

Introduction

Inside/Outside and Around Observing the Complexity of Global Life

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And so he [the student of world politics] embarks on a search for certainty, only to find that it lies in such phrases as “apparently,” “presumably,” and “it would seem as if.”

—James N. Rosenau (1960, 21)

Introduction

“Apparently,” to use James Rosenau’s suggestion in the epigraph, uncertainty has always been a defining feature of world affairs. So why then are policy makers, international relations (IR) scholars, and we—the news-thirsty public—so surprised when the world turns out to be unpredictable? After all, depending on how far back one is willing to look, the discipline (at least in its “Eurocentric” form) has gone a long way since the first department of international politics opened its doors at Aberystwyth or since Thucydides scripted his account of the Peloponnesian wars. In either case, the veritable age of IR should have “presumably” provided it with enough experience to expect—if not necessarily be prepared for—the unexpected. Yet, as Rosenau (1980) reminds us, IR is anything but prepared for uncertainty (and has been so for a while). According to him, “it would seem as if” the mainstream has lost its “playfulness.” Thus, instead of allowing “one’s mind to run freely, to be playful, to toy around with what might seem absurd, to posit seemingly unrealistic circumstances and speculate what would follow if they ever were

to come to pass,” the IR mainstream has sidelined its mischievous nature in favor of stiff parsimonious models simplifying the contingent nature of most that passes in world affairs. Therefore, for Rosenau, it is no wonder that IR has consistently failed to “imagine the unimaginable” (Rosenau 1980, 19–31).

It is for this reason that he pioneered nonlinear approaches “to toy around” with the complex patterns of world politics (Rosenau 1990). Subsequently, the propagation of complexity thinking (CT) concepts and ideas across the IR domain has become one of the most fascinating trends in the discipline. Complex challenges emerging from the interconnectedness between local and transnational realities, between financial markets and population movements, and between pandemics, a looming energy crisis, and climate change have tested IR’s ability to address convincingly their turbulent dynamics. The contention of this volume is that such complex challenges intimate a pattern of interactions marked by sharp discontinuities. Modern, large-scale actors—such as states and international organizations—have become vulnerable to unexpected shocks. However, IR, with its tradition of state-based analysis, has difficulties with the cross-cutting and intersecting character of many complex challenges. In fact, the emergence of such qualitative uncertainties demands a different type of thought process capable of addressing the multitude of forces and random processes that animate the dynamism of global life (Bernstein et al. 2000).

The need for a new vocabulary reflects the twin tendency in IR to think in paradigms and to return to familiar concepts. This is a perplexing trend, bearing in mind that the topography of IR theory—especially following the end of the Cold War—has developed into a multicolored matrix of perspectives and frameworks on the appropriate ways for studying world affairs. Motivated by the failure to anticipate the demise of Soviet superpower, the discipline embarked on an unprecedented widening and deepening of its outlook. It appears, however, that two-and-a-half decades later the innovative spark that invigorated this proliferation of views has pitered out. Instead, what used to be a liberating tearing up of conceptual straitjackets seems itself to have oscillated into the very “paradigmatic imperialism” that it sought to displace. As J. Samuel Barkin cogently demonstrates, the discipline is plagued by a “castle syndrome”—proponents of different IR schools engage in defending and reinforcing the bulwarks of their analytical castles, while bombarding the claims of everybody else (Barkin 2010).

The contention is that the discipline has increasingly immersed itself in debates on the substantiation of particular paradigms rather than engaging with the reality of global life. To put it bluntly, the turbulence of world affairs appears to have relevance (primarily) to the extent that it can validate (or

disprove) the proposition of a particular IR school. Such contention should not be misunderstood as a condemnation of the field, or as a suggestion that it lacks sophistication. On the contrary, post–Cold War developments have challenged the discipline to venture into intellectual terrains that it previously did not deem necessary, important, or worthwhile. The suggestion here is that while this has been going on, IR scholars failed to break from the leftover mode of thinking in paradigms—probably one of the most palpable Cold War legacies of the discipline. Thus, despite the “new challenges,” IR has not abandoned its “old habits” (Waltz 2002). Such a proclivity has recently been termed as “returnism”—IR’s predilection for traditional conceptual signposts that provide intellectual comfort zones but are “simply images of old concepts” decontextualized from (and, therefore, inapplicable to) current realities (Heng 2010).

Such a mentality has hindered the interaction between the different IR paradigms, between IR and the advances in other social and natural sciences, as well as the development of qualitatively new intellectual platforms for engaging the complexity of world affairs. This volume addresses this shortcoming by bringing together distinct readings of international patterns developed by proponents of CT. The claim here is that while IR scholars often employ the metaphor of complexity, the potential theoretical and policy contributions emerging from the analytical principles of CT have largely been neglected. The marginalization of CT proponents within the discipline reflects both their refusal to think in paradigms and the espousal of a new vocabulary both for the study of IR and for the explanation and understanding of global life, which very often has its origins in the natural rather than the social sciences.

