPD, imagine asking *what underlies* prisoner 2’s defection on the 76th run.

In *Rediscoveries and Reformulations* Alker writes of his analysis of the verbal protocols of SPD games in order to ask just these types of questions of SPD games, only to reveal the deep underlying dramatic/historic intersubjective repertoire of highly socialized individuals that is played out in them (1996: 303-331). Beer’s project is to build a model

that minimizes the assumptions found in other models, making interrogations of why and how dynamics occur worth the asking. Perhaps soon we will be able to build models with multiple agents that are complex enough to ask similar how and why questions about the intersubjective dynamics between agents. This is why in addition to being an important step toward creating an understanding of sensorimotor processes; it also has significant implications for bridging the understanding/explanation gap in social dynamics.

Embodied Cognition and Post-Positivist IR

Part II began with summaries of the philosophical underpinnings of embodied cognition to show that its underlying philosophy has significant parallels to normative thought in IR, and that it specifically converges with pragmatic concepts at the level of individual-in-its-environment. In particular, embodied cognition, like post-positivist thought in IR, rejects subject/object foundationalist claims and emphasizes the contingent, situated and strongly intersubjective nature of human and social behavior. This situatedness (or embodiment) that is inherent in embodied cognition is deeply rooted in pragmatic thought. However, what is proposed in this paper is that embodied cognition is highly suited to be a methodological construct for a wider application in normative, post-positivist IR, so what remains is to show that it can be widely applied to the subfield beyond pragmatism. This is the primary focus of this last section of part II. I will draw from Cochran's 2004 article "Deweyan Pragmatism and Post-Positivist Social Science in

IR”, to show how the pragmatic roots of embodied cognition allow for it to be adopted as a scientific methodological framework in post-positivist IR. I will then briefly summarize commonalities in enactive cognition and embodied realism, and suggest how these commonalities can inform a normative IR methodology.

As has been seen in my earlier discussion of Deweyan pragmatism, its strength for both embodied cognition and post-positivist IR lies in its ability to build up scientific concepts without the strict subject/object divisions adhered to in positivist thought. However, Deweyan pragmatism has only recently witnessed a revival among post-positivist IR scholars, and thus may require some support for suggesting that a pragmatic methodology would be applicable to this subfield as a whole. I follow work by Cochran to accomplish this by comparing Deweyan pragmatism to phenomenological and Habermasian philosophies more familiar to current day post-positivist thought in international relations.

Phenomenological concepts carry significant complementarities to Deweyan pragmatism. As seen in earlier discussions, Dewey’s transactionist approach to interactions suggests that knowledge is deeply rooted in everyday experience as perceptions are typified and distinguished to give meaning to this experience. This Deweyan concept of knowledge is similar to Husserl’s depiction of ‘lifeworld’, where human experience is grounded in the everyday social world. Here human experience is not limited to perceptual experience but includes reflection and theoretical activity, including science. Similarities in Deweyan knowledge can also be found to Wittgenstein’s language games which seek to realize a

general program of analytical philosophy through careful study of ordinary language in its context, or form of life.

However, studying situations in their contexts alone will only lead to understanding of several situations in the particular phase space they actualize. It is the method of generalizability offered by Deweyan pragmatism that makes accommodation of pragmatic methodologies into theoretical constructs attractive. Even here similarities between pragmatism and phenomenology exist, in Dewey's habits and interests and Alfred Schutz's 'zones of relevance'.

Most significant in Cochran's discussion of complementarities between Dewey and the phenomenologists is in Wittgensteinian notions of the "interconnected language games of culture" and Deweyan ideas of the settlement of proof, truth and justification. Here both theories allow for weaker forms of intersubjectivity to exist within socially constituted cultures. Thus, rather than thinking of intersubjectivity as weaker because of 'scaling up', it is possible that even in its highest international level, it is the *socially constituted aspects* of statehood common among all societies that exist in states which offer ways of thinking of certain state action as rational.

Cochran also offers a powerful reason for considering Deweyan pragmatism over Habermasian concepts of social action and objectivity currently favored by post-positivist theorists. This is that although Habermas' concepts have strength in that they offer universal truth claims, this is done without "justification of their transcultural status"

(Cochran 2002, 541). On the other hand Dewey specifically seeks to build generalized knowledge from the ground up, so to speak, thereby avoiding susceptibility to overgeneralizations.

In comparisons with phenomenology on issues including experiential knowledge and the others discussed above, Cochran shows that Deweyan pragmatism can be effectively adopted to engender a methodology for study in post-positivist IR. While a pragmatic outlook to studying the intersubjective dynamics of normative IR is helpful, it is also incomplete without the structure of a methodological framework.

Embodied cognition offers a set of principles common, for example, to both embodied realism and enactive cognition that structure a methodological framework, which direct the researcher to certain methods and pull together interdisciplinary work over its common platform. From reviewing enactive cognition and embodied realism we see that these principles include the situated embodied nature of cognition, the emergent properties of cognition through interaction and the strong intersubjectivity that underlies interaction. These key principles will form the structure over which methods of studying social dynamics will be discussed in part III.

Summary

After establishing a motivation for the development of methodologies in normative IR in part I, I introduced embodied cognition in this part of my paper as a methodological framework that is both complementary and convergent with normative IR. The philosophical and conceptual underpinnings of this new turn in cognitive science were then outlined in discussions of Deweyan pragmatism and the biologically derived concept of autopoiesis. I also discussed two predominant philosophies, as well as new methods of computational modeling, that are grounded in an embodied concept of cognition.

