

## *Part I*

# Systems, Relations, Levels, and Explanations

## Foundations for Systemic/Relational IR

This book advocates a relational processual revival of systems-based theory and research in International Relations (IR). Part I outlines the distinctive character of systemic and relational approaches. Part II comprehensively critiques Kenneth Waltz's conception of systemic theory, which has dominated IR for the past four decades. Part III begins to plot paths forward towards new types of systemic research and explanations.

In this Part, Chapters 1 and 2 establish basic terms of reference, emphasizing the importance of considering international systems *as systems* and the actors in international relations *as parts of systems*. Chapter 1 lays out the ideas of systems and relations and introduces the framings of processes, mechanisms, and assemblages. Chapter 2 looks at three central features of systems: emergence, complexity, and the partial (in)separability of systems and their components. It concludes by briefly noting some important differences that a systemic/relational perspective makes for IR.

Chapters 3 and 4 identify two major metatheoretical implications of a focus on systems. Chapter 3 argues that a relational/systemic understanding of the world as a layered system of systems of systems suggests looking less at levels *of analysis* and more at levels *of organization*. Chapter 4 explores the differences between causal-effects and systems-effects explanations and argues for explanatory, not merely methodological, pluralism in IR.

Because I consider a wide range of topics, some of which are likely to be of little interest to some readers, I have tried to write this book so that each chapter can be read separately, pretty much in any order. The detailed table of contents, introductions to each Part, and copious cross-references aim to help readers engage the book in ways that work well for them.

I also use extensive quotations and pinpoint citations and often offer extended references and suggestions for further reading. And to cater to readers with different degrees of engagement with the material at hand,

## 2 Part I: Systems, Relations, Levels, and Explanations

I make fairly extensive use of expository footnotes. I therefore encourage you to treat the footnotes, which make up a full fifth of the manuscript, and the reference list, which makes up another fifth, as integral parts of the book.

With no further ado, though, let us begin to look at systems, relations, and their place in a pluralistic social scientific IR.

# 1 Systems and Relations

---

This book explores some implications for the discipline of International Relations (IR<sup>1</sup>) of accepting the following propositions.

- Some features of the world can be understood, more or less fully, through knowledge of the elements that compose them.
- Other features can be understood only by also considering the organization of elements into larger systems/wholes and the structured operation of those wholes.
- The biological and social worlds can be adequately understood only by combining “analytic” knowledge of components considered separately and “systemic” knowledge of the organized operations of structured wholes.

I ask readers to accept, for the sake of argument, the systemic perspective sketched by these propositions – to see where it takes us.

In this chapter I define systems, identify a few fundamental features of systemic explanations, and explore some alternative framings for studying “things” that have qualities that cannot be fully explained in terms of their parts.

## 1.1 Systems

The *Oxford English Dictionary* defines a system as “a group or set of related or associated things perceived or thought of as a unity or complex whole.” Most definitions in the natural and social sciences similarly see a system as “an assembly of elements related in an organized whole.”<sup>2</sup>

<sup>1</sup> As is conventional, I use IR to indicate the “discipline” of International Relations, which studies the subject matter of international relations – whether IR is understood as a discipline in its own right (which is more common in the UK), a sub-field of Political Science (as is more common in the US), or an interdisciplinary field (often in the US under the label International Studies).

<sup>2</sup> (Flood and Carson 1993, 7).

4 Part I: Systems, Relations, Levels, and Explanations

“A whole which functions as a whole by virtue of the interdependence of its parts is called a system.”<sup>3</sup>

“The most fundamental act of systems theory ... [is] distinguishing it [the system] from its environment.”<sup>4</sup> A bounded set of components that share “concentrated feedback relationships” is distinguished from what lies outside the system – the environment – “with which the system shares only input and output relationships.”<sup>5</sup>

In a system “the organization of units affects their behavior and their interactions.”<sup>6</sup> This produces “systems effects” including, most notably, “emergent” phenomena.<sup>7</sup> “A whole can have properties (or powers) ... that would not be possessed by its parts if they were not organised as a group into the form of this particular kind of whole.”<sup>8</sup>

“System” is often used in a looser sense to refer to any bounded entity. Here, however, I consider only structured wholes with emergent properties: what are often called “complex systems.”<sup>9</sup> And I address only systems that are, to the best of our knowledge, “in the world” (not mere analytic constructs).<sup>10</sup>

I adopt the following definition.

