RELATIONALISM IS NOT ENOUGH: TOWARDS A PROCESSUAL IR

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Paper prepared for presentation at
GUITARS (Georgetown University International Theory and Research Seminar)
October 28, 2019

The growing popularity of "relationalism" in IR (and other social sciences[1]) suggests that now might be a good time to step back and reconsider its conceptual and philosophical foundations. I argue that a focus on relations, although a valuable addition to IR's traditional emphasis on substantial things, is, in the end, no less one-sided and inadequate.

Drawing heavily on recent work in the philosophy of Biology, I argue for a focus instead on processes: organized entities and activities that produce characteristic outcomes. Processes, which integrate substances and relations with structured activity over time, are primary. Relations (and substances) are secondary.

The first three sections of this paper contrast relationalism and processualism and argues for a processual frame for relational work. The following sections highlight some important implications of processualism for IR.

1. RELATIONALISM

IR's "standard" conception of relationalism goes back to Patrick Jackson and Daniel Nexon's prescient call, two decades ago, for a relational IR.[2] Their understanding has predominated because it is admirably catholic, encompassing the wide range of self-consciously relational work rather than imposing a particular normative vision.

Jackson and Nexon come out of the "New York School" of relational Sociology that developed in the 1990s around the works and networks of Harrison White and Charles Tilly.[3] This style of relationalism, however, fits well with both Pierre Bourdieu's relational Sociology,[4] which has been immensely influential across the social sciences, and (con)figurational Sociology rooted in the work of Norbert Elias[5]. And both in Sociology[6] and in IR[7] these (and other) varied strands have not

1 I stress here Sociology, where relational approaches have made the greatest progress and penetrated most deeply. (Dépelteau 2018b, 12-17) offers a useful brief introduction to relational work in Archaeology and Psychology. On relational geography, see, for example, (Bathelt and Glückler 2003), (Boggs and Rantisi 2003), (Ward 2010), (Malpas 2012, esp. 227-232).

2 (Jackson and Nexon 1999). They have recently revisited their account (Jackson and Nexon 2019), in light of the substantial body of relational research over the past two decades. (Nexon 2010) is also a good overview.

3 (Mische 2011, 80-85). Mustafa Emirbayer's "Manifesto for a Relational Sociology" (1997) is a classic programmatic statement.

4 On the relational foundations of Bourdieu's work, see ???. On Bourdieusian IR, see, for example, ???.

5 See especially (Elias 2000 [1939], 1978 [1970]). (Dépelteau and Landini 2013) offers a wide-ranging overview. In IR, Andrew Linklater has been a forceful advocate for drawing on Elias. See, for example, (Linklater 2011) and (Linklater and Mennell 2010).

6 (Dépelteau 2018a) and (Powell and Dépelteau 2013) offer wide-ranging overviews of contemporary relational Sociology. (Crossley 2011) is a good book-length introduction (useful also because it is rooted in British, rather than American and French, discussions).

7 Among "relational" works in IR published in the last few years, a good sample might include (Adler-Nissen 2015), (Brigg 2018), (Bucher and Jasper 2017), (Kavalski 2016, 2018), (Learoyd 2018), (Lee 2019), (Macdonald 2017), (McConaughey, Musgrave, and Nexon 2018), (Pratt 2016; 2016), (Selg 2016). See also (Schneider 2015).

merely comfortably coexisted but in many cases coalesced,[8] with networks, fields, and practices being widely recognized today as leading relational approaches.[9]

Relationalism is not a substantive theory, paradigm, or research program but an orientation to social theory and research that focuses on "connections, ties, transactions and other kinds of relations among entities."[10] Relationalists stress the interconnections of the things of the world (rather than their substantiality and separateness). They 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 – entities exist before interaction and all relations should be conceived as relations between 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.[11]

This framing reflects (and is a reaction against) the preponderance of substantialist approaches not just in contemporary social science but in modern science generally and in Western philosophy for most of its history.[12] Individualist substantialism (e.g., rational choice models) treats subjects, agents, or actors as (logically or ontologically) prior to and generative of their relations – or, somewhat more modestly, gives methodological priority to their interests, identities, or preferences, which are taken as given. Holist substantialism (e.g., world systems theory) sees large-scale formations (e.g., "structures," "societies") as prior to and generative of the entities that compose them. Variable-based substantialism treats "independent variables" as *independent*; that is, separate from and causally generative of (the values of) "dependent variables."[13]

Relationalists, of course, do not deny the reality, or even the importance, of substances. Rather, they deny that "things" are essentially substantial or exist prior to (or remain fundamentally independent of) relations. Relationalism rejects the idea of persistent pre-existing entities; of "pre-given units such as the individual or society."[14]

"Stuff" (substance) becomes things only when arranged in specific ways. The actual things of the world are the things that they are – are *real things* – not because of substance alone (or even necessarily primarily) but in part (and essentially) through the arrangement of their parts and their relations to other (relational) things. (Isomers provide a particularly striking example. Diamonds,

[8] For example, (Paulle, van Heerikhuizen, and Emirbayer 2012) discusses affinities and complementarities of the work of Bourdieu and Elias. See also (Dépelteau 2013). (White 2008, xvi, 114, 145, 241-242, and passim) draws attention to affinities between his work and Bourdieu's.

[9] (McCourt 2016), (Donnelly 2019, 918-919), and (Jackson and Nexon 2019, 4-10) provide brief overviews and examples of the range of recent relationalist work in IR.

[10] (Jackson and Nexon 2019, 2. Cf. 11). Frédéric Vandenberghe (2018, 37), however, argues, much more ambitiously, that "the emergence of a general relational social theory is on the horizon" (although he admits (2018, 38) that today it is more "an academic movement within the social sciences").

[11] (Jackson and Nexon 1999, 291-292). Cf. (Emirbayer 1997, 281), (McCourt 2016, 478-479), (Adler-Nissen 2015, 285-286, 288, 290-295).

[12] The substantialist bias of Western philosophy is emphasized in, for example, ???.