In part II I have supplied the reader with an overview of embodied cognition. That is, this part serves as an overview with the significant addition of showing how embodied cognition relates to normative IR theory. This relationship suggests that there is scope for scientifically observing social interactions even if one accepts that strong intersubjectivity can be enacted in them. However, so far I have only shown relations that suggest undefined possibilities for developing future interdisciplinary methodologies that exploit the relations. In the next part I will structure the relations suggested here and review some methodologies that emerge from this structure to show that embodied cognition can act as a methodological framework upon which methods for studying normative IR can be developed.

PART III:

On Applying Embodied Cognition to Normative IR

There is no distinction at all between the everyday world (samsara) and freedom (nirvana). There is no distinction at all between freedom and the everyday world.

The range of the everyday world is the range of freedom. Between them not even the most subtle difference can be found.

Nagarjuna (XXV: 19, 20), quoted in Inada, 1970

In the first part of this paper I advocated that we increase our understanding of intersubjectivity in IR, doing so primarily by exposing weaknesses in Wendt's construction of the state and international culture in *STIP*; a construction that presumes constraints on human intersubjectivity without clear justification for such presumptions. My intention was to show that once we accept a role for ideas and identity in IR even our most celebrated efforts to understand international dynamics are limited and weakened due to an inadequate understanding of how intersubjectivity is enacted in and between humans.

In part II I introduced the concept of embodied cognition as an emerging multi-disciplinary science which complements and converges with those views in IR that incorporate both material and social dynamics. I also showed that this convergence occurs specifically with post-positivist normative IR.

The field of international relations has experienced a resurgence of norms-based conceptualizations in recent years, but, perhaps partly due to the privileged position of action through rational choice in IR, this resurgence has occurred with very little grounding in the intersubjective means by which norms develop. As IR theorists focusing once more on the roles of ideas, identity and norms we need to understand intersubjectivity because it is through such understanding that we can address group intentionality and the forces that group intentionality exert at international levels of society. It is with this need in mind that I introduced embodied cognition as a methodology for a material and normative international relations theory.

As we saw in part II both normative IR and second generation cognitive theory support a view where intersubjectivity is the medium through which social cognition emerges. In agreement with post-positivist IR, the scaling up of embodied cognition to the level of conceptual cognition means that individual cognition is influenced by intersubjectivity—and perhaps even entirely emergent from it, as suggested by Maturana and Varela. The domain of intersubjectivity addressed in both fields follows a continuous range from weak to strong as introduced at the start of this paper.

So we see that embodied cognition complements much normative IR and, through the scholarship outlined in part II, it gives the IR scholar groundwork from which to build an understanding of sociality and the role that intersubjectivity plays in sociality. From part II we can define three key aspects of embodied cognition that agree with and complement post-positivist material and norms based IR as follows:

1. Cognition is embodied

Embodiment implies grounding in both the brain/body characteristics of cognizers as humans, and the characteristics of space, time, history, culture and other dimensions that fully describe the cognizer in interaction with her environment

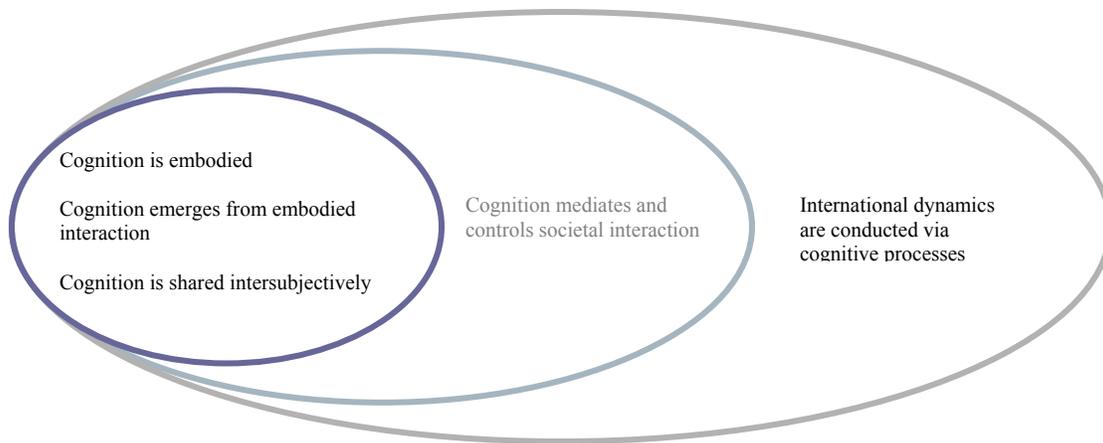
2. Cognition emerges intersubjectively from embodied interaction between cognizers in the environment

3. Cognition is intersubjectively shared by cognizers

Individually none of these aspects are new to IR. First, as we have seen, both Alker and Cochran have argued for the situatedness or contingent nature of cognition and societal knowledge. Second, the emergence of cognition, or in other words the ontological primacy of intersubjectivity which gives rise to cognition, is an underpinning of much normative thought, as reviewed in Ruggie's description of the rise of the state system. Finally, the distributed nature of cognition is in agreement even with Wendt's positivist

construct, in his definition of collective knowledge. However the shared nature of cognition means that it is not only distributed but also interactive through social coupling. That is, in embodied cognition (as in reflective IR) group cognition is a process of social coupling which can be settled to persisting, widely accepted knowledge, but never reaches the permanence that positivists would allot truth in knowledge.