However, one question that needs to be addressed at the outset is: Why complexity thinking? The answer offered by the contributors to this volume is that IR needs new forms of knowledge to respond to emerging complex challenges, in particular knowledge coming from a different epistemological, ontological, and ethical place than the conventional repertoire of IR (Ang 2011; Murphy 2000). CT offers such a point of departure. In particular, CT endeavors a form of argument that illuminates that the development of sophisticated and sustainable responses to current challenges requires the recognition of complexity—not for complexity’s own sake, but because simplistic solutions are unsustainable and counterproductive (Kavalski 2012b). What IR can gain from such a move are useful analytical and policy-making concepts and ways of thinking about the dynamism of a fragile and unpredictable global life.

The use of the notion of “global life” is not coincidental here. It allows the contributors to this volume to explore the full spectrum of CT’s con-

tributions to IR. As it will soon become apparent, CT has a (potentially) transformative impact both on the established anthropocentric IR and on the emerging nonanthropocentric one. Having its roots in the Latin word *complexus*—describing “that which is woven together” as well as something that has “embraced,” “plaited” several elements—the complexity perspective infers the *interwovenness* of life (both as an inherent quality and a systemic condition). The recognition of such interwovenness between human and natural systems defines *global life* not merely as international politics, but as coexistent “worlds,” “domains,” “projects,” or “texts” of ongoing and overlapping interconnections (Rosenau 1988). Global life consists of more than just political communities and the polities that they inhabit—that is, it is not only about what happens “inside/outside” the state, but also about what happens “around” the state. It also reveals that the “international system” is embedded within wider structural conditions and interactions located within the environment “around” the conventional focus on interstate relations, an environment which conceptually constitutes as well as causally conditions (although not in a mono-causal and linear fashion) states *and* other actors (Kurki 2008, 255–261).

It has to be stated from the outset that such engagement with the “around” of global life is much less radical than it might appear at first sight. In fact, it merely recollects the central place that the agency of nature used to be accorded in the study of IR. The term “nature” is not used here in an essentialized sense, but meaning “an independent domain that both enables and constrains human activities, and [that] will not prove endlessly adaptable on the demands made on it by human beings” (Soper 2010, 223). Such encounters with the “around” of world politics should not be new to IR. For instance, by the 1920s, the discipline acknowledged that the natural environment is one of the key actors on the international stage. As Raymond Garfield Gettell insisted, despite “man’s best efforts to bring the world in which he lives under his control, the influence of the natural environment upon political evolution has been throughout all human history an important and, in many instances a decisive, factor . . . Battles, upon whose outcome the fate of nations has depended, have been decided by natural phenomena such as wind, rain, fog or snow, beyond human control” (Gettell 1922, 322). In particular, the significance of the “around” of global life to the study and practice of international affairs has been stressed by the suggestion that “the dominant factor which determines the survival of a group is suitability to the environment” (Heath 1919, 143).

In this sense, already from its outset, IR has acknowledged that nature’s agency—even if unintentional—plays an important role in the unfolding of

world affairs (and should therefore not be discarded). For instance, it is often overlooked that with his emphasis on the “geographic causation [behind] the competing forces in current international politics,” Halford Mackinder, the so-called father of geopolitics, intended not only to draw attention to the crucial role played by geography, but rather “to exhibit human history as part of the life of the world organism” (a statement which can be read as Mackinder’s version of the notion of the “around” of global life). From this point of view, the dynamics of world affairs demonstrate that “man and not nature initiates, but nature in large measure controls [the outcomes]” (Mackinder 1904, 422). This ontological commitment is echoed by Harlan and Margaret Sprout in their outline of “ecological viewpoints, concepts, and theories in connection with politics in general and international politics in particular.” The Sprouts defined world politics as a turbulent set of “man-milieu relationships,” which includes “both tangible objects, non-human and human, at rest and in motion, and the whole complex of social patterns, some embodied in formal enactments, others manifest in more or less stereotyped expectations regarding the behaviour of human beings and the movements and mutations of non-human phenomena” (Sprout and Sprout 1956). Consequently, such recognition of and confrontation with the “around” of global life calls for

a major revision of our understanding of international relations: politics among and above nations is recognised as a part of a vast natural system, a biosystem. Therefore, all past units we [have] become accustomed to—territorial units and functional relationship—are subsumed under the biosystemic perspective. All units and all relationships become relevant. (Haas 1975, 842)

Thus, the emphasis on the notion of global life intends to resuscitate IR’s interest in the ossified knowledge about the embeddedness of world affairs in the “around” that provides the context for what has and makes possible its interactions. Human societies and their international interactions are just “one component in a package of interdependent life forms that continue to adapt to each other” (Clark 2000, 4). The suggestion is that the “inside/outside” and the “around” aspects of the study of world politics are not in contradiction, but part of the same spectrum of dynamics embedded in the patterns of global life. The notion of global life therefore elicits that all human interactions are embedded in and made possible by complex global interconnections. The claim is that in contrast to the conventional distinction between subjects (humans) and the objects (the world around them) (Rosenow 2012), the emphasis on the concomitance of the “inside/

outside and around” allows for acknowledging the agency and subjectivity of human and nonhuman actors on the global stage.