[13] (Emirbayer 1997, 286) highlights the substantialist nature of mainstream variable-based "causal" analysis, drawing heavily on (Abbott 1988, esp. 170).

[14] (Emirbayer 1997, 287). By contrast, substantialists "presume that entities precede interaction, or that entities are already entities before they enter into social relations with other entities." (Jackson and Nexon 1999, 293).

graphite, soot (more precisely, char), and buckyballs are all "the same stuff" – "just" arranged differently.) Whatever the stuff of the world may be – and contemporary Physics suggest that at bottom it isn't "stuff" at all – no thing in the world is purely substantial.

Relationalism is also anti-essentialist.[15] "Every so-called essence appears as a dense bundle of relations."[16] "The question of what something is becomes one of the relational configurations within which it is embedded."[17]

Relationalism in IR has both provided new insights into old topics and extended research into important parts of the social world that have been systematically ignored, and even denigrated, by substantialists.[18] I will argue, however, that it is a one-sided inversion of substantialism – and that processualism offers a more promising framing for theory and research in IR that both integrates and transcends relationalism and substantialism.

2. EMBEDDING RELATIONS IN PROCESSES: TOWARDS RELATIONAL PROCESSUALISM

> [For obvious reasons, I am particularly interested in reactions to this section from *this* audience. The argument here, I think, is pretty polished. Therefore, criticisms and suggestions on style and tone, in addition to substance, would be appreciated.]

This section focuses on problems in Jackson and Nexon's account of relationalism that I argue suggest a processual frame. I intend my arguments, however, to be constructive. "Relationalists," I hope, will see processualism as, at worst, a parallel project with broader analytical aspirations.

2.1. Relations and Relata

Jackson and Nexon argue that "the distinction between relationalism and substantialism involves ontological commitments."[19] Their title "Relations Before States" also seems to suggest that relations are an analytic or ontological primitive.[20]

This reading is supported by their account of the famous mid-1980s interchange between Richard Ashley and Kenneth Waltz. Waltz took Ashley to be advancing "the 'baffling' position that 'the balance-of-power regime antedates the units that engage in the balancing!'"[21] And Jackson and Nexon *endorse* "this 'baffling' position – that relations precede (in a logical, if not always in a temporal, sense) the very existence of the units doing the relating."[22]

This, I argue, is not merely perplexing but wrong.

[15] For example, (Fuchs 2001) frames what is usually called "relationalism" as *Against Essentialism*. Cf. (Tilly 1998, ch. 1 esp. 17-21), (Jackson and Nexon 1999, 293, 295, 300, 301, 307, 321 n. 18) (Emirbayer 1997, 282, 283, 285, 286, 292, 295 n. 34, 308). For similar arguments in process Biology, see, for example, (Dupré and Nicholson 2018, 23-26), (DiFrisco 2018, 79-92).

[16] (Powell 2013, 205).

[17] (McCourt 2014, 36).

[18] See nn. ???.

[19] (Jackson and Nexon 1999, 292).

[20] ".

[21] (Jackson and Nexon 1999, 310) quoting (Waltz 1986, 337-338).

[22] (Jackson and Nexon 1999, 310). Similarly, Nexon in a later piece (2010, 100) argues that "relations should be treated, either analytically or ontologically, as prior to either individual agents or aggregate structures."

A relation is "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*."[23] There are no relations without relata. You can't connect or arrange (relate) nothing.[24]

Modern states and the modern balance of power system were inseparable parts of the modern configuration of states-in-a-states-system. One was impossible without the other. (What would it even mean to have a balance of power regime without powers that balance? Or a power that is not part of a system of powers?) *Neither* "came first" (or had logical or ontological priority).

Parts are not parts except as parts of a whole. Wholes are not wholes without the parts that compose them.[25] And in the social world, parts typically become the parts that they are and wholes typically become the wholes that they are through mutually co-constitutive relations and activities that are transformative over time.

Whatever "units" existed prior to the rise of the modern states system were parts of another (type of) international system. Over centuries, those polities and that system recursively reshaped one another, leading ultimately to the configuration of modern-states-in-the-modern-states-system. And that configuration itself has undergone (and continues to undergo) processes of co-constitutive transformations – leading, in some accounts, to the configuration of post-modern states and transnational and international actors in a post-modern ("globalizing") system of world politics.

In their recent piece, Jackson and Nexon call relations an "analytical primitive."[26] Taking the avoidance of the terms ontological and logical to be intentional,[27] this can be read to suggest only a contingent methodological priority for relations. Relationalists give analytical or methodological priority to relations much as substantialists give analytical or methodological priority to substances. And these choices are to be evaluated by their explanatory fruitfulness not their ontological adequacy.

This reading is also compatible with Jackson and Nexon's argument in their original article that "descriptions of an object as a 'substance' and descriptions of that object as a 'bundle of processes and relations' are complementary, in that neither exhaust the object itself."[28]

What we need, then, is an overarching frame that integrates substances and relations. I have suggested processes.[29] And much in Jackson and Nexon's account would support such a move.

2.2. Relations and Processes

Surprisingly for "relationalists," Jackson and Nexon argue that "relationalism … takes processes of social transactions as the basic building blocks of theory."[30] They also identify *processes* as "the basic

[23] *Oxford English Dictionary* [emphasis added].

[24] The idea of, for example, opposition is independent of particular things that are opposed. But this abstract idea or type is not a *relation* of opposition.

[25] "The proper 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." (Bertolaso and Dupré 2018, 331).

[26] (Jackson and Nexon 2019, 4).

[27] "There is an important distinction between an analytical standpoint and an ontological standpoint." (Jackson and Nexon 1999, 320-321).

[28] (Jackson and Nexon 1999, 292. Cf. 304).

[29] (Renault 2016, 20-23) makes a similar argument from a very different perspective. Cf. also (Galton and Mizoguchi 2009).