By formalizing these aspects together in embodied cognition (and the social scaling up of embodiment) we arrive at a framework for post-positivist IR methodologies that incorporate normative and material notions, in a similar way as the rational actor provides the groundwork for methodologies that inform material interest based IR. But the characteristics of cognition, even at the social level, must be coupled with an acknowledgement that cognition mediates and controls societal action before we can see how such groundwork specifically informs us about a normative and material IR theory. Upon appreciation of the role of societal cognition in international dynamics a clearer picture emerges of how its embodied nature affects international dynamics, as encapsulated below.



This organization is highly complementary to norms and material interest based post-positivist IR, because it affords a nonfoundationalist, non-value neutral, explanation- *and* understanding-seeking methodology. In some senses it is subsumptive to the rational actor model because through it we can conceive of ways in which intersubjectivity can be enacted to create cultures where humans do behave something like rational actors, yet it does deny that economic rational choice behavior is universal, suggesting to the contrary that it is highly situation dependent.

To be clear, what is offered here is not a new theory for IR, but a methodological framework for organizing existing scholarship and for identifying possibilities of new interdisciplinary research. Existing research in normative IR theory can be compiled and connected through organization around the concept of embodied cognition, to create a cohesive body of work that can then draw from related scholarship in other fields for further development. In particular, through its pragmatic approach, embodied cognition gives the post-positivist theorist pathways for tapping into scientific research without the

negative implications of determinism and decontextualized objectivity that social theorists have historically associated with the application of science to sociality.

In the final part of this paper I focus on new areas for interdisciplinary research in IR that an embodied cognition approach would offer, highlighting three possible avenues for empirical exploration. These are a) context studies, b) linguistic systems, and c) dynamic systems modeling. The purposes of these explorations are to further our understanding of intersubjectivity itself and to explore new ways to model intersubjectivity in action so as to increase our understanding of the role of sociality in international dynamics.

Context Studies

Normative studies of IR often seek to reintegrate empirical research into theory building¹⁴ because empirical research in the form of case studies and comparative studies has consistently been the method turned to when seeking to understand how norms and ideas make a difference in politics. This is also true for a socially embodied methodology in IR, except here the explicit emphasis on the situatedness and sharedness of cognition instructs the scholar on how to formulate her work. Here the emphasis on situatedness would take empirical research further than is commonly practiced in IR today. This would be accomplished by softening the boundary between the empirical scholar and

¹⁴ See Finnemore and Sikkink (1998).

theorist through focusing on the theory as it lies within the context itself, rather than on how the empirical research fits in with “offline” general theoretical constructs. Following a pragmatic approach, generalizations of findings then occur through processes of sharing studies and the settlement of knowledge through debate and discourse.

One direction suggested by situated cognition would be to focus on goal directed, situated group activity as with Edwin Hutchins’ (1995) now paradigmatic study of group cognition in ship navigation. Here, Hutchins follows activities of the crew at the bridge of a naval vessel to show that cognition is distributed when a group performs both routine and unexpected tasks together, without any one member having full awareness of the action taking place. Rather, the cognition occurs beyond the head, in the interaction of crew, bridge, ship and the tools used in activity. Gyrocompass, logs, forms and charts act as scaffolds, aiding but also mediating and constraining the actions of the crew. Hutchins notes that the cognition that occurred during coordinated activity was dynamic and happened in real time, unlike classical views which would have emphasized the sequences of actions of individuals. Such studies, whether within the bridge of a ship or between international institutions during a crisis, inform the IR researcher to be cognizant of the real time interactions and group level behavior during activity, as well as to pay heed to the scaffolds—whether gyrocompass and chart, or embassy and culture—that enable and mediate interaction.

However, cognition for normative theorists is not just distributed, but also shared and bidirectional, affecting the individual as that individual contributes to cognition in the

group. How does this occur? One possibility is through mimicry. As we have seen in part II, neuroscientists have discovered that mirror neuron circuitry in the brain is activated with similar patterns when the animal performs a task and during observations of the *same* activity in *others* (Gallese 1999). This research is consistent with concepts of empathy developed by Varela, Thompson and Rosch discussed in part II where empathy is predicted to occur through just this type of non-inferential pairing of the self with another. Social psychologists have taken the concept of mimicry further, exposing human tendencies for bodily (Bernieri 1988) and facial (Provine 1986; Zajonc et al. 1987) mimicry, as well as communicative mimicry where speakers match speech rate (Capella and Planalp 1981), emotional tone (Neumann and Strack 2000), manual gesture (Bavelas et al 1988), and syntactic construction (Bock 1986). Social theorists argue that conversational mimicry occurs to establish rapport, empathy and cooperation (Bernieri 1988; LaFrance 1985; Neumann and Strack 2000; Semin 2000).

This is informative for the IR theorist for several reasons, including that studying the contexts and time durations in which mimicry occurs could significantly inform us of the developmental processes of culture. One revealing study conducted by Zajonc et al shows that facial similarity increases in couples married for over 25 years because of continued facial mimicry during interaction (Zajonc et al. 1987). Similarly, it is possible that persistent states (or dynamic traits) carrying cultural attributes condense over prolonged, continuing processes of communicative mimicry.