As the contributors to this collection aptly demonstrate, the reference to global life should not be misunderstood as an insistence on the similarity of human and nonhuman systems (be they biophysical or technological). On the contrary, the notion of global life does not deny the qualitative differences between human and nonhuman systems. Instead, it underscores that the two are mutually implicated and interdependent. In other words, the emphasis on the global life proffers a “human-in-ecosystem” perspective on the study and practice of IR, which recognizes “the mutual influence of ecological and social processes, instead of treating social and ecological systems as linked but separate domains” (Davidson-Hunt and Berkes 2003, 54). Thus, while this volume does not want to brandish CT as a panacea for the crises plaguing the global condition, it nevertheless suggests that CT offers unique opportunities (if not for blurring the dichotomy between anthropocentric and nonanthropocentric IR) for a thorough reconsideration of the explanation and understanding purveyed by representatives of both anthropocentric and nonanthropocentric IR.

The confrontation with the radical reality of global life—namely (to use Emmanuel Adler’s term), its “cognitive punch”—seems to suggest that existing analytical frameworks, institutions, and types of political behavior have become “dysfunctional and can no longer deal with the situation in the old ways” (Adler 2005, 75). The intention of this collection is to offer a glimpse into CT’s potential to generate new ideas and new arguments for tracking the evolution of global life through periods of discontinuous change, in ways that promise to better over time both understanding and action (Geyer and Rihani 2010). The following sections provide a brief overview of the “complexifying” trends in IR and the contributions to this volume.

Complexifying IR

As the contributions to this volume demonstrate, the applications of CT to the study of world politics offer perhaps the best confirmation of the insistence that “the value of complexity exists in the eye of its beholder” (Manson 2001, 412). As a referent for the intricacy of international processes, “complexity” has become an integral part of IR discourses as is instanced by the notions of “complex interdependence” (Nye 1993, 169), “complex learning” (Wendt 1999, 170), “complex political emergencies” (Goodhand and Hulme 1999), “complex security” (Booth 2005, 275), “complex socialization”

(Flockhart 2006), and “complex political victims” (Bouris 2007)—to name only a few. Yet, despite their sophistication, such uses of the term fall short of suggesting the analytical paradox of the complexity of global life—“the less foreseeable the future, the more is foresight required; the less we understand, the more is insight needed; the fewer the conditions which permit planning, the greater is the necessity to plan” (Ruggie 1975, 136).

In this respect, the proponents of a CT approach to world politics insist that IR scholars are unaware of the built-in limitations of the mainstream agenda (Cederman 1997, 20). In order to address these shortcomings, the application of CT research to IR has cut across the intellectual purview of the discipline:

- *revision of IR paradigms* (Bousquet and Curtis 2011; Clemens 2013; Cudworth and Hobden 2011a; Geyer and Cairney 2015; Harrison 2006; Kavalski 2007; 2011; 2012a; Keating 2013; Lehmann 2012; Morçöl 2012; Rosenow 2012);
 - *rationalism/realism* (Axelrod 1997; Brown 1995; Byrne 1998; Friedman 2014; Gunitsky 2013; Jervis 1997; Kissane 2011; Özal 2003; Zolo 1992);
 - *constructivism* (Adler 2005; Cederman 1997; Hoffman 2005);
 - *postmodernism* (Cilliers 1998; Coetzee 2013; Deuchars 2010; Dillon 2000; 2005; Lenco 2012; Popolo 2011);
 - *eclecticism*—synthesizing rationalist and reflectivist approaches (Cooksey 2001; Dittmer 2013; Geyer 2003b; Cîndea 2006);
- *international history* (Beaumont 1994; Brunk 2002; DeLanda 1997; Dobuzinskis 1987; Hoffman and Riley 2002; Jervis 1997; Khalil and Boulding 1996; Ma 2011; Richards 2000; Rosenau 1990);
- *globalization* (Boardman 2010; Chandler 2014; Chesters 2004; Clark 2000; Cole 2003; Geyer 2003c; Grove 2011; O’Riordan and Lenton 2013; Ramalingam 2013; Rosenau 2003; Urry 2003; Walby 2007; Whitman 2005);
- *European integration* (Barry and Walters 2003; Clemens 2001; Connolly 2011a; Geyer 2003b);
- *conflict resolution* (Azis 2009; Beech 2004; Bueno de Mesquita 1998; Burt 2010; Davis 2004; De Coning 2012; Hendrick 2009);

- Little 2008; Mesjasz 2006; Pil-Rhee 1996; 1999; Raphael 1982; Sandole 1999; 2010; Suedfeld and Tetlock 1977);
- *development* (Boardman 2010; Coetzee 2013; Cole 2003; Dimitrov and Hodge 2002; Farrell 2004; Özel 2003; Longstaff 2005; Loorbach 2010; Parfitt 2006; Ramalingam 2013; Rihani 2002; Sassen 2014; Whiteside 1998);
 - *security studies* (Alberts and Czerwinski 1997; Ayson 2006; Bousquet 2009; 2012; Coetzee 2013; Cudworth and Hobden 2011b; Dillon and Wright 2006; Dunn Cavalty 2007; Elhefnawy 2004; Grove 2011; Kavalski 2008; 2009; Little 2008; Longstaff 2005; Martinás et al. 2010; O'Riordan and Lenton 2013; Ramsden and Kervalishvili 2008; Scheffran 2008a);
 - *state-building* (Cederman 1997; Coghill 2004; Dobuzinskis 1987; Little 2008; Matthews 2013; Zolo 1992);
 - *policy-making/strategy* (Cairney 2012; Chandler 2014; Comfort 2000; Dennard et al. 2008; Dobuzinskis 1987; Duit and Galaz 2008; Elliott and Kiel 1999; Feder 2002; Geyer and Cairney 2015; Geyer and Rihani 2010; Hoffman 2003; Kavalski 2012b; Kiel 1992; Kuah 2012; Lane and Maxfield 1996; Lehmann 2011; Longstaff 2005; Loorbach 2010; Morçöl 2012; Özer and Şeker 2013; Ramo 2009; Richards 2000; Room 2011; Rosenow 2012; Teisman and Klijn 2008; Wallace and Suedfeld 1988; Whiteside 1998; Zolo 1992).