[30] (Jackson and Nexon 1999, 291).

units of p/r [processual/relational] analysis,[31] and claim that "a p/r approach holds that processes *are* the most fundamental elements of reality."[32] I agree – and point out that this would seem to call for an overarching frame of *processualism*. "Relationalism" thus would become "relational processualism;" a *processual* approach that adopts a methodological or analytical focus on relations.

A relation ("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"[33]) and a process ("that which goes on or is carried on; a continuous action, or series of actions or events; a proceeding"[34]) are very different "things." Jackson and Nexon therefore note, for example, that "it is logically possible to be a processualist without being a relationalist, and vice versa"[35] and that social network analysis has often been "relational but *not* processual."[36]

They are not, however, at all clear about how processes and relations are similar and different. They regularly use variants of the formulation "processes and relations" with no attempt to clarify how they differ.[37] The formulation "processual-relational"[38] is equally obscure. The shorthand formula "p/r"[39] suggests that "processual" and "relational" are largely overlapping and more or less substitutable terms – which clearly they are not. And Jackson and Nexon suggest that the most accurate term for the perspective is "processual relationalism"[40] – which I will argue gets the relationship backwards.

All processes involve relations. But not all relations involve or are parts of processes. And no process is merely a matter of relations.[41]

[31] (Jackson and Nexon 1999, 292). They go on to define configurations as "sets of related processes."

[32] (Jackson and Nexon 1999, 314 [emphasis in original]). Similarly, Mustafa Emirbayer begins his "Manifesto for a Relational Sociology" by contrasting substances and processes (1997, 281) and reverts to this contrast at many important points in his argument (e.g., 1997, 290, 295, 301, 304) . And Jackson and Nexon, in their latest piece, argue (2019, 3-4, 11) that "relational approaches to world politics specify *processes* and *mechanisms* that, among other thing, give rise to both actors and the environments in which they find themselves" and that relationalism involves "a broad scholarly commitment to lodge explanatory claims at the (meso-)level of transactions and processes."

[33] *Oxford English Dictionary*. Neither Jackson and Nexon nor Emirbayer defines relation – presumably because they (quite sensibly) use the term in its ordinary-language sense.

[34] *Oxford English Dictionary*. This closely corresponds to Jackson and Nexon's definition (1999, 291) of a "linked set of occurrences or events which produce a 'change in the complexion of reality.'" (The quoted passage is from (Rescher 1996, 38).)

[35] (Jackson and Nexon 1999, 391 n. 3).

[36] (Jackson and Nexon 1999, 305). Cf. (Jackson and Nexon 2019, ???).

[37] (Jackson and Nexon 1999, 298, 299, 300, 301, 304, 306).

[38] (Jackson and Nexon 2019, 9). Similarly, Emirbayer (1997, 309) speaks of "a processual, relational view of the world" – the comma indicating conceptual confusion.

[39] (Jackson and Nexon 1999, 292, 297, 301, 302, 303, 304, 306, 307, 308, 312, 314, 316, 317, 318). Similarly, Andrew Abbott (2007 [1996], 3) refers to "the processual/relational tradition."

[40] (Jackson and Nexon 1999, 292, 301, 318). In their 2019 piece, they claim that they initially used "the rather clunky term 'processual-relationalism.'" (2019, 6). They did not. They used the not at all clunky (but, I am arguing, wrong) term processual relationalism (using processual as a modifier of relationalism). And they also used the very different (clunky) formula p[roccessual]/r[elational].

[41] In their recent piece, Jackson and Nexon (2019, 3) present still another account, distinguishing relational approaches that emphasize (static) positions from those that emphasize (dynamic) processes. A process, however, is something different from, not a type of, a relation. It is a *process*, which involves organized (related) entities and activities that produce a particular result. (Note also that if processes are dynamic relations, it cannot be the case, as Jackson and Nexon claim (quoted at n. 35) that one can be a processualist without being a relationalist.)

Furthermore, and most importantly, processes essentially involve *activity* and occurrences *over time*. Relations typically do not. As Stuart Glennan puts it, "the language of relations is a static language."[42] Even if this is an overstatement, many (most?) relations are static; that relations are not inherently dynamic.

2.3. Entities and Activities

This makes relations more like substances than processes. From a processual point of view, both substantialism and relationalism suffer from "entity bias."[43]

The debate between substantialists and relationalists, like the debate between materialists and idealists, focuses on what makes up "things" (entities). Neither substantialism nor relationalism directly addresses what entities do (or the productive nature of those structured activities). And the unfolding of entities and activities over time ("becoming") is not readily comprehended in either relational or substantial framings (which focus on "being").

No matter how intensively we investigate relations, we will never understand how the world *works* – which is, if not the principal aim of science,[44] certainly a very desirable kind of scientific knowledge. Relation-ism, like substance-ism, provides "what" or "why," not "how," explanations.

Most relationalists do not intend entity bias. Quite the contrary, they regularly conflate (static) relations and (dynamic) processes.[45] In fact, Jackson and Nexon argue that relationalism

> treats configurations of ties – recurrent sociocultural interaction – between social aggregates of various sorts and their component parts as the building blocks of social analysis (Tilly, 1996: 2). These configurations of ties give rise to what we normally refer to as entities. Because ties are not static 'things', but ongoing processes, a more accurate term for this kind of analysis is processual relationalism.[46]

Ties, however, are *not* necessarily dynamic. (Even configurations of ties may be static.[47]) Entities arise not simply from configurations of ties (and the entities so related) but from the *activities* of related entities. Most importantly, if (configurations of) ties really are, as Jackson and Nexon claim, processes then we should call them (and study them as) processes – productively related entities and activities – not a type of relation (which they are not[48]). If we choose to use the language of configurations to describe processes, we should speak of something like "configuring configurations that configure"[49] – which are continually "in process."

[42] (Glennan 2017, 50).

[43] (Illari and Williamson 2012, 126-127). A variant of this problem, which is especially evident in contemporary quantitative social science, is what Glennan (2017, 53) aptly calls "property bias."

[44] "Understanding patterns in terms of the processes that produce them is the essence of science." (Glennan 2017, 24) quoting (Levin 1992, 1944).