*A system is a bounded set of components of particular types, arranged in definite ways, operating in a specific fashion to produce characteristic outcomes, some of which are emergent.*<sup>11</sup>

This definition emphasizes the operation, not just the organization, of components.<sup>12</sup> Some systems effects arise from arrangement alone.

<sup>3</sup> (Rapoport 1968, xviii).

<sup>4</sup> (Gougen and Varela 1979, 32). For Niklas Luhmann, the leading systems theorist in the social sciences in the last four decades, “a system *is* the difference between system and environment” (Luhmann 2013 [2002], 44. See also 52, 63, 187; 1995 [1984], 5–8, 16–18, 20–23; 2012 [1997], 43–44, 63–64, 121).

<sup>5</sup> (Flood and Carson 1993, 8).

<sup>6</sup> (Waltz 1979, 39).

<sup>7</sup> See §2.2.

<sup>8</sup> (Elder-Vass 2007a, 28).

<sup>9</sup> See §2.3.

<sup>10</sup> Older systems approaches often distinguished “concrete” systems from “analytic” (or “abstracted”) systems. See, for example, (Bunge 1979, 1992), (Parsons 1979), (Bailey 1983). Artificial units of investigation, however, do not (unless they happen to correspond to a concrete system) have emergent systems effects. They therefore will not be addressed here.

<sup>11</sup> This is similar to Mario Bunge’s definition of systems in terms of “composition, structure (relations among the parts), and connections with the environment”; “composition (collection of parts), environment, and structure (set of bonds or couplings between system components and things in the environment)” (1997, 417, 416. See also 458).

<sup>12</sup> Operations might be considered arrangement across time. The temporal and processual dimensions of operations, however, seem to me worth separate note. See also §§1.6, 10.1–10.3. I avoid the language of “structure and process,” though, because it facilitates analytically severing organization from operation and reifying arrangement/structure.

(Consider the allotropes of carbon – the “same” “stuff” arranged differently to produce diamond, graphite, graphene (a single layer of graphite with unusual electrical properties), char (the amorphous carbon in charcoal), and vitreous carbon (used in certain electrodes), as well as various nanocarbons (e.g., buckminsterfullerenes) and carbon nanofoam (which is ferromagnetic).) Usually, though, especially in the living and social worlds, the operation of the arranged elements is crucial.

This definition also emphasizes the specificity of the components, their arrangement, and their operation. Parts of particular types are organized and operate in specific ways.

Finally, systems are of special interest because of systems effects – irreducible higher-level phenomena that emerge from the operation of complex wholes – which are essential to a comprehensive understanding of the things of the social world. For example, a state or society is more than an aggregation of individuals. The national interest is not the average of (or any other operation performed on) the interests of the individuals and groups that make up the nation. And the reason to study an international *system* is that it has properties that cannot be understood by even the most intensive study of its components and their interactions.

## 1.2 Systemic and Analytic Explanations

Systems require – and provide – a distinctive type of explanation. This usually is explicated by contrasting “analytic” and “systemic” explanations.<sup>13</sup>

In analytic explanations “the whole is understood by knowing the attributes and the interactions of its parts,”<sup>14</sup> “disjoined and understood in their simplicity.”<sup>15</sup> As Nicholas Onuf puts it, “analysis is the procedure whereby someone (the analyst) observes (or causes and then observes, or imagines) and describes the disaggregation of some (actual or hypothetical) unit.”<sup>16</sup> This strategy of breaking things down into smaller or simpler pieces often produces epistemically powerful and pragmatically valuable knowledge.

If, however, the object of inquiry has properties arising from the organization or structured operation of its elements “then one cannot predict outcomes or understand them merely by knowing the

<sup>13</sup> In IR, Waltz’s account (1979, 39–40ff. See also 12, 37) is hegemonic. (I reject his account, however, in §§5.3–5.6.)

<sup>14</sup> (Waltz 1979, 18).

<sup>15</sup> (Waltz 1979, 39. See also 12, 37, 60, 68, 121).

<sup>16</sup> (Onuf 1995, 42).