The breadth and scope of this literature corroborate the suggestion of a “paradigm shift” in the study of world politics (Harrison 2006; Rihani 2002). At the same time, Adler (2005, 32) insists that the application of CT to IR proffers images and sets of perceptions about causality, which are broader and more profound than the concept of “paradigm” would suggest. Without wishing to comment on the nuances of these claims, the suggestion of this volume is that there is not one single CT approach to IR, nor even an emergent complex international relations theory—if anything, there is a multitude of contending complex IR theories. Thus, the proposition of this volume is that the cross-over between complexity research and the study of international affairs suggests a nascent complexification of IR.

On a theoretical level, the application of CT to the study of world affairs proffers “new ways of thinking about how global politics unfold” in an environment where “uncertainty is the norm and apprehension the mood”

(Rosenau 2003, 208). Thus, while most IR scholars would agree that the world of their investigations is complex, they still insist that the proper way for acquiring knowledge about it is through the modeling of linear relationships with homogeneous independent variables that discern between discreet stochastic and systemic effects (Hoffmann and Riley 2002, 308; Johnston 2005). The value from the complexification of IR is to *start thinking* about the interconnections of global life in terms of complex systems. The application of CT to IR asserts that uncertainty and unanticipated consequences should be expected (Beaumont 1994, 155; Cioffi-Revilla 1998, 25). Although this might seem like a truism, it is surprising how little attention mainstream IR theory spares for the study of contingency and contradictions. Ruggie's assertion that the leitmotif of international politics is "better orderly error than complex truth" still appears to hold true (in LaPorte 1975, 145). In translating the jargon of complexity to the vocabulary of IR, Rosenau (2003, 11) has substituted it with the term "fragmegration." His intention is to suggest "the pervasive interaction between fragmenting and integrating dynamics." As such, fragmegration

serves as a constant reminder that the world has moved beyond the condition of being "post" its predecessor to an era in which the foundations of daily life have settled into new and unique rhythms of their own. Equally important, the fragmegration label captures in a single word the large degree to which these rhythms consist of localizing, decentralizing, or fragmenting dynamics that are interactively and causally linked to globalizing, centralizing, and integrating dynamics. (Rosenau 2003, 11)

Yet, the point of this volume is not to suggest *the one way* for studying global life, but (by acknowledging that there are many possible avenues for observing global life) to provide a conceptual framework within which IR theory can learn, adapt, and interact "to maximize its own local interactions and complexity to find its own way" (Geyer 2003a, 254).

Outline of the Volume

How important is complexity? This is an important question which the blossoming literature with the word "complexity" in its titles does very little to address. The contributors to this volume answer this query in their analyses of the causes, characteristics, and consequences of complexity. The intention

is not to produce a unified response on the content and practices of complexity, but to bridge some of the gaps between the different discussions of CT. The aim is to encourage the development of new questions and ideas in IR. With these objectives in mind, the contributors to the volume offer their own distinct responses to the questions: What can CT add to our understanding of the challenges posed by global life? How can CT improve the study of IR? In what ways can CT assist IR to suggest ethical modes for navigating the complex challenges of our time? Can CT prepare institutions, organizations, and communities to be surprised?

While focusing the conversation, such queries allow for transcending the paradigmatic bulwarks of IR by engaging with the very concepts that the discipline uses in its explanation and understanding of global life. At the same time, the diversity of responses engendered in the contributions to this collection outline two distinct trends in the complexification of IR—an anthropocentric and a nonanthropocentric one. While neither of these labels is envisaged as a value judgment, the emphasis on this bifurcation is probably the key contribution of this volume to the emerging literature on complexified IR. Moreover, distinguishing between these trends assists the development of new questions and ideas in IR. In this respect, part 1 of the volume explores CT's contribution to IR's preoccupation with relations between human subjects (and their anthropomorphized effects such as states). The anthropocentric perspective frames IR as a study of how humans engage one another independent of the environments that they inhabit. The contributors to this section offer a panoply of approaches for the explanation and understanding the discontinuities of global life. Part 2 investigates CT's contribution to IR's consideration of relations between human and various nonhuman subjects. The contributors suggest that there appear to be two key relationships at stake—between sociopolitical and biophysical systems and between sociopolitical and technological systems. In both these instances, the IR mainstream lacks the language and concepts to account for and engage human metabolism with nonhuman systems (Ahmed 2012, 348).