[45] For example, Christopher Powell (2013, 188, 194-195), in arguing for "radical relationalism," argues that we should "treat relations as processes" – which suggests that he really ought to be advocating radical processualism. François Dépeletau (2018b, 18) identifies "processual thinking" as one of five key principles of relational thinking (but never indicates why this should be so). In IR, [need two IR examples] See also n. 32.

[46] (Jackson and Nexon 1999, 291-292).

[47] Furthermore, recurrent sociocultural interaction need not involve configurations of ties. And these two formulations imply very different analytical foci.

[48] See n. 41.

[49] This formulation is borrowed from Bourdieu's (1977 [1972], 72) famous account of *habitus* as "structured structures predisposed to function as structuring structures." Note also that although Elias "was willing to present his sociological

The language of configurations draws our attention away from the flow of configuring and reconfiguring activities. For example, the teacher-student relation (and configuration) is in itself static. The goal of the *activity* of teaching, which unfolds over time, is change (learning). Realizing that goal, however, requires the productive operation of the interrelated processes of teaching and learning.

More generally, a focus on processes suggests a preference for analyses that employ verbs (and adverbs and verbal nouns) instead of nouns.[50] For example, rather than look for causes (for example, by trying to determine the "causal effects" of explanatory variables) we should study causation – the productive processes of causally efficacious entities and activities operating in particular ways. Rather than see the actions of states as constrained by "structures" we should see international relations as "structured" (by many kinds of structuring structures that structure). Rather than think of identity as a defining attribute of individuals we should explore the many and varied identification processes that produce contingently stabilized, multiplex configurations of identities – for which we often use the substantialist shorthand "persons."[51]

None of this is to criticize research or theory that focuses on relations – or substances, entities, or properties. I am simply repeating the point that relationalists make against substantialism, namely, that such a focus is not conceptually, logically, ontologically, or scientifically privileged. And I am further suggesting that processes – productively organized entities and activities – provides a more encompassing and fruitful frame for "relational" IR.

3. PROCESSES

I take the arguments above to have established that relationalism is, in "dialectical" terms, a progressive negation of substantialism – but that processualism is their synthesis.[52] Processes integrate entities (substances and relations) and activities into the "things" – processes – that make the world what and how it is. At the very least, processes deserve considerable, perhaps even central, scientific attention.

Process-oriented work in IR, however, is rare. Standard research design texts give no attention to processes as objects of investigation.[53] And even when processes appear to be considered, they are not. For example, "process tracing," as typically practiced, does not investigate processes (entities and activities productively organized in a particular fashion). Rather, it either provides narrative (not processual) explanations[54] or generates "causal process observations" that can be incorporated into (statistical or set theoretic) associational explanations (or used to check the validity of those kinds of

theory for some time as organised around the concept of 'figuration', he grew to dislike the term 'figurational sociology' and ended up preferring 'process sociology' as a label." (Van Krieken 2001, 353-354).

50 Cf. (Rescher 1996, 29), (Machamer, Darden, and Craver 2000, 4), (Glennan 2017, 20).

51 (Bucher and Jasper 2017) argue powerfully for this understanding. (White 2008) develops a full-fledged social theory based on such an understanding of identity. Cf. also (Crossley 2011, 17, 30), (Abbott 2007, 7, 8. 9 10, 12, 15). See also ??? below.

52 "Relationalism," I am thus suggesting, has been too focused on combatting substantialism and not focused enough on understanding itself in something more like its own terms – which, I am suggesting, ought to be processual.

53 For example, in International and Comparative Politics, (King, Keohane, and Verba 1994), (Brady and Collier 2010), and (Goertz 2017) all have index entries for "process tracing" but not for "process(es)."

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between-case causal inferences).[55] And in social-scientific International and Comparative Politics, "causal mechanisms" usually are understood not as structured entities and activities that produce characteristic outcomes in the world but as intervening variables[56] or "as if" predictive devices.[57]

Processes, however, are central to the practice of Biology. ("Essentially, every biologist is engaged in the description of processes."[58]) Furthermore, the contemporary philosophy of Biology contains a robust body of work on processes.

Especially relevant is the body of work sometimes referred to as "the new mechanical philosophy."[59] [finish paragraph][60]

Therefore, I ground the following discussion in processual and mechanismic Biology – which, on its face, seems a much more promising place to look for scientific concepts, practices, and understandings relevant to the social sciences than Physics and Statistics, which inspire most social-scientific self-understandings in mainstream IR. And in pursuing some important implications of processualism for IR, I will rely heavily on biological analogies.

3.1. Varieties of Processualism[61]

Processualist typically adopt the ordinary-language conception of process noted above: "that which goes on or is carried on; a continuous action, or series of actions or events."[62] As Nicholas Rescher, a leading contemporary processual philosopher puts it, "a process is a coordinated group of changes in the complexion of reality, an organized family of occurrences that are systematically linked to one another either causally or functionally;"[63] "an integrated series of connected developments unfolding in programmatic coordination."[64] Or, as the mechanismic philosopher of Biology Stuart Glennan puts it, processes are "causal chains involving sequences of activities and interactions between entities leading up to" an event.[65] I use the formulation productively organized entities and activities.[66]

55 Brady (???). "Arguments employing process tracing are often found in regions of social science in which one is interested in questions about what causes what [not how a result is produced] but in which good statistical data are unavailable." (Steel 2004, 68).

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58 (Bapteste and Anderson 2018, 283). Cf. (Bechtel 2011), (Darden 2013), (Craver and Kaiser 2013, 130). Even more broadly, Laura Nuño de la Rosa (2018, 264) argues that "following processes is a – if not the – characteristic activity of science." Cf. also n. 44.

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60 [need to address largely interchangeable use of "process" and "mechanism" and stipulate a focus on recurrent (not just one off) processes/mechanisms.]