## 6 Part I: Systems, Relations, Levels, and Explanations

characteristics, purposes, and interactions of the system's units."<sup>17</sup> "Systemic" approaches are required to comprehend "systems effects." What this implies for IR is the central subject of this book.

In the social sciences, analytic explanations typically rely on the *attributes*, *actions*, and *interactions* of *actors*. Systemic explanations, by contrast, focus on the *organization* and *operation* of *structured wholes* – which, I argue, require relational and processual explanations.

### 1.3 Levels of Organization

Systems have "multiple levels of organization ... [arranged in] a rough hierarchy, with the components at each ascending level being some kind of composite made up of the entities present at the next level down."<sup>18</sup>

In the life sciences, the standard framing is levels of *organization*<sup>19</sup> or "*compositional* levels – hierarchical divisions of stuff (paradigmatically but not necessarily material stuff) organized by part–whole relations, in which wholes at one level function as parts at the next (and at all higher) levels."<sup>20</sup> (For example, cells, tissues, organs, systems, organisms; alleles, individuals, populations, communities, ecosystems.) As Bert Hölldobler and E. O. Wilson put it, "life is a self-replicating hierarchy of levels. Biology is the study of the levels that compose the hierarchy."<sup>21</sup>

Levels of organization are (understood as) "in the world." "Levels of organization are a deep, non-arbitrary, and extremely important feature of the ontological architecture of our natural world."<sup>22</sup> In a strong formulation, they are "levels of reality."<sup>23</sup> The world "is" a layered system of systems of systems in which parts at one level are wholes on "their own" lower level.

Higher-level "things" are, of course, made up (and obey all the laws) of lower-level "things." The whole, however, is not fully reducible

<sup>17</sup> (Waltz 1979, 39).

<sup>18</sup> (McClamrock 1991, 185). "Hierarchy" in this taxonomic sense, which is standard in the natural sciences, indicates relations of inclusion (not command or control). "Things" at higher levels encompass lower-level things in a graded series of part–whole relations: metaphorically, boxes within boxes (within boxes).

<sup>19</sup> (Eronen and Brooks 2018), (Brooks, DiFrisco, and Wimsatt 2021a), and (Brooks 2021) are good recent overviews of levels of organization in Biology. (Brooks, DiFrisco, and Wimsatt 2021b) is an excellent recent edited volume, including (Potochnik 2021), which reviews and extends recent criticisms of the concept.

<sup>20</sup> (Wimsatt 1994, 222 [emphasis added]). Joseph Needham's (1937) idea of "integrative levels" is an early version of (or precursor to) this framing. And the levels ontology of a chain of being (Lovejoy 1936) was popular in the West for two millennia.

<sup>21</sup> (Hölldobler and Wilson 2009, 7).

<sup>22</sup> (Wimsatt 1994, 225). See also (Floridi 2008, 319).

<sup>23</sup> (Heil 2003), (Salthe 2009), (Poli 2009), (Nicolescu 2010). See also (Grene 1967).

to – cannot be explained entirely in terms of – its components. Quite the contrary, its distinctive character only emerges in the higher-level whole.

In this understanding – which I adopt for the purposes of this book (which addresses the implications of systemic approaches to IR) – each organizationally differentiated level, because it is ultimately irreducible, has the same ontological status.<sup>24</sup> The world is *organizationally layered* but, as Manuel DeLanda nicely puts it, *ontologically flat*.<sup>25</sup> The things of the world are larger and smaller, simpler and more complicated, aggregated or complex. But no one level is more real, fundamental, or foundational than any other.

Understanding such a world requires not only bottom-up explanations of the large by the small or the whole by its parts but also attention to “downward causation”<sup>26</sup> and top-down explanations. (As Kenneth Waltz puts it, systems “shape and shove.”<sup>27</sup>) “The combination of ‘top-down’ effects ... and ‘bottom-up’ effects ... is a pervasive feature of complex systems.”<sup>28</sup> And one of the great attractions of systemic approaches is that they not merely allow but require us to comprehend the causal powers of both higher-level and lower-level entities, activities, and forces.<sup>29</sup>

#### 1.4 Relations and Systems

In the social sciences, systems theories were common in the decades following World War II.<sup>30</sup> The failure of such projects, however, led in the 1970s to a marginalization of, and in many circles a strong reaction

<sup>24</sup> Rather than illegitimately sneaking in an important substantive claim, I intend this as a plausible hypothesis or methodological move that is unlikely to impede work on (partially) reductive explanations. (See §2.1.) Assuming that some level is ontologically primary, by contrast, not only commits one to an account that is inconsistent with most scientific practice but encourages empirically baseless “in principle” reducibility claims. Supporting evidence for this position is scattered through this book. For now I ask for a willing suspension of disbelief, in order to pursue the implications of a radically systemic view of the world.