It needs to be acknowledged at the outset that the bifurcation between anthropocentric and nonanthropocentric approaches is somewhat forced upon the contributions. Admittedly, the intention is to distinguish the volume from existing attempts to bring CT ideas to bear on the study of IR. At the same time, such a division offers productive ways for focusing the conversation and allows the opportunity to make a comprehensive overview of the current state of the art on CT's contribution to IR. As the following chapters will demonstrate, the contributors tend to agree that the CT vocabulary of complex adaptive system, nonlinear patterns, emergence,

coevolution and endemic change, and so on provide pertinent and novel ways for the explanation and understanding of global life. Yet, this agreement notwithstanding, the contributors offer distinct (and, admittedly, sometimes contradictory) ways for applying CT to the challenges posed by the fragility and unpredictability of global life.

The divergent viewpoints reflect the eclectic research program of the volume. On the one hand, the demand for eclecticism arises from the study of “unobservable wholes”—such as the complexity of global life—which reveal “considerable uncertainty about whether the parts observed are actually elements of the wholes inferred” (Puchala 2003, 21–22). On the other hand, the diverse perspectives presented in the volume intend to suggest that IR—especially, in its complexified form—is not an exact and homogenous science, but a field of ongoing contestation and struggle. Such analytical reflects the inherent desire of complexity research to encourage the transcendence of dogmatic representations by discouraging understandings grounded in any *one* particular perspective (Cooksey 2001). At the same time, eclectic inquiry allows for encountering the infinite messiness of global life without reducing its complexity (Sil and Katzenstein 2010)—that is, “in a period of rapid, discontinuous, fundamental, global, multicultural change, coherent belief systems are an obstacle to the effective structuring of comprehension and action” (Allenby and Sarewitz 2011, 121). Thus, while consistency might be at stake, the eclecticism adopted by this collection aims to suggest that it does not intend to provide a uniform, grand-narrative-style account of a singular complexity theory/complexity science of IR (hence the emphasis on complexity thinking by the contributors to this volume). Instead the volume aims to explore the various “alliances” forged between CT and IR and allow IR to develop the skills, frameworks, and governance mechanism to “think the unthinkable” dynamics of the future (Connolly 2011b).

Part I: Complexity Thinking and Anthropocentric IR

Perhaps one of the key challenges of CT to IR is the insistence on the endemic nature of change. CT draws attention to “variation, change, surprise and unpredictability to the center of the knowledge process” (Baker 1993, 123–24). At the same time, it offers analytical and policy “antidotes” to the anxiety that randomness engenders in traditional IR (Feder 2002, 117). In other words, a key aspect of the complexification of IR is the insistence that we need to learn to live with uncertainty (Morin 2008, 97). This challenges what many perceive to be the central tenets of the IR mainstream. Yet, even the founders of the discipline stressed that “[t]he first lesson the student of

international politics must learn and never forget is that the complexities of international affairs make simple solutions and trustworthy prophecies impossible" (Morgenthau 1973, 4–6).

CT suggests that the uncertainty associated with unforeseen events and random changes not only is an intrinsic condition of all phenomena animating global life but also a crucial feature of all knowledge. This inference brings us back to James Rosenau's complexity research and, in particular, his insistence that the student of IR "must be tolerant of ambiguity, concerned about probabilities, and distrustful of absolutes." Thus, by stressing the need to be "genuinely puzzled about international phenomena," Rosenau suggests that the IR scholar "must be constantly ready to be proven wrong" (Rosenau 1980, 19–31). In other words, the acceptance to live *in* and *with* change opens the potential for coming to terms with the turbulence of global life. The recognition of uncertainty as a *normal* condition of existence (as opposed to something which is exceptional, out of the ordinary, and different) informs a new repertoire of IR responses to "anticipate the unexpected as the norm" (Fowler 2008). The contention of this volume is that the abstractions of CT offer relevant cognitive frameworks to address problems not merely difficult to prevent, but also difficult to foresee.

In this setting, the sense of insecurity pervading popular and policy attitudes reflects the contingency of complexity that is subject not only to vast past and future influences, structural reflexivity, and amplification, but also to the rise of *simultaneity*—both as a feeling of time according to which an individual can be and participate at any spatial location simultaneously and as the sense that others are doing at the same time things that are meaningfully related to one's own experience (Küpping 2001, 350). It is not surprising, therefore, that the first part of the volume opens with David C. Earnest's provocative question: "Why is global life complex"? While a straightforward one, such a query lends itself to no simple answers. The nonlinearity of interactions and the recursivity of causes and effects demand analyses that break the reductionist scientific explanations underpinning the IR mainstream. Paving the way for such interpretative journeys, Earnest outlines four different types of complexity—interaction, strategic, ecological, and reflexive.

While the first three have been previously mentioned in the literature, Earnest's exploration does not merely update the validity of these terms; he also reinstates the enhanced relevance of such typology to the explanation and understanding of global life. As he poignantly demonstrates, many of the most pressing challenges of world politics today—the 2008 financial crisis, accelerating climate change, the resource curse, and others—share a common

feature: the interaction of political institutions with physical, technological, biological, or ecological systems. Thus, the patterns of global life are made unpredictable by the contingent interactions between these four different types of complexity. Earnest points out that as actors interact with physical, technological, or natural systems, they alter not only the system but also the incentives, payoffs, and strategies of future actors. For him, therefore, CT provides both the analytical frameworks and the scholarly tools to engage meaningfully with the complexity of global life.