61 Nicholas Rescher *Process Metaphysics* (1996) and *Process Philosophy* (2000) are sophisticated and wide-ranging yet accessible introductions to a broad analytic understanding of process philosophy. More briefly, although somewhat more densely, see (Bickhard 2011a, b). Cf. also (Seibt 2018b).

62 *Oxford English Dictionary*.

63 (Rescher 1996, 38).

64 (Rescher 2000, 22).

65 (Glennan 2017, 26).

66 This draws heavily on "the new mechanism." See, for example, ???.

Processualism thus understood can be (and regularly is) adopted as an ontological, an epistemological, or a methodological stance or doctrine. And it can be seen as applying to all of reality or only some parts – usually the living and social worlds (either in whole or in part).

Ontological processualists hold that the world *is* "a matrix of process;"[67] in Wilfred Sellars' colorful formulation, "the ongoing tissue of goings-on."[68] This understanding often is carried down to – and is particularly striking at – the lowest physical levels.

> Modern physics teaches us that at the level of the very small there are no ongoing *things* (substances, objects) at all in nature … Matter in the small … is not a Rutherfordian planetary system of particle-like objects but a collection of fluctuating processes organized in stable structures (insofar as there is stability at all) by statistical regularities of comportment at the level of aggregate phenomena. Twentieth century physics has turned the tables on classical atomism. Instead of very small things (atoms) combining to produce standard processes (windstorms and such), modern physics envisions very small processes (quantum phenomena) combining to produce standard things (ordinary macro-objects) as a result of their modus operandi.[69]

For ontological processualists, at least some significant part of the world "really is," at its base, processual. But how much (and which parts) is a matter of dispute – or uncertainty.[70]

Processualism is often advocated as an approach to the biological or social world in particular. For example, John Dupré and Daniel Nicholson argue that "the world – *at least insofar as living beings are concerned* – is made up not of substantial particles or things … but of processes … *the living world* is a hierarchy of processes, stabilized and actively maintained at different timescales."[71]

In addition, processes need not be the sole ontological furniture of the world. For example, Peter Machamer, Lindley Darden, and Carl Craver, the authors of the seminal "new mechanist" paper, argue that both entities and activities, the two principle components of processes/mechanisms, are irreducibly real.[72] ("There are no activities without entities, and entities do not do anything without activities."[73]) This ontological dualism, they claim, "capture[s] the healthy philosophical intuitions underlying both substantivalist and process ontologies."[74]

[67] (Rescher 1996, 92).

[68] (Sellars 1981, 57). (I first encountered this passage in (Seibt 2018a).)

[69] (Rescher 2000, 12-13).

[70] For example, Rescher argues (2000, 6), relatively modestly, that "processes are more fundamental, or at any rate not less fundamental, than things for the purposes of ontological theory." Much more ambitiously, Mark Bickhard (2004, 122) argues "Every science has passed through a phase in which it considered its basic subject matter to be some sort of substance or structure. Fire was identified with phlogiston; heat with caloric; and life with vital fluid. Every science has passed beyond that phase, recognizing its subject matter as being some sort of process: combustion in the case of fire; random thermal motion in the case of heat; and certain kinds of far from thermodynamic equilibrium systems in the case of life."

[71] (Dupré and Nicholson 2018, 3 [emphasis added]). Cf. (Nicholson 2018, 161): "If we want an ontology of life that is grounded and informed by natural science, then a processual account is unavoidable ."

[72] (Machamer, Darden, and Craver 2000, 4, 6, 8). This is very similar to the position Jackson and Nexon suggest in the passage quoted at n. 28.

[73] (Machamer, Darden, and Craver 2000, 8).

[74] (Machamer, Darden, and Craver 2000, 4. Cf. 8).

Processualists, furthermore, is compatible with ontological agnosticism. For example, Thomas Pradeu expresses skepticism toward ontological processualism but advocates "an epistemological process view" on the grounds that "interpret[ing] the living world in terms of processes (rather than of already individualized things) makes an important difference to scientific work, because it leads to different perspectives and potentially to different experimental programs."[75]

One may also be simply a methodological processualist, studying processes or mechanisms because this is a fruitful way to generate interesting or useful knowledge. (I suspect, though, that most processualist have at least ontological suspicions about, and some sort of epistemological commitments to, processes.)

What unites these views is a focus on the operation of productively organized entities and activities. And nearly all processualists view at least many of the entities of the world – and most of the entities of the social world – as (or at least as reasonably analyzed as) the products of productive processes.

3.2. Activities and Entities

Processualism can be understood as extending the relational critique of substantialism. To the argument that entities are relational as well as substantial, processualism adds, and draws our attention to, activities – which not only are as essential as substances and relations to the production of entities but are of considerable independent intrinsic importance.

"Mechanisms do things. They are active and so ought to be described in terms of the activities of their entities, not merely in terms of changes in their properties."[76] Processualism insists that the world is as much a matter of doings (activities) as beings (entities).

"Among the things discovered by science are things that are not entities, but doings extended in time."[77] Binding, catalyzing, folding, cutting, inhibiting, stabilizing, transcribing, synthesizing, selecting, sorting, recombining, reproducing, radiating, colliding, capturing, photosynthesis, meiosis, epistasis, respiration, metabolism, fermentation, osmosis, oxidation, reduction, hydrolysis, halogenation, combustion, freezing, melting … Such "activities are identified and described independently of the particular kinds of entities that take part in them."[78] And they are no less real – or, leaving ontology aside, no less worthy of scientific investigation – than the entities involved or their internal or external arrangements (relations).

"The notion that only things or substances are qualified to count as concrete particulars is nothing more than a prejudice. Many processes are *bona fide* individuals – they are concrete, countable, and persistent units. Non-biological examples include whirlpools, flames, tornadoes, and laser beams."[79]

As these illustrations suggest, this is particularly striking in the case of "unowned processes"[80] – processes that are not the activities of individual entities – such as rain, wind, or a flame. But even for owned processes, [finish paragraph]

75 (Pradeu 2018, 105).

76 (Machamer, Darden, and Craver 2000, 5).