Lawrence Barsalou (2003) adds that in addition to mimicry, shared cognition also occurs through embodied response to social stimuli. He draws on neuroscientific research which shows that neuronal motor circuitry is activated in humans during processes of conceptualization, in which Rizzolatti and others (2002) demonstrate the activation of appropriate neuronal motor circuitry when subjects are shown images of objects that imply certain physical behavior for manipulation (such as a hammer). The subjects were relatively immobile during the experiment, lying in a functional magnetic resonance imaging (fMRI) scanner, but even so exhibited patterns of neuronal activity as if they were physically manipulating the objects they were shown. Social psychologists, including Bargh and others (1996), have similarly shown that subjects primed with words related to rudeness are more likely to interrupt during interactions immediately following the prime than subjects primed with words related to politeness or neutral words. Once again, this suggests a dynamic nature to cultural behavior where our traits are continuously being adapted and readapted through interaction with others and with the cultural artifacts that surround us. Researchers in international relations often conceive of cultural behavior as a static trait, but work done in other disciplines suggests that cultural attributes can be best perceived when studied as dynamic behavior in context.

At the international level culture, sovereignty, extraterritorial presences and histories of interactions act as scaffolds, mediating, but at the same time controlling interactions between states. At the social level scaffolds can act as very powerful directors of behavior and in some cases can even affect an individual's memory. Daniel Wegner (1995) has shown that continuous, persistent social coupling between individuals with

different specializations leads to individuals acting as each other's scaffolds as each member's memory is progressively indexed to their activity and to complement others' activity. This leads to a transactive memory within the group that is irreducible to any member. Notice that this is a much stronger statement than that each member shares her specialized knowledge to create a group level collective knowledge. Rather, it tells us that through the continued appropriation of a role within a group, an individual's ability to evaluate and act in response to a new occurrence is affected because of their progressively indexed memory. Indexed memory from prolonged social coupling would have significant ramifications if it is found to translate to higher group levels such as persistent regimes of shared, segmented responsibility. Further studies of regimes that sustain groups of segmented specialization, such as in the segmented responsibilities between U.S. and Russian teams in the International Space Station, could be informative in scaling up this concept to levels applicable to the IR scholar. To take this concept even further, is it possible that transactive memory affects the collective memory of societies? Possibilities for further research at this level include focusing on affects on collective memory within institutions that have historically allocated certain tasks to cultural out-groups, for example Gulf oil exporting states that have historically employed overseas firms to manage their refineries.

The adoption of an embodied cognition approach to IR research emphasizes that studies be situated and contextualized to build theories, with a small 't', that are pertinent to the situation addressed, drawing generalities through further comparative research and dialog. This may sound disappointing to some because it seems to offer nothing new;

comparative studies have been carried out in IR for centuries. However, embodied cognition does offer something new: it offers groundwork around which research can be linked and organized to build a unified theory, and through its organization it directs the researcher to 'lower scale' work done in other disciplines that can be scaled up, adopted and tested at the international level. As shown above, through the organizational aid offered by an embodied cognition approach, the IR theorist has the ability to consult research in other disciplines that address context dependent cognition and test how ideas in these fields contribute to our understanding of interactions at the international level. We have previously seen that intersubjectivity is underspecified in normative IR. Interdisciplinary context oriented studies may help us understand when and why stronger intersubjectivity is evoked in some interactions, but not others.

I will close this section with a reminder of Alker's study of the verbal protocol during sequential prisoner's dilemma (SPD) games mentioned earlier in part II. It was through situating SPD games that Alker was able to disrobe the decontextualized mysticism that lay underneath the seeming ability of such games to speak to the heart of our IR conundrum. Through situating the games Alker resurfaced the scaffolding that mediated and controlled player dynamics in both real and virtual (computational) games: that scaffolding was language. Language is the means by which most interactions relevant to international relations occur, thus situating interactions for the IR theorist commonly necessitates situating interactions in language.

Linguistic Systems Modeling

Alker applies Chomskian representationalist “scripts” (1996, 274-296) following Schank & Abelson (1977) in his retelling of SPD games. Rather than conceptualize our minds as the creators of elaborate internal scripts, embodied cognition would instead suggest that dynamic sensorimotor coupling to the everyday world mediates behavior. For the IR theorist interested in embodiment and situatedness Alker’s argument still has every relevance despite the redirection away from representation to persistent, dynamic social coupling. What changes here is that rather than think of our behavior as mediated by static representations, the dynamic nature of social behavior is given forefront in embodied cognition.

Lakoff and Johnson (1999, 553) lay out what they define as the “traditional Western conception” of personhood—perpetuated dynamically through interaction in the world—which easily confers with Alker’s conception of the scripts that lead to SPD game behavior. These traditional Western conceptions of personhood include the following: the world is objective; a universal reason characterizes the rational structure of the world; the structure of the mind is defined by universal reason and independent of the brain and body; through deciphering of universal concepts our minds can attain knowledge of the world, and; since reason is separate from our bodies, perception, bodily movement, feelings, emotions, etc. play no role in reason. Additionally, traditional reason is literal, where our concepts are said to be capable of “directly fitting” the features of the world.

Instead, Lakoff and Johnson argue that new interdisciplinary research suggests reason is metaphoric. They apply neuroscientific advances which show that our judgments and subjectivity become neurally linked¹⁵ through everyday regular sensorimotor experiences. We are able to activate these links through simple, automatic, unconscious metaphors, which in turn allow us to structure conceptual metaphors of our subjective experiences. And it is through conceptual metaphors that we are able to engage in abstract reasoning.