<sup>25</sup> (DeLanda 2006, 28. See also 13). See also (Bryant 2011, ch. 6), (Latour 2005), (Schatzki 2016), (Salter 2019).

<sup>26</sup> The term appears to have been coined by Donald Campbell (1974). See also (Emmeche, Köppe, and Stjernfelt 1997, 2000), (Bedau 2002), (Kistler 2009), (Campbell and Bickhard 2011), (Elder-Vass 2012), (Bechtel 2017b), (Paoletti and Orilia 2017). (Eronen 2021) usefully links downward causation to compositional levels in the context of the tangled hierarchies characteristic of the biological (and I would add the social) world.

<sup>27</sup> (Waltz 1990b, 34; 1997, 915; 2000, 24).

<sup>28</sup> (Holland 2014, 5).

<sup>29</sup> See §2.1.

<sup>30</sup> The leading example in IR was (Kaplan 1957). See also (Rosecrance 1963), (Masters 1964), (McClelland 1966), (Deutsch 1968), (Banks 1969), (Thompson 1973). In Political Science, see (Easton 1953, 1965), (Deutsch 1963), (Almond and Powell 1978).

## 8 Part I: Systems, Relations, Levels, and Explanations

against (the excesses and abuses of), “systems theories.”<sup>31</sup> And such an attitude remains common today.<sup>32</sup>

In IR, the publication in 1979 of Waltz’s *Theory of International Politics* revitalized explicitly systemic approaches – but in a very limited and peculiar way that I argue has been a mixed blessing (if not a pyrrhic victory). As I show in Part II, Waltz’s narrow structuralism is not actually systemic. And the only explicitly systemic substantive theory that is widely employed in IR is structural realism, which is extremely contentious. As a result, in much of IR today there is widespread skepticism of, and even hostility to, “systemic theory” – which is usually taken to mean Waltzian structural theory.

Nonetheless, in IR,<sup>33</sup> Sociology,<sup>34</sup> and most other social sciences,<sup>35</sup> a broadly systemic perspective has emerged under the label of *relationalism*. Relationalist approaches employ a variety of framings, including

In Sociology, Talcott Parsons was a leading proponent. See, for example, (Parsons 1951, 1966, 1971) and (Kroeber and Parsons 1958). More broadly, see (Buckley 1967) and (Buckley 1968).

<sup>31</sup> (Pickel 2011, 4–7) briefly reviews this decline. In IR, see (Weltman 1973).

<sup>32</sup> The principal exception is transdisciplinary complexity science, which has made limited but significant inroads in many social sciences. (Miller and Page 2007), (Holland 2014), (Miller 2015), and (Ladyman and Wiesner 2020) are useful general introductions. More briefly, see (Walby 2007). In IR, see (Bousquet and Curtis 2011), (Byrne and Callaghan 2014), (Cineda 2006), (Cudworth and Hobden 2013), (Gadinger and Peters 2016), (Gunitsky 2013), (Harrison 2006), (Jervis 1997), (Kavalski 2007), (Orsini et al. 2020), (Pickering 2019), (Scartozzi 2018), (Snyder and Jervis 1993), (Wagner 2016), (Walby 2009), (Young 2017).

<sup>33</sup> (Jackson and Nexon 1999) is the seminal programmatic statement in IR. (McCourt 2016) and (Jackson and Nexon 2019) are excellent brief overviews. See also (Kurki 2020, 2022). Among “relational” works published in the 2010s, a good sample might include (Adler-Nissen 2015), (Brigg 2018), (Bucher 2017), (Duque 2018), (Gazit 2019), (Joseph 2018), (Kavalski 2016, 2018), (Learoyd 2018), (Lee 2019), (MacDonald 2014), (McConaughy, Musgrave, and Nexon 2018), (Nordin et al. 2019), (Pratt 2016a, b), (Selg 2016). See also (Schneider 2015).