77 (Illari and Williamson 2013, 74). (Machamer 2004) is another good discussion of the independent importance of activities. Much more briefly, see also (Glennan 2017, 50-51), (Overton 2015, 31).

78 (Illari and Williamson 2013, 74).

79 (Dupré and Nicholson 2018, 12).

80

Processualist argue that the things of the world are – or at least that the things under investigation can be profitably understood as – "complex bundles of coordinated processes."[81] What philosophers call "endurants" or "continuants"[82] – entities that persist across time – "are not abstracted from processes but are rather precipitates of processes: they are what abides, as certain kinds of processes continue and develop."[83]

"What we identify as things are no more than transient patterns of stability in the surrounding flux, temporary eddies in the continuous flow of process"[84] – although their transience is measured in different time frames. (For example, exotic radioactive elements have half-lives ranging from $23*10^{-24}$ seconds to more than 10^{24} years .) "The universe" itself is just an unusually long-lived pattern of stability (moving from "big bang," through billions of years of expansion, to ???.

Even the most persistent entity is ultimately only a phase of a process. (We will return to this theme in some detail in §**Error! Reference source not found.**.

> [At this point the paper pretty much falls apart. I have a more or less clear idea of some of the things I want to achieve, but the most developed parts of what follow are rough first drafts. And I have not the slightest idea of how this paper is meant to end.]

4. Levels of Organization and Scale in an Ontologically Flat World

The following sections look at some of the differences processualism makes for IR. As a prelude of sorts, this section briefly sketches a processual vision of the world as ontologically flat but complexly differentiated by levels of organization and scale. I frame this discussion in terms of an "all in" ontological processualism in order to highlight the distinctiveness of a processual vision. Although less comprehensive forms of processualism would moderate much of what follows, they would nonetheless be closer to this vision than to standard substantialist visions of the world.

If the world really is just a matrix of processes – if every thing is a manifestation of a process and processes are everywhere – then the world is ontologically "flat." Every "thing" in the world is equally real. No part of the world (e.g. substances, energy, entities, or activities) is more fundamental than the other.

Ontological similarity, however, is matched by immense existential diversity. This ontologically flat world is organizationally varied and complex. And it can be profitably analyzed at wildly varying temporal and spatial scales.

"New Mechanists have emphasized that nature is hierarchically arranged, with new and different kinds of entities and interaction arising at different levels of organization."[85] Processes, and the entities and activities that compose them, are nested in a hierarchy of complexity. "Processes exist in relation to other processes, in an organization of processes."[86] And each level of organization –

81 (Rescher 2000, 9).

82 ???

83 (Simons 2018, 55).

84 (Dupré and Nicholson 2018, 13).

85 (Glennan 2017, 6). Cf. (Bechtel 2017, 255).

86 (Arnellos 2018, 203).

for example, the physical, chemical, biological, psychological, and social – has characteristic entities and activities that are studied with models and methods appropriate to them.[87]

In the living world, "the processes in this hierarchy not only compose one another but also provide conditions for the persistence of other members, both larger and smaller."[88] "The stable persistence of an organism requires … interactions between multiple systems at multiple organizational levels."[89] And the same, I will argue below, is true of the social world.

The world also can be studied at varying spatial and temporal scales. And these different scales often crosscut levels of organization. For example, Physics studies both the smallest entities operating on the shortest time scales and the largest entities operating on the longest time scales – and the very ideas of space and time (and their apparently inseparable interrelation).[90]

[need another paragraph on scale]

Such a processualist vision implies that this is no privileged position from which to investigate the world. No level of organization or spatial or temporal scale imposes itself on us. For example, the physicist's view of the "stuff" of the world has no special privilege – as it might in a substantialist world, if Physics were the discipline that could tell us what the stuff of the world was really made of.

"A single activity [or entity] may be embedded in many larger processes, and how one should carve up the activity [or entity] … will depend on which of these larger processes one is seeking to explain."[91] Different disciplines, and even different parts of the same discipline, will "bottom out" in different entities and activities; different "components that are accepted as relatively fundamental or taken to be unproblematic for the purposes of a given scientist, research group, or field."[92] These bottom-out entities are the terms for the intelligibility of an explanation in a particular field[93] but have no special ontological status. And thus there is no privileged level of causation.[94]

Reductionism thus is a purely analytical (not ontological) strategy.[95] Dropping down a level of organization (or moving to a more granular temporal or spatial scale) reveals not something "more fundamental" but something inaccessible to the analytical tools employed at a higher level. Reduction supplements, rather than replaces, explanation at a higher level. The world of the physicist "lies beneath" that of the chemist or biologist and explains things no fully accessible to Chemistry and Biology. But the most complete knowledge of Physics will never eliminate the need for Biology – because biological processes, although they depend upon and are constrained by physical processes, are not (merely; reducible to) physical processes.

87 (Eronen and Brooks 2018) and (Craver 2014) are useful introductions to levels of organization in Biology. (Wimsatt 2007, ch. 10) is more demanding. See also (Campbell 1990), (Emmeche, Køppe, and Stjernfelt 1997), (Hall and Kerney 2012), (Simpson 2011), (Vogt 2019). For various accounts of the idea of "levels of reality" see (Nicolescu 2010), (Poli 2009), (Rueger and McGivern 2010), (Walter and Eronen 2011), (Gnoli and Poli 2004), (Grene 1967), (Heil 2003).

88 (Dupré and Nicholson 2018, 3).

89 (Bertolaso and Dupré 2018, 322).

90 For two rather different accounts of levels of organization and scale see (Allen and Hoekstra 1990) and (Eronen 2015). See also (DiFrisco 2017).

91 (Glennan 2017, 42).

92 (Machamer, Darden, and Craver 2000, 13).

93 (Machamer, Darden, and Craver 2000, 21).

94 (Souza and do Amaral 2019).