Even as abstract content is generated out of embodied metaphor, it is also situated. In recent work, Barsalou and Wiemer-Hastings (in press) explore the content of the abstract concept *FREEDOM*, suggesting a more direct link of abstract concepts to sensorimotor experience. Empirical studies conducted by Barsalou and Wiemer-Hastings suggest that the abstract conception *FREEDOM* is highly situated (it is hard to talk about this concept without embedding it within a situation), like concrete concepts (for example, *HAMMER*). However, unlike concrete concepts which focus on objects, the concept *FREEDOM* focuses on “social, event and introspective properties,” implying that although they are situated, abstract concepts are more distributed than concrete ones. What the authors seek here is to understand whether a core definition of abstract concepts can be found through the sampling of distributed definitions. If, however, a core definition is deemed not to be particularly useful it is possible that situated definitions may be applied from memory as abstract concept instances are encountered. The authors contend that if this is so, then instead of allowing scholars to produce the content of

¹⁵ These neural linkages occur during childhood through conflation of sensorimotor activation and subjective experience. For more on how primary metaphors arise through subjective experience see Lakoff and Johnson, 1999: 45-59

concepts such as *FREEDOM* in an “unrestricted manner”, it would be more useful to have them produce content relevant to a specific situation.

The situatedness of abstract concepts is highly significant to the IR scholar. Accepting the intersubjective nature of language structure, a non-universality of abstract concepts would suggest that there can be no objective method of their application. Given that these concepts, especially freedom, found and lie at the heart of IR theory and political philosophy, grounding them in situated metaphor would challenge much historical Western, particularly Kantian, thought. In one of the many ways in which Nagarjuna’s¹⁶ two thousand year old quote can be read (copied at the start of part III), his message resonates with the situatedness of abstract concepts: for Nagarjuna the dependence of freedom on the situated, subjective experience of the observer means that freedom only arises through experience. Barsalou’s studies again emphasize the need for situationally contextualized studies, even suggesting that the most historically theoretical subjects of thought, the study of abstract concepts such as freedom, are derived intersubjectively in context through language and should therefore be studied in a situated manner.

The application of situated linguistic modeling also puts the IR scholar in a better position to reduce the conflation of meaning and context in analysis. Language, like culture but unlike a material tool such as a hammer, only exists in its application, and for this reason cannot only be conceived as a tool for communication. Social psychologists Eliot Smith and Gün Semin (in press) highlight this point by proposing that communication through language continuously reproduces and reinforces the structure of

¹⁶ Nagarjuna was a Buddhist scholar in the Madhyamika tradition; see Inada, 1970; Varela et al, 1991

language in order to convey meaning and enact intentionality. Structural reproduction and the conveyance of meaning are thus two interrelated features that underlie communication and it is because of this that language should not be conceived of simply as a container of information and meaning, but also as an evolving process by which social coupling occurs, holding in its semantics and syntax information about the regularities in behavior of its users. In his book on the evolution of linguistic and communicative forms Paul Saenger (1997) discusses many instances of the interplay between culture, innovation and prominent changes in the structure of language, music and mathematics, supporting this line of argument. One such example of interplay Saenger writes of is the move to silent reading that occurred with the introduction of differential spacing between words and word groupings.

Similarly, Semin (1989) argues that language cannot be simply treated as inter-individual phenomena without addressing the cognitive processes that underlie it. In his study Semin shows that patterns obtained in Asch data, which have been traditionally held as a model dataset of human traits through relations between words, can be reproduced just by utilizing a dictionary of synonyms and antonyms, removing the humans from the model altogether. This suggests that rather than showing linkages with psychological relevance, studies that utilize language are often simply reproducing the connections within the language itself.

The main thrust of this section has been to show that advances in linguistics emphasize the situated nature of language, and through this instruct the IR researcher to consider not

only the content of communication but also the context in which it takes place in their empirical studies. The appropriate inclusion of linguistic analysis in empirical research can help ascertain the extent to which a common context has been established in key communications, and therefore the extent to which meaning between communicators is truly shared.

Dynamic Systems Modeling

It is a curious and dangerous characteristic of social scientists to confuse structure and meaning (the information explicitly carried in the structure) in systems modeling. On the one hand, when we analyze linguistic communication we tend only to perceive meaning, ignoring the linguistic structures behind it. On the other, when we analyze mathematical models we often adopt the structure of the model, when only the meaning it carries has any validity. The section above has given several examples of why the context specific structure of language must be taken into account to fully understand the situation in which language-based interactions take place.

For elaboration on my first point, that we adopt the structure of mathematical models when only the content carried in them should be applied, one need simply look at the volume of theories attributing linear causality to complicated social and international dynamics in the past decades when linear or logit mathematical models were readily

available. That has changed in IR recently, with the absorption of mathematical modeling of nonlinear processes into international relations scholarship.