<sup>34</sup> (Emirbayer 1997) is the classic programmatic statement. Charles Tilly (e.g., 1995, 1998, 2001b, 2015 [2008]) and Harrison White (esp. 1992, 2008) were particularly influential. (Crossley 2011) is a good book-length introduction (useful also because it is rooted in British, rather than American, discussions). See also (Dépelteau 2018), (Donati 2011), (Powell and Dépelteau 2013).

<sup>35</sup> Examples of relational Anthropology include (Ingold 2004), (Jansen 2016), (Salmond 2012), (Stensrud 2016), (Streiner 2016), (Thelen, Vetter, and von Benda-Beckmann 2018). Anthropology also has a growing substantive literature on relational ontologies (e.g., (Herva et al. 2010), (Lee 2019)). Archaeological literature explicitly using relational frames includes (Betts, Hardenberg, and Stirling 2015), (Collar et al. 2015), (Fowler 2013, 2017), (Harris 2020), (Harrison-Buck and Hendon 2018), (Hill 2011), (Hutson 2010), (Watts 2014). I have also found (Hodder 2012) especially useful for its links to assemblage thinking. In Geography, see, for example, (Bathelt and Glückler 2003), (Bathelt and Li 2014), (Boggs and Rantisi 2003), (Hesse and Mei-Ling 2020), (Malpas 2012), (Murdoch 2005), (Ward 2010), (Yeung 2005). (Gergen 2009) outlines a relational psychology with clear connections to the social sciences more broadly. On



- networks<sup>36</sup> – patterns of ties between nodes in webs of relations;
- fields<sup>37</sup> – structured “spaces” that induce particular behaviors from entities of particular types;
- practices<sup>38</sup> – sets of shared expectations and opportunities that underlie action-channeling dispositions;
- (con)figurations<sup>39</sup> – long-lived patterns of social relations;
- assemblages<sup>40</sup> – complex combinations of human, institutional, and material entities and forces; and
- “relational institutionalism”<sup>41</sup> – the approach of a group of IR scholars, rooted in both network theory and historical institutionalism, focusing on causally efficacious relational forms.

relational economics, which is only beginning to emerge, see (Biggiro et al. 2022), (Wieland 2020).

<sup>36</sup> (Avant and Westerwinter 2016) is an excellent edited volume that suggests the range of network approaches in IR. (Hafner-Burton, Kahler, and Montgomery 2009) is the standard article-length overview. See also (Borgatti et al. 2009). (Victor, Montgomery, and Lubell 2017) and (Knoke et al. 2021) are comprehensive overviews of political network approaches at varied levels of analysis. (Light and Moody 2021) is a similar extended overview of social networks. Interesting IR applications include (Acuto and Leffel 2021), (Beardsley et al. 2020), (Carpenter 2011), (Dorussen, Gartzke, and Westerwinter 2016), (Eilstrup-Sangiovanni 2014), (Erikson and Occhiuto 2017), (Gade et al. 2019), (Gallop and Minhas 2021), (Goddard 2009a), (Haim 2016), (Kim 2019, 2020), (Kim and Morin 2021), (Legg 2009), (Montgomery 2016), (Mueller, Schmidt, and Kuerbis 2013), (Mulich 2020), (Oatley et al. 2013), (Owen 2010), (Owen 2016), (Sazak 2020), (Sikkink 1993), (Torfing 2012).

<sup>37</sup> In IR, see, for example, (Adler-Nissen 2011), (Berling 2015), (Dixon and Tenove 2013), (Go 2008, 2011), (Guzzini 2013), (Kauppi and Madsen 2013), (Lim 2020), (Nexon and Neumann 2018), (Schmitz, Witte, and Gengenagel 2017), (Stampnitzky 2013), (Steinmetz 2007, 2008). (Bourdieu 1996 [1989]) is a classic empirical case study in Sociology that has had immense impact. See also (Bourdieu and Wacquant 1992, 14–26, 94–115). (Martin 2003; 2011, ch. 7, 8) provides an excellent introduction, stressing analogies with physical fields. (Fligstein and McAdam 2012) presents a more mainstream American sociological approach. (Barman 2016, 445–452) provides a useful brief overview of field approaches in the social sciences. See also §4.6.2 at nn. 74ff.