95 The account of reduction here is inspired by (Wimsatt 2007, ch. 11, 12). Cf. (Bunge 1977).

Another crucial implication of this vision of the world for the social sciences is the reality of "downward" as well as "upward" causation. [finish paragraph]

5. "INDIVIDUAL" AND "SOCIAL" ARE MATTERS OF POINT OF VIEW

Having established (or at least aggressively argued) that a processual perspective approaches the world in a distinctive way – and thus can provide distinctive knowledge about how the world "is" and especially about how it operates, I now want to consider a couple important implications of processualism for IR.

I begin with one of the more contentious issues in the contemporary social sciences, namely, the status of individuals and individualism. Processualism rejects both individualism and holism, holding that MOST social entities are both individuals and groups. Perhaps more precisely, neither individual persons nor the social entities to which they belong are "essentially" either an individual or a group. Whether a biological or social entity is an individual or a group is largely a matter of perspective.

5.1. Human Beings are Both Organisms and Parts of Superorganisms

In the biological world, whether an entity is "individual" or "collective" is often unclear to the point of indeterminacy. For example, aphids have specialized cells that host *Buchernera* bacteria from whom they obtain essential amino acids. And the bacteria have evolved so that they are no longer able to live anywhere else. Less exotically, termites can only digest the wood that they eat with the help of protist in their gut. And human beings cannot live without their microbiome.

"Indeed, it is becoming increasingly apparent that symbiosis is the rule rather than the exception in the biological realm."[96] "The entities we used to refer to as single living things (for instance termites moving around, eating, and digesting food) turn out to be less autonomous than we might have thought them to be: in order to function the way they do, they need the other elements of the symbiotic system."[97]

An "individual" human being is a superorganism – an integrated inter-species system of many organisms. Each of us is more like an ecosystem or a society than "an individual."

Conversely, coral colonies and bee hives are no less "individuals" than the creatures that make them up. Similarly, an elephant herd, a chimpanzee band, or a human society is no less a superorganism than an individual elephant, chimpanzee, or human being. It is an integrated whole composed of smaller organisms (which, in these cases, are members of the same species).

"There is a great variety of ways in which cells, sometimes genomically homogeneous, sometimes not, combine to form integrated biological wholes."[98] "Different types of collaboration among processes result in different types of self-maintaining organizations."[99] And "because functional integration and common fate can be achieved at various levels of organization, one can have overlapping individuals operating at different temporal scales and with different levels of

[96] (Dupré and Nicholson 2018). Cf. (Guttinger 2018, 309).

[97] (Guttinger 2018, 311).

[98] (Arnellos 2018, 201).

[99] (Arnellos 2018, 209).

transiency."[100] "There are various ways of dividing living systems into biological individuals—a position that Dupré (2012: 241) has called 'promiscuous individualism'."[101]

This interpenetration of individuals and groups – the fact that "the same" entity is both individual and collective – is to be expected in an organizationally hierarchical but ontologically flat processual world. Organizationally more complex entities, whether chemicals, molecules, organisms, or societies, cannot be reduced to their constituent elements – and thus cannot be left out of our account of the furniture of the world. But neither can the elements that compose them.

An "individual human being" is a superorganism to a biologist, an individual to a psychologist, and a part of various social groups to a sociologist. And all of these characterizations are equally true and equally fundamental. An "individual human being" *is* many different kinds of things in the multiple streams of being and becoming in which she is enmeshed.

5.2. Life Cycles and Genidentity

What an entity "is" is even more complicated when we take time into account – especially in the case of biological and social entities.

"The entities that we commonly represent or model as thing-like, such as organisms and other biological individuals, are just particular time slices of their life cycles."[102] This is particularly striking in organisms that undergo dramatic changes across their life cycle, such as frogs and butterflies – or more exotic creatures, such as the parasitic flatworm *Fasciola gigantica* (the giant liver fluke), which goes through several morphologically distinct life phases in two different hosts.[103] More often than not, "it is surprisingly difficult to specify what stays the same throughout the life cycle of an organism."[104]

In the case of humans, infants have some rudimentary biological similarities to adults but few of their attributes and capabilities. And almost nothing "of substance" persists over the life of a person. "Virtually all the protein molecules in our body are replaced during the course of a year"[105] – and nearly all the rest turn over in about a decade.

"An organism's persistence does not depend on being kept in a single state but on being maintained through numerous processes."[106] A living thing is the thing it is not as the result of the persistence of some substrate or essence but by and through its history.[107] (Nothing else is persistent.) Its identity is what Kurt Lewin and Hans Reichenbach in the 1920s, in trying to develop a conception of time consistent with Einstein's relativistic physics, called "genidentity," or "identity through/over time."[108]

[100] (Bouchard 2018, 190).

[101] (Arnellos 2018, 199). The citation is to (Dupré 2012).

[102] (Arnellos 2018, 201).

[103] (DiFrisco 2018, 79-81) provides a brief overview.

[104] (Dupré and Nicholson 2018, 19).

[105] (Dupré and Nicholson 2018, 17).

[106] (Anjum and Mumford 2018, 63).

[107] "Without an identical subject that passes through each stage, one can interpret the stages as temporal parts of an extended process."(DiFrisco 2018, 82).

[108] (Padovani 2013) is a good introduction. In a biological context, see, (Pradeu 2018).

"A process perspective allows us to identify (i.e. specify the identity of) an individual through time, however discontinuous that individual may be."[109] Chickens and eggs and acorns and oak trees "are slices of the same genetic series connecting the selfsame biological individual along a temporal sequence"[110] – selfsame being defined by that temporal sequence. Rather than pre-defined organisms having life cycles, "it is the life cycle that constitutes the organism."[111]

Consider human beings. "The unity of the person resides neither in the physical body as such" – form, function, and substance change – "nor in the psychic unity of custom and memory" – which, at best, ignores important parts of the human life cycle (none of us remembers infancy, or even much of childhood) and accepts at face value first person reports of questionable value – "but in a synoptic unity of process."[112] "People are constituted as the individuals they are through their doings, their history: one is the individual that one is by nature of the macroprocess that integrates the microprocesses constituting one's life and career."[113] Rescher even argues that "individual human life is a process geared to the 'life cycle' of homo sapiens."[114]

In a processual world, there is no fundamental qualitative difference in the nature of the identity of an individual, a family, a society, a state, or a states system. In every case, the entity is the entity that it is through time; processually.[115] It is what it is largely as a processual matter of its historical path to what and where it is.