One famous example of this is Nathaniel Beck, Gary King and Langche Zeng's (2000, referred to as BKZ) application of neural network (connectionist) modeling of international conflict data. BKZ exchange the traditional logit for a neural network by adding an extra layer of hierarchy to the Bernoulli distribution of a logit model. The traditional logit Bernoulli model is given by,

$$Y_i \sim \text{Bernoulli}(\pi_i),$$

where Y_i is the outcome (1 for conflict, 0 for peace) between a dyad i . The probability of international conflict between a dyad, π_i , is given by

$$\pi_i = \text{logit}(X_i\beta) = \text{logit}(\text{linear}(X_i)) = 1 / (1 + e^{-X_i\beta}),$$

where X_i is a vector of k constant terms for k explanatory variables and β is a $(k + 1) \times 1$ vector in which each term corresponds to the weight of the explanatory variable. The neural network takes on a new layer for the probability of conflict as follows:

$$\begin{aligned} \pi_i &= \text{logit}(\text{linear}(\text{logit}(\text{linear}(X_i)))) \\ &= \text{logit}[\gamma_0 + \gamma_1 \text{logit}(X_i\beta_{(1)}) + \gamma_2 \text{logit}(X_i\beta_{(2)}) + \dots + \gamma_M \text{logit}(X_i\beta_{(M)})], \end{aligned}$$

where each effect parameter, $\beta_{(j)}$, is *itself* a $(k + 1) \times 1$ vector, and γ linearizes the inner logit function (providing the same function as β in the traditional logit model). Here the relationship between probability, π_i , and explanatory variables, X_i , is no longer a straightforward logit S curve, but instead a set of M logit functions, thereby allowing as many as $(M(k + 2) + 1)$ parameters that can alter the relationship between probability and variables. In the BKZ neural network model the inner logit layer serves as the hidden layer previously discussed in part II of this connectionist model, carrying an M number of neurons. The authors choose $M = 25$ neurons in the hidden layer, and $k = 6$ explanatory variables in their model (whether the dyad is contiguous, allied and of similar state preference, and the asymmetry in power, degree of democratization and years since conflict of each dyad). As discussed in the introduction to connectionist modeling in part II the BKZ network was trained using a test set of data before its predictive capability was tested.

This neural network model of conflict is a vast improvement on the traditional logit model (which never predicts conflict between a dyad in the BKZ experiment) because the insertion of the hidden layer allows the explanatory variables chosen to significantly interact with each other, as is shown in BKZ in the partial derivative of the probability of conflict in a dyad with respect to any one explanatory variable. This is very different from logit models which only allow for a very weak interaction between variables. The neural network model clearly performs better than the logit model because of its nonlinearity, predicting a greater than 50% probability of conflict in 17% of the conflicts

that in reality did occur. The authors agree that the 17% prediction rate leaves much to be desired in absolute terms, but argue that this is still a vast improvement on other models. I readily agree that their model is a vast improvement and add that it clearly suggests that allowing nonlinear interactions significantly improves the quality of modeling. Another significant improvement on previous models is that the authors recognize the contingent nature of causal structures and limit their dataset to data that they qualitatively assess has a high risk of conflict. However, BKZ take their case further, and real concerns about confusing meaning with structure arise when they use their model to test the causal structure of conflict and its agreement to some IR theory.

The problem here is that the model suddenly changes from one that reveals nonlinearity and contingent dynamics in datasets, to one that produces data for testing theoretical constructs. In highly nonlinear dynamics, as the BKZ neural network is by allowing an $M = 25$, the sensitivity of the dependent variable to very slight changes of the right parameters can also be very high. That is, once the closer (but far from absolute) correlations to real conflict are found in certain nonlinear processes, the first conclusion one should arrive at is that no broad theoretical claims can be tested reliably with this parametric configuration. This is because a) the omission of variables could completely alter convergence to theoretical claims, b) there could exist an alternate parametric configuration of the included variables that would offer a higher correlation but suggest a very different causal structure, and c) if variables are omitted, then even a lower correlation parametric configuration (that is, a configuration that was rejected during training) could actually more closely model reality than the configuration that passes the

training period. Thus, in IR when a highly nonlinear causal structure is suggested, and where qualitative, strong causal linkages do not exist independently of the model, the model does little more than make a strong argument for the nonlinearity of the causal structure, and is surely not robust enough to test theoretical structures.

However, the authors do test various causal structures after their model returns 17% accuracy in conflict prediction, including the causality of democratic pacifity. What seems to be forgotten in doing so is that the net only forecasts the continuation of relationships that are coded in during its training period, where the variables have semantic meaning only before their input and in their deciphered outcome. Thus all that has been shown is that patterns of relationships trained into the model as a system are perpetuated beyond the training period, and when interrogated the model shows these patterns of interactions that are then once again given semantic meaning. Specifically, the patterns of interactions and outcomes that exist in the training dataset (in BKZ this is the 1986-1989 portion of their complete dataset) play a very strong role in assessing causality in ex ante results. Additionally, a Bayesian framework is also applied in BKZ during training to encourage configurations that “punish model complexity” so as to avoid overfitting, and the patterns of interactions that model and test theories are only those allowed through this screening.

Even though this model is far superior to logit models because the neural net here (quasi-)independently converges to a pattern of interaction of the variables given, it is still far from authoritative, if only because the data used in training may (unbeknownst to

the modeler) be entirely inadequate in supplying the net with suitable relationships to make generalized predictions. In a 2004 paper the authors agree that closer correlation to neural network modeling suggests a highly contingent nature for international dynamics. They write, “our point is that theories of international conflict that have a one-size-fits-all approach to regions and time periods should be replaced with theories that reflect the highly contingent and context-dependent nature of the phenomenon” (Beck, King and Zeng 2004, 380). However, the conflation of content with structure has already been accomplished in their discussion of theoretical fits to their model.