A similar motivation informs Colin Wright's exploration of CT's contribution to IR. His point of departure is the relationship between theoretical pluralism, science, and democracy. The intention is to demonstrate that while in democratic societies diversity and the tolerance for alternative opinions are seen as inherent good and rarely questioned, in the social sciences theoretical pluralism is encouraged only to the extent that it complies with the accepted scientific methodology. Wright refers to this trend as the unity-through-pluralism (UtP) position. It is this UtP position that provides the basis for the reductionism dominating most of mainstream IR. Wright's call therefore is that the discipline needs to develop an unconditional acceptance of pluralism regardless of the methodological commitments of individual perspectives. In other words, his investigation questions why it is that we do not question the necessity of pluralism to democracies, while putting preconditions to its existence in science. Wright therefore proposes an "integrative pluralism" approach relying on the notions of emergence and organized complexity. His suggestion is that if IR persists in its UtP ways, not just the discipline will lose its relevance, but the viability of the very institutions and structures will be severely undermined.

The latter point is developed further by Christopher A. Ford in chapter 3. In particular, his investigation draws attention to some of the challenges that CT presents for public policy making by seeming to explode the very idea that the complex adaptive social systems of the human world may be purposefully manipulated in order to bring about specific desired situational outcomes. Ford suggests that it may be possible—consistent with our emerging understandings of CT—to argue that some types of policy input are more likely to have significant effects upon operational behavior and longer-term systemic patterns than others, and that some of these inputs may indeed also operate in ways that are less stubbornly "unpredictable" than CT might at first seem to indicate. Specifically, Ford demonstrates the importance of ideational inputs for complex adaptive social systems—in particular, that subset of complex adaptive systems the unit-level constituents of which happen to be sentient humans. Inputs at the level of conceptual organizing frameworks,

narratives that structure people's understandings and expectations of the world around them, are to some degree purposefully manipulable by members of the policymaking community and are perhaps unusually likely to affect systems in ways that are "predictable" at least to the extent that such inputs will tend to exert recognizable patterning influences over time.

To that end, Ford discusses whether and to what degree it is possible to speak of political ideologies as being themselves systems that may usefully be understood through the lens of CT and perhaps subjected to purposive manipulation (for good or ill) by policy elites. Ford indicates that a CT-informed analysis of ideologies is possible and outlines a tentative program for further work aimed at understanding the internal dynamics, feedback loops, stabilities and instabilities, and morphogenic processes of ideologies. In this way, Ford stresses that CT-informed dynamical analysis offers a way to conceptualize ideologies and their evolution over time that avoids at least some of the pitfalls and incoherencies of past efforts to theorize about ideology and that may offer some hope of better informing public policy analysis and formulation in operationally useful (as opposed to merely post hoc and descriptive) ways.

One of the complex issues plaguing IR scholars and practitioners is ensuring the security and safety of the growing number of refugees around the world. In chapter 4, Erika Frydenlund and David C. Earnest use a CT-reading of the Mugunga III refugee camp in the Democratic Republic of Congo. With the help of agent-based modeling (ABM), they examine how cell phone networks can improve the security of refugee camps. At its core, ABM constructs models of how communities, social institutions, and values arise "bottom-up," from the interactions between individuals. Crowd sourcing has been gaining prominence in the social sciences in recent years, but the IR mainstream has kept aloof from its implications. In this respect, Frydenlund and Earnest offer one of the first detailed treatments of the potential and shortcomings of "human sensor networks" in IR. They evidence that social networks can play an important role in the provision of collective security and safety to vulnerable individuals. They also indicate that ABM analysis in this nascent field of IR, while not without its limitations, illuminates a novel understanding of a self-organizing form of governance without government.

In this context, the final contribution to part 1 of the volume subscribes to Frydenlund and Earnest's intentions but takes issues with their ABM approach. As Mark Olssen insists ABM misses what is distinctive about CT. His suggestions that ABM tends to confine research to a narrow positivist-imitating style typical of the North American IR environment in

which it was developed. The concern is that ABM approaches ignore the normative aspects of the complexification of IR, especially as it relates to the analysis of political authority, institutionalization, and the political ethics of cooperation. Thus, drawing from continental contributions to CT, Olssen suggests that the complexification of IR opens possibilities for a richer conception of complexity-based historical materialism which have far reaching implications for research in politics, international relations, and indeed the social sciences in general. In short, the aim of his chapter is therefore to reorient the complexification of IR away from ABM approaches and toward what Olssen considers to be the “richer” research promise of CT.

Part II: Complexity Thinking and Nonanthropocentric IR

The terrorist attacks of September 11, 2001, were perceived by some as an epochal event that quite literally changed overnight the study and practice of IR. Others, however, while acknowledging that the violence and trauma of that day produced unique experiences and responses, have suggested that the events of September 11 provided one of the clearest confrontations with the complexity of world affairs—a complexity that reflects the underlying unpredictability and uncontrollability of global patterns as a result of the bewildering synergies between various systems. In the subsequent decade the threat (and fear) of terrorism produced profound changes in security discourses and practices intent on enhancing our feeling of safety. The ensuing “security theater” of the biometric border, the color-coded threat-level system of the Department of Homeland Security, and the full-body scanners at airport terminals provides the parameters of the new normal for our “orderly” lives (Schneier 2003). Yet, despite this hankering after predictability and certainty, these security measures have been unable to provide protection against (let alone reduce the anxiety from) the growing scale and frequency of natural disasters and other forms of biophysical insecurity.