Once again, because there is not ontologically privileged perspective – no irreducible foundation or essence – what something "is" is in part a function of how we look at it. In particular, the things of the social world *are* many different things at once: physical systems, chemical systems, biological systems, psychological systems, and many different kinds of complexly embedded social systems as well. They are all, equally, entities of all these types. And they coalesce into "persons" – psychological persons and (individual and collective) social persons of various sorts – largely as a result of the intersection of a series of (bio-physically constrained) temporal successions in the social world.

5.3. Assemblages

The idea of "assemblages" can help to both clarify and extend the conception of individual and collective social entities as compound genidentical entities.

109 (Bouchard 2018, ???).

110

111 (Dupré and Nicholson 2018, 19).

112 (Rescher 1996, 107-108). Alternatively, a psychic unity of custom and memory *is* a processual social-psychological foundation of genidentity, constructed out of the succession of experiences.

113 (Rescher 1996, 108). "I am not straightforwardly identical with those processes to which I owe my life (blood circulation, cell division, digestion, and so on). I am rather a higher-order process relying on a manifold of lower-order processes – I am a processual form." (Meincke 2018, 369).

114 (Rescher 1996, 105. Cf. 116-118).

115 Rescher(1996, 52-53) makes the point quite nicely. "Heraclitus was only half right: We indeed do not step twice into the same waters, but we can certainly step twice into the same river. The unity of a particular that defines what it is consists in what it does." Cf. (Seibt 2018b, 3): an entity "is individuated in terms of what it 'does.'"

An assemblage[116] is a system the parts of which are linked by "external" relations, in the sense that they retain a certain separate identity, if not separability, while still being parts of a whole.[117] Where parts are related by "internal" relations, by contrast, they are in an important sense inseparable. Human beings and human societies are assemblages. The organs of a human body are joined by internal relations.

In an assemblage, wholes and parts exist in organizationally hierarchical relations but have the same ontological status. Individuals and societies – and polities and systems of polities – are equally real. And which is "more fundamental" is almost entirely a matter of perspective. "No [assembled] object is a seamless whole that fully absorbs its components."[118] An assemblage is both a multiplicity and a unity. Niklas Luhmann's description of a system as a *unitas multiplex*[119] is especially apt for assemblages.

For the social sciences, an assemblage perspective is particularly attractive because it highlights the simultaneous irreducibility and inseparability of individuals and social groups;[120] their dialectical or recursive relationship. Social groups, as systems, are not reducible to their individual parts. But as assemblages they do not reduce individuals to parts of social wholes.

We are who we are (and act as we act) as parts of complex (and historically variable) arrays of social assemblages. Those assemblages, however, are assemblages of individuals (and other elements). But the "personal identity" of those individuals is in large measure an assemblage of identifications as parts of multiple social assemblages …

An assemblage frame is also useful because it makes no presuppositions about the elements of the assemblage. In particular, the distinction between entities and their environments are contingent and variable.

Consider African termites. [finish paragraph]

At the level of individual human beings, consider distributed cognition. [finish paragraph]

[paragraph on man-machine military assemblages]

[need a conclusing paragraph for the section]

[From here on, I have nothing more to offer than very lightly annotated section headings]

5.4. Microfoundations are Not Foundational

One of the more striking implications of a processual vision for contemporary social science is the decisive rejection of the idea of "microfoundations."

116 This account of assemblages is rooted in (DeLanda 2016; 2006), which draws heavily on (and translates into Anglo-American analytical terms) (Deleuze and Guattari 1987 [1980], ch. 3, 4).

117 (DeLanda 2016, 2, 10, 11-12). Cf. (Holmqvist, Bachmann, and Bell 2015, 4): "an assemblage is a network in which relations between elements are never fully contained by a set formation."

118 (Harman 2010, 172).

119 (Luhmann 1990, 409–410, 418–419; 1995 [1984], 18).

120 As an assemblage, any particular group is (partially) divisible. But categorically social groups *are* assemblages of individuals.

The claim that "in principle, explanations in the social sciences should refer only to individuals and their actions"[121] might be defensible in a world where individual human beings were primal substances. Viewed processually, however, this, is a perverse arrogant ontological or analytical pretense that flies in the face of how and what the world is.

[need to finish section]

5.5. An Ecological Perspective on the Living and Social Worlds

"Everything, from atoms to populations, is an ecosystem and has to be treated as such."[122]

6. CONTINUITY AND CHANGE

An equally vexed issue in IR, and the social sciences more generally, is that of change. Here too processualism has a distinctive perspective that suggests a very different kind of IR.

6.1. Continuity, Not Change, Needs to be Explained

In a world of pre-given substances, change demands explanation – and is typically explained as a matter of differing arrangements of more or less fixed things. In a processualist world, though, "change, not stasis, is the default state of the world."[123] Continuity thus requires explanation. "For a process it is persistence that requires explanation."[124]

[need to develop linkage with Second Law of Thermodynamics, far-from-equilibrium systems, and dissipative structures.

Centrality of metabolism in living beings. How to develop analogies with societies?

Link with interconnected processes discussion in preceding section]

6.2. Continuous Transformation: A Processual Perspective on the Social World

7. FROM STRUCTURES TO SCAFFOLDINGS

Idea of scaffolding from (Caporael, Griesemer, and Wimsatt 2014). A more open-ended and processual notion of "structures"

8. NEED SOME SORT OF CONCLUSION

121 (Elster 2015, 7).

122 (Guttinger 2018, 304).

123 (Meincke 2018, 373). Cf. (Rescher 1996, 91).

124 (Bertolaso and Dupré 2018, 321). Cf. (Anjum and Mumford 2018)@71, (Arnellos 2018)@200, (Dupré and Nicholson 2018, 14).

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