<sup>38</sup> (Pouliot 2010) and (Adler and Pouliot 2011) were seminal in IR. (Bueger and Gadinger 2018) and (Lechner and Frost 2018) are good book-length overviews. See also (Adler-Nissen and Pouliot 2014), (Bigo 2011), (Brown 2012), (Bueger 2014, 2016a), (Bueger and Gadinger 2015), (Côté-Boucher, Infantino, and Salter 2014), (Davies 2016), (Holthaus 2020), (Kustermans 2016), (Neumann 2002), (Pouliot 2013, 2016).

<sup>39</sup> This is the framing of Norbert Elias (2000 [1939], 1978). See also (Mennell 1998), (Baur and Ernst 2011), (Dépelteau and Landini 2013), (Tsekeris 2013), (Landini and Dépelteau 2014). In IR, Andrew Linklater (e.g., Linklater 2011; Linklater and Mennell 2010) was a forceful advocate for drawing on Elias.

<sup>40</sup> See §1.8 (esp. n. 93 for IR examples) and §10.5.

<sup>41</sup> This is Nexon’s label (2010, 112ff.). (Nexon and Wright 2007) is a brilliant application. (Nexon 2009, 39–65) offers a useful medium-length overview. See also (Goddard 2009b), (Jackson 2006), (MacDonald 2014), (McConaughy, Musgrave, and Nexon 2018). One might also include ch. 15–17 of this book.

The language of systems highlights wholes and emergence. “Relations” highlights ties between elements. But the “sense in which ‘the whole is greater than the sum of the parts’ is that the parts are, to some degree, constituted as the kinds of entities they are by their relation to the whole.”<sup>42</sup> Conversely, relationalists see related elements as parts of larger wholes (systems). And both framings emphasize the organization or arrangement of elements.

I therefore treat “relational” and “systemic” as substantially overlapping. And an important aim of this book is to emphasize the systemic character of relational work in order to bring these two styles of theory and research, which are largely unconnected in contemporary IR, into constructive dialogue.<sup>43</sup>

### 1.5 Relationalism

Relationalism (like systemism<sup>44</sup>) is not a substantive theory or research program but an orientation to social theory and research. Relationalism focuses on “connections, ties, transactions and other kinds of relations among entities,”<sup>45</sup> stressing the interconnections of the things of the world (rather than their separate substantiality). Relationalists see the world as made up more of configurations (of things) than of things (that stand in various relations).

Relationalists typically oppose themselves to what they call “substantialism,” which “maintains that the ontological primitives of analysis are ‘things’ or entities ... Relationalism, on the other hand, treats configurations of ties ... between social aggregates of various sorts and their component parts as the building blocks of social analysis.”<sup>46</sup>

<sup>42</sup> (Bertolaso and Dupré 2018, 331).

<sup>43</sup> Natural scientists widely employ networks and fields. They almost always, though, use the language of systems to make what contemporary social scientists would call relational arguments. This, it seems to me, reflects the reaction against “systems theories” in the social sciences that I noted at the outset of this section – in sharp contrast to the normalization and naturalization of systems framings across the natural sciences (which, I am suggesting, ought to be a model for IR).

<sup>44</sup> By “systemism” I mean an orientation to social research that emphasizes systems, parallel to established uses of “relationalism.” I am *not* adopting Mario Bunge’s sometimes idiosyncratic approach to systems, which he (e.g., Bunge 2000) labels “systemism.”

<sup>45</sup> (Jackson and Nexon 2019, 583. See also 592). Relationalists typically understand relations in the ordinary-language sense of “a connection, correspondence, or contrast between different things; a particular way in which one thing or idea is connected or associated with another or others.” *Oxford English Dictionary*. On conceptualizing relations, see (Crossley 2013).

<sup>46</sup> (Jackson and Nexon 1999, 291–292). See also (Emirbayer 1997, 281), (McCourt 2016, 478–479), (Adler-Nissen 2015, 285–286, 288, 290–295). (Dupré 2020) offers a brief parallel critique of substantialism from a processualist (see §1.6) perspective. William