Offering clear indications of the self-organizing pervasiveness of “episodic patterns” (as opposed to regularized orders) in global life (Dunn Cavelty 2007), such vulnerabilities to environmental degradation and technological interconnectivity attest to the potential for exponential transformations triggered by incremental changes. Such recognition, however, does not make the confrontation with complexity any less frustrating. For instance, the U.S. Congressman Roy D. Blunt (2008) from Missouri remarked in exasperation: “We do not need any more of this stuff! This area has been hit in the last twenty-four months with one disaster over another—ice storms, floods, tornados . . . Enough is enough!” In this respect, “global warming” has become

convenient (albeit incongruous) shorthand for the enveloping uncertainty of the post–Cold War climate of international interactions.

The problems associated with the dynamic patterns of climate change and their unintended consequences continue to challenge the capacities for comprehension and tend to evince the fickleness of established models for their management. The growing impact of environmental contingencies on everyday lives has demanded a reconsideration of the relationship between sociopolitical and biophysical systems. While a pressing concern, the environment is not a new preoccupation for IR. By the 1970s Ernst Haas has commented that “international politics . . . is becoming synonymous with man’s efforts to carve out a pattern of coexistence with his biological and physical environment. *International politics becomes ecopolitics*. No wonder things are complex.” This statement offers a surprisingly contemporary (if not prophetic) description of global affairs at the start of the twenty-first century. It could be argued that Haas’ statement offers a useful point of departure for exploring the dynamics of global life under (what he labels as) “complexity”—both as a descriptor of global dynamics and an analytical perspective for their comprehension. As Haas points out, the reference to complexity in IR: (i) acknowledges that global life is characterized by “the condition of turbulence” (which “can be visualized as a giant simultaneous chess match over which the judges have lost control”), and (ii) interrogates the conceptual frameworks for “coping with complexity”—namely, it “calls for clearer understanding of why we want to cope” (Haas 1975, 861; 1976, 175).

The portrayal of such “ecopolitics” queries the ontological underpinnings of IR and its interpretation of political action in an environment where “complexity” arises from the “interconnected parts” between human/sociopolitical and natural/biophysical systems. In this setting, the engagement with the “around” of global life gains its significance to the theory and practice of IR, because it is only when “environmental factors [are] being perceived and taken into account in the policy-forming process” (Sprout and Sprout 1965) that there can be hope for ethical adaptation to the challenges of the anthropocene. It must be acknowledged, however, that Haas was not particularly sanguine about IR’s capacity to tackle this challenge. As he indicated, “the existence of this complexity is not matched with a political recognition of the problem. The knowledge to bring about recognition exists. But the political institutions for acting on the knowledge do not. Hence, we are headed toward ecological catastrophe” (Haas 1975, 861). Thus, the contributions to part 2 of the volume propose that in order to cope with the escalating complexity of global life, IR has to abandon its predilection

for linear models, accept unpredictability, respect (and utilize) autonomy and creativity, and respond flexibly to emerging patterns and opportunities.

Obviously, not all IR scholars are (or have been) enthralled by the orderly paradigm of the discipline; however, the contention is that despite the commonsensical complexity of politics and the undeniable evidence of divisions within the discipline, it still remains dominated by an empiricist vision of an orderly Newtonian framework. As a result the mainstream ontological purview of IR has been underpinned by the perception that human/socio-political systems (such as civil society, states, international organizations, etc.) are both *detached from* (not only conceptually, but in practice) and *in control of* the “nonhuman” natural/biophysical systems. Not surprisingly, therefore, IR has been concerned *only* with “the human subject” (and its anthropomorphized effects such as states). Thus, while human subjectivity in IR has been largely emancipated from the restrictions imposed by class, race, gender, and religious affiliation, nature remains subject to the same hegemonic jackboot discourse.

The assertion here is that the relative stability of the Cold War “geohistorical context” (Thompson 1992)—*when and in response* to which majority of conventional IR discourse has been articulated—has obfuscated the realization that human societies inhabit complex spaces. The opening chapter of part 2 aims to rectify this. In it, Erika Cudworth and Stephen Hobden sketch out a prolegomenon for a posthuman IR. Posthumanism represents a significant new research direction for both IR and the social sciences. As Cudworth and Hobden indicate, posthumanism emerges from questions about interspecies relations which challenge dominant perceptions of what it means to be human. Such an approach mounts a fundamental epistemological and ontological challenge to the IR mainstream. However, with the help of CT, Cudworth and Hobden offer a radical revision of the “complex ecologism” of IR. Theorizations of the political in general, and world affairs in particular, have been little concerned with the vast variety of other, non-human populations of species and “things.” The chapter therefore advocates a differentiated complexity that views the social world as embedded in a diversity of nonsocial systems. A logical conclusion of the differentiated complexity approach is the significance of human systems as embedded in a wide range of animate and nonanimate systems. These systems intersect, overlap, and coevolve. Hence a CT approach provides a means of analyzing these relations which so far has eluded mainstream IR. This implies a move to a posthuman IR, seeing human systems as “of nature” rather than “in nature”; and it fundamentally reorients our notion of “the political.” Cudworth and

Hobden demonstrate that this view has profound implications for the means and purposes of the study of IR.