A situated methodology would suggest a different approach from BKZ to applying nonlinear models. Although the application of neural network modeling to international conflict datasets is well suited to show the superiority of nonlinear models, once this superior performance has been shown, BKZ’s valuable contribution to IR modeling would be better applied to more specific data than that of international conflict. Coupled with extensive, qualitative analysis of detailed causal structures, as in specific case studies, a BKZ style neural net could be rendered more robust by being carefully designed to fit the known dynamics of a case.

However, even so its application is still limited because reflexive ideas-based theories can specifically *not* be modeled following BKZ. This is because the BKZ model, although vastly more insightful than the “normalized linear” causal curve only allowed by logit, is still static in nature, and does not allow for endogenous changes in time. Thus strong intersubjective interactions could not be modeled in this way. Additionally, one of

the basic arguments behind ideational theory is that humans can self-reflectively assess their behavior and change it to better suit normative goals. Without any ability for changes in relations and patterns to occur from within the system itself, only static “stuck-in” behavior can be modeled by this type of neural net. For this reason computational modeling methods have seldom been used in normative IR research; but as described below dynamic systems modeling holds considerable promise for becoming a method by which to model normative and material dynamics.

The introduction to dynamic systems theory provided in part II briefly discussed the significant advancement of dynamic systems models in its ability to address the transactive processes that are present in cognition and the changes in behavior over time, including those that would occur through self reflection. In part II I focused on a very limited, but highly reasoned and deeply causally and constitutively structured, dynamic model of a visual perceptor in its environment created by Randall Beer. After studying the BKZ model, one is clearly struck by differences in the two projects’ outlooks. Where BKZ abstract a handful of variables to suggest causal claims, Beer builds a simple but complete system of agent and environment to increase understanding of the interactions that occur within it. Of course, the sheer complexity of international relations phenomena makes it virtually impossible to create systems in such deep detail, but it is still possible that careful, pragmatic applications of the tools offered by dynamic systems theory—as part of a larger methodology that incorporates field or comparative studies and situated theoretical constructs—could help build normative IR methodology.

The approach to dynamic systems modeling in IR promoted here stresses that the situations modeled stem from extensive and in-depth empirical observation. Such observations should occur at levels below and above the system, so that the research offers an understanding of the dynamics underlying the system's self-organization. Following Haken's phenomenological synergetics (1983), which focuses on observation of phenomenological behavior in self-organizing systems, instabilities pose a more convenient entry point from which to model a system. In nonlinear dynamical theory a separation of behavioral patterns of variables occurs during periods of instabilities, allowing the observer to discern which variables are involved in the change in patterns within the system¹⁷.

Close observations of instabilities support the proposal that it is better to start from situated, in-depth comparative studies of an event and the system in which the event takes place rather than apply massive data sets to a model. After discerning patterns of behavior and instabilities in these patterns, the theorist/empirical scholar can study their observations to identify variables (or order parameters) that best describe changes in these patterns. These variables are often not the semantically ready variables familiar to the IR theorist and can often in fact be processes that underlie them; so much care is required in variable assignment. Once the variables that best describe the patterns of behavior, as well as the parameters that induce changes in these variables (the control parameters), are identified, the researcher can then consider turning to dynamical systems modeling to test their theories. Finally, *distributed* dynamic connectionist models should

¹⁷ See Beek, Peper and Stegeman (1995)

be sought in computational modeling, allowing the variables to interact in an appropriately wide variety of ways.

Dynamic systems modeling can be highly complex (often involving more than cursory perusals of such journals as *Physica-D* to grasp) and a review of its details is beyond the scope of this paper. However excellent reviews of the application of this type of modeling in the behavioral and biological sciences¹⁸ can inform the IR scholar on ways in which it can be done in our field. Situated, in-depth theory constructs that are supported by qualitative case studies can potentially gain from the application of dynamic models. When well designed, these models can accurately describe fairly complex systems and can be effectively interrogated to test the veracity of theories. There is reason for the normative IR theorist to be reservedly optimistic about dynamic systems modeling because of their potential to model reflexive societal interactions, and their ability to capture highly interactive environments. Therefore, further study of situated, context-oriented dynamic modeling could prove very fruitful for normative IR scholarship.

Context studies, linguistic systems and dynamic systems modeling offer new insight and methods for analysis for the IR scholar. Combined in context oriented empirical studies these areas can constitute a new methodology for conducting research in IR that emphasizes the situated and embodied nature of human cognition and interactions.

¹⁸ In particular, see Thelen, Schöner, Scheier and Smith, (2001) who model Piaget's A-not-B error in toddlers; see also Schöner and Kelso (1988).

Situated theoretical constructs can be developed in such research to help build on existing normative and material IR theory. These concepts studied above, and embodied cognition as a whole, offers the IR theorist a pragmatic, scientific outlook—and in dynamic systems theory and context analysis it also offers concrete methods—from which to increase our understanding of the intersubjective dynamics through which human and societal interaction takes place.

In Conclusion: Intersubjectivity, Embodied Cognition and a Dialectic Approach to Synthesis in IR

This paper has taken a broad perspective in addressing the problem of intersubjectivity in norms- and interests-based international relations. At present, IR theorists are restricted in their ability to conceptualize the dynamics and characteristics of institutional interactions because of a weak understanding of the intersubjective means by which these institutions are constituted. Additionally, they often develop an either/or mentality toward normative and material-based theories. In material-based IR this occurs because intersubjectivity is only understood in its common form as perception. In normative theory this is done by underspecifying the range of strengths of intersubjectivity observed in social interactions.