In chapter 7, Antoine Bousquet concurs with such assessment. In fact, his contribution stresses that CT offers unique opportunities for addressing IR's shortcomings. Nevertheless, he is quick to acknowledge that this theoretical export from the natural to the social sciences while promising has not been without difficulties. In this respect, Bousquet's installment to the postanthropocentric reinvention of IR reconsiders some of the key conceptual and analytical hurdles of such an endeavor. However, unlike the posthuman IR of Cudworth and Hobden, which focuses primarily on the relations between human and various biological systems, Bousquet's postanthropocentric IR details the full spectrum of human embeddedness in both the biosphere and the technosphere.

Such an approach suggests that CT makes available a much-needed vocabulary to engage the emergence, practices, and dynamics that cut across the turbulent domains of natural and technological environment. Bousquet's complexification of IR proposes a radical reconsideration of the anthropocentric certainties dominating the purview of the discipline. At the same time, he is clear that CT is far from perfect, yet it seems to offer some of the more pertinent responses to the challenges defining the complex ecologies—be they natural or technological—that we inhabit, interact with, and coconstitute.

The risks and challenges emerging from the complex interactions between human and nonhuman systems are the focus of the Myriam Dunn Cavelty and Jennifer Giroux's analysis. To deploy Bousquet's term, their investigation explores the technospheric aspects of nonanthropocentric life. For them, the notion of complexity occupies a special and multifaceted place in the discussion about risks in international security. On the one hand, complexity is conceptualized as a key characteristic of new security challenges, and therefore viewed as a threat. On the other hand, scientific observations regarding the behavior of complex systems have become a powerful driver for conceptualizing new modes of security governance to tackle increasingly complex phenomena. This conceptual duality of “the complex”—and the interrelationships between the two—is explored in this chapter via a salient subissue of the current security debate: vital systems security/critical infrastructure protection. In other words, complexity is a property of technological, biophysical, and sociopolitical systems. In this setting, Dunn Cavelty and Giroux demonstrate that CT-inspired approaches can construct capabilities to cope with vulnerabilities, defy adversity, and construct new proficiency in response to the uncertainty, cognitive challenges, and complex unbounded risks of global life.

Finally, in chapter 10, Jürgen Scheffran draws attention to environmental degradation. In particular, the complex interactions between climate stress, environmental change, human responses and social conflicts that could significantly shape the future landscape of global life. As he points out, depending on vulnerability, environmental changes will stress basic human needs and values (such as the availability of water, food, energy, health and wealth) which may lead to social disruption through instability events (such as migration, riots, insurgencies, urban violence or war). The analysis suggests that the stability of this interaction depends on the sensitivities between crucial variables which determine how events spread in the network of interconnections. Scheffran suggests that as a result of non-linear effects, an increase in global temperature above a certain threshold may trigger instabilities, tipping points and cascading sequences that could exceed the viability of natural and social systems. In this respect, a key challenge for policy-making is to develop new approaches that stabilize the interaction. Scheffran argues that it is with the help of concepts such as adaptive complexity and stability that policy-makers can develop relevant skills and responses to deal with complex challenges.

The dominant theme of the contributions to this part of the volume is the inability of IR to grapple convincingly with the challenges posed by the natural and technological ecosystems that form the fibers of global life, of which anthropocentric world affairs is only one aspect. The claim therefore is not that mainstream approaches are *blind* to the complexity of global life, but that they chose to ignore it (not least because of their focus on *willed* human/sociopolitical phenomena). Thus, despite the intellectual challenges posed by the growing interdependence and connectedness between human and nonhuman systems, the mainstream of IR research has been, on the one hand, dominated by the deterministic and parsimonious tools of the traditional reductionist mode of investigation and, on the other hand, underpinned by an inherent antibiology (if not biophobia).

In this respect, the contemporary criticism leveled at the constructs of IR emanates not because of their truncated representation of the reality of world affairs, but because of IR's failure to acknowledge that this truncation is only one facet of a much more complex field of observation. The contributors to part 2 of the volume demonstrate that the application of CT to the study of world politics disrupts the entrenched human-centered purview of the discipline and urges it to account for the interactions between sociopolitical systems and the ecologies that they inhabit. The contention is that the recognition of the unpredictability and randomness of such sociopolitical, technological, and biophysical interdependence remove the constraints on

IR's imagination. Such inference echoes James Rosenau's intuition that IR has to get comfortable with the power of the contingent and chaotic forces of the fast-changing and complex global life. The key to IR's coping in such a dynamic context is its willingness to change (that is, abandon existing assumptions), its "being able to adjust to the unexpected in creative and appropriate ways" (Rosenau 2001, 149; Rosenau 1970). The hope is that the contributions included in this collection make a meaningful, if small, step in this direction.

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