Unlike theories built from rational choice models, normative concepts cannot be readily appropriated into larger classically scientific constructs, and attempts to naturalize norms

and sociality could steer the field in entirely the wrong direction. Our subjective experiences tell us that sociality simply does not work following the rationality of Newtonian dynamics. Unlike the objects studied in classical dynamics, humans are intentional beings and through our intentionality are able to alter the dynamics of the systems in which we interact. Rational choice scholars address this problem by allocating one static trait for humans, that of interest-seeking efficiency. In this way, once the particular interest sought by the agent is established, human dynamics can be readily modeled with the application of adjusted Newtonian principles.

However, there is another problem even with this adjusted view. Humans are not only intentional but also capable of self reflection. Through social-coupling we exchange views about ourselves to intersubjectively devise collectively held norms and ideas about who we are and what the world we live in is. Rational choice models, no matter how loosely bounded, simply cannot address this process of experiential intersubjectivity, and cannot do so for two reasons: first, rational choice has reduced intentionality to conscious, logical and disembodied interest maximization; and second, for rational choice actors ideas are always in the head, and intersubjectivity can at most take the form of perception and the common knowledge of agreed upon meanings.

Despite, or perhaps because of, a disinterest in naturalizing international relations among norms-based scholars, normative IR has built up into an alternative theory that rivals the traditional interest-based theories of neo-realism and neo-liberalism. However some

scholars on both sides are troubled by the debilitating effects of having such parallel and largely non-communicative directions of scholarship, and seek to bridge the fields.

One prominent example of a theoretical construct that seeks to act as a *via-media* is in Wendt's *Social Theory of International Relations*. Here Wendt builds up a system of states as self-organizing entities, made up of humans capable of collectively sharing knowledge, but who still carry a 'rump' of rational actor characteristics. This allows Wendt to conceptualize variances in the strengths of intersubjective interactions. Through this conception Wendt's contribution to IR is significant, but upon careful study one sees that the restrictions he places on intersubjective dynamics are weakly supported. What this tells us is that normative IR's underspecification of intersubjectivity could hinder attempts to build theoretical constructs, and that a methodology is needed through which we can better how varied strengths of intersubjectivity are enacted in different social contexts.

This paper also seeks to bridge the gap between normative and interest-based IR scholarship, as well as the *Verstehen-Erklaren* controversy in IR¹⁹. However, instead of suggesting that the true answer is somewhere in between the two sets of theories, I think that what is really required is a methodology that allows normative IR scholars to conduct research that is accessible and meaningful to those in interest-based IR. Through such a methodology a dialectic can be established and maintained between the fields that provides a forum for the exchange and sharing of ideas. I suggest that this is a wiser

¹⁹ The two are not necessarily the same, as there have been real advances in understanding in interest-based research, while normative theorists are often interested in explanation in their work.

approach than attempting to find a middle ground that can be agreed on by both sides, because it allows the body of knowledge gained through the work of both sides to be debated and discussed and thereby incorporated into the dialectic. In turn, the incorporation of existing knowledge *in* discourse would allow for a settlement of new knowledge to occur *through* discourse.

It is for this reason that Wendt's approach is not as powerful as the direction suggested by Alker and Cochran. Following Wendt, one is only offered another fully elaborated theory for international politics. However, Cochran and Alker suggest that through pragmatism, or practical reasoning, a stronger theory than already exists can be settled upon through discourse. Therefore while Wendt's work acts as a stand-alone theory, Alker and Cochran seek to bridge existing theories by offering methodologies that are significant and meaningful to both sides from which stronger theories can emerge.

I follow Cochran's and Alker's lead and propose embodied cognition as a methodological framework for adoption in normative IR. As shown earlier there is a deep complementarity and convergence of ideas between much normative theory and new advances in cognitive science, and I propose that this convergence be exploited and be rendered instrumental in building up an IR methodology. Specifically, the contribution that embodied cognition offers normative IR is the potential for interdisciplinary scaling up intersubjective dynamics from the conceptual level to the level of interactions of large groups, societies and institutions. Furthermore, it allows us to interrogate and test the strength of intersubjectivity in societal dynamics so as to gain a better understanding of

when and how strong intersubjective dynamics take place. This can be done through modeling methods such as dynamic systems models, which offer the IR scholar methods of modeling social dynamics that take humans as embodied, intentional, cognitive and situated agents into account.

Finally, the methodology proposed here is necessarily a post-positivist methodology that draws from Deweyan pragmatism and phenomenology in its creation. Following Cochran's and Alker's suggestions that a pragmatic approach would further normative post-positivist IR, I lay out the benefits to be gained from incorporating the pragmatic approach of embodied cognition into an IR methodology. I suggest that the post-positivist nature of embodied cognition actually gives further strength to its application, by offering new ways of incorporating scientific knowledge to further a nonfoundationalist approach to international relations.

As mentioned earlier, the outlook of this paper has been broad. Rather than proposing particular models for development I have chosen to overview expansive and complex fields of research to show the potential they carry for furthering post-positivist normative IR and international relations as a whole. Rather than offering one methodology for study of normative and material interaction, this study intends to be an introduction to a new approach containing many methodologies for applying research in cognition to advance our understanding of international relations.

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