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RESEARCH ARTICLE

Governance as multiplicity: the Assemblage Thinking perspective

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Abstract
Governance, the process of steering for collective action, is being theorized and empirically explored on a variety of subjects, private and collective issues and spatial levels. Depending on epistemological and theoretical preferences, studies adopt a hierarchical/centralized or a relational/decentralized conception of governance although they increasingly recognize that 'hybrid governance,' a mix of multiple models and modes, prevails in practice. Theoretical and empirical studies alike discuss sparingly, if at all, ontological issues, i.e., the nature of the 'what' is governed, despite their prominence for meaningful empirical analysis. A 'system' ontology is mostly presumed that usually produces static, context-insensitive accounts of dynamic governance phenomena and one-size-fits-all and 'best practices' recommendations. Since the 2000s, Assemblage Thinking (AT), a current of poststructuralist thinking, is being utilized on the grounds that the assemblage ontology better supports, conceptually and methodologically, the situated study of governance. This paper offers an overview of the application of AT in governance studies and an introductory exploration into the capacity of AT to frame a compleat approach for the applied study of governance conceived not as unitary process but as multiplicity. After summarizing the discourse on governance, the paper highlights the main features of AT and critically reviews selected assemblage-based governance studies. Then, it discusses the conceptual affinities between governance and assemblage, reconceptualizes governance, outlines the contours of an assemblage-based methodology and proposes an AT-based approach to governance. A discussion of the value of AT for applied governance studies and future research challenges conclude the paper.

Keywords Assemblage · Ontology · Multiplicity · Deleuze · DeLanda · Governance

Introduction

Governance is a concept that has captured the attention and interest of academics, politicians and laypersons since the late 1980s. It has diffused in a broad range of scientific disciplines beyond the Political and the Policy Sciences and is being empirically explored

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in numerous applications on a variety of subjects worldwide. The common, cross-cutting understanding is that it is the process of steering for collective action with respect to an issue in private and public affairs. The prefixes and modifiers that usually accompany it denote either a subject area (urban, regional, rural, tourism, migration, environmental, coastal, energy, etc.), or a spatial level (local, regional, multi-level, global), a mode of governance (hierarchical, market, corporate, self-governance), a style of governance (authoritarian, interactive, deliberative, discursive, adaptive), an issue (carbon forestry, natural gas transit, biological economies, housing, global crisis, preparedness) or its quality (good, sustainable, inclusive).

Interdependent reasons explain its ascendancy and popularity. They include the socioeconomic and political changes of the 1970s, the financial crisis of the state, the ideological shift toward the market, the emergence of New Public Management and new sources of governance, heightened concerns for political accountability, and public sector reforms in the 1980s and 1990s. The latter are partly attributed to the inability of formal, hierarchical, often administratively fragmented, state apparatuses to efficiently and effectively manage the complex, interdependent wicked issues facing post-1970s societies and economies (Stoker 1998; Heritier 2002; Jessop 2002; Pierre and Peters 2005; Bevir 2009, 2013; Levi-Faur 2012; Colebatch 2014). Nonstate actors are inevitably implicated in their resolution while their roles and responsibilities *vis-a-vis* state actors are becoming blurred. Concurrently, the mode of governance has changed from command-and-control to other techniques of coordination which importantly judge the environmental, socioeconomic and other impacts and consequences of governance. However, these occurrences have always characterized the process of governing; what is new presently is their overt recognition and inclusion in governance discourse (Colebatch 2014). Thus, a deeper reason for the popularity of governance may be its inclusive and encompassing nature that makes it ideal for portraying the practice of steering for collective action in a world that has always been complex and uncertainty-ridden (Levi-Faur 2012).

A voluminous literature offers various accounts of governance. Essentialist/reductionist accounts uphold either a hierarchical, top-down conception of governance being the sole responsibility of assumedly neutral and 'insulated' state actors, or a network/interactive conception involving complex, multi-level interactions among state and nonstate actors within policy and governance networks (Stoker 1998; Levi-Faur 2012; Peters 2014; Torfing and Sørensen 2014). Relational/nonreductionist accounts underline the relational, complex and situated nature of governance and the fundamental role of practices and power, and advance decentered conceptions of governance (Bevir 2013), self-governance (Rhodes 2007) and metagovernance (Jessop 2002). Increasingly, studies stress that no pure forms but 'hybrid governance,' a mix of multiple forms and modes, prevails in practice (Peters 2014).

A common feature of all accounts so far is the inadequate discussion of ontology, i.e., the nature of the 'what' is governed (cf. van Wezemael 2008) despite the fact that governance, generically and fundamentally, concerns the 'what' is governed and 'how' it is governed (Torfing and Sørensen 2014). An essentialist/reductionist 'system-as-a-whole' ontology implicitly underlies most approaches that may partly explain the often static and context-insensitive accounts of dynamic policy and governance phenomena and the disenchanting performance of OSFA (one-size-fits-all) recommendations and fixes offered.

Since the early 2000s, Assemblage Thinking (AT),[1] a form of relational, poststructuralist thinking, rooted in the works of the French philosopher Gilles Deleuze and his colleague Felix Guattari, is being employed in policy and governance studies at various spatial levels (Bennett 2005; Li 2007; Anderson and McFarlane 2011). Assemblages have been conceived as dynamic, decomposable but irreducible, revisable compositions emerging from processes of diverse, heterogeneous, material and immaterial cofunctioning components, or actors, coming together, or assembling, to serve an overt or covert purpose in a milieu (Anderson and McFarlane 2011; Bennett 2005; DeLanda 2006, 2011). AT is argued to conceptually and methodologically better support the study of the situated and hybrid nature of governance (Bouzarovski et al. 2015; Baker and McGuirk 2016; Briassoulis 2017b; Bueger 2017). Extant applications are in early stages of development while a coherent assemblage-based approach is lacking.

This 'ontological void,' the conceptual affinities between the concepts of governance and assemblage and a latent, general quest for alternative ontologies (Peters 2014) have provided the impetus for this paper. Adopting an applied research perspective, premised on the crucial importance of sound ontology for meaningful empirical analysis (Sayer 1984; Jessop 2005), it aims to offer an introductory overview of the application of AT to governance studies and to demonstrate that it can frame a compleat approach for the situated study of governance. The second section summarizes the current discourse on governance, the third highlights the main features of AT and the fourth critically reviews selected assemblage-based governance studies. The fifth section discusses the conceptual affinities between governance and assemblage, reconceptualizes governance, outlines the contours of an assemblage-based methodology and proposes an AT-based approach to governance. A discussion of the value of AT for applied governance studies and future research challenges conclude the paper.

Governance: multiple accounts of a multifaceted concept

Governance is used in a broad, all-encompassing and in a narrow, restricted sense. The broad sense encompasses every mode of steering which formal and informal, state, private and civil society actors employ to manage their common socioeconomic, political and other affairs. The narrow sense considers nonhierarchical modes of steering only (CEC 2001; Heritier 2002; Jessop 2002; Lafferty 2004; Pierre and Peters 2005; Rhodes 2007; Bevir 2009; Colebatch 2014; Peters 2014). The concept of governance has acquired at least four meanings as structure, process, mechanism and strategy (Levi-Faur 2012), all of which bear on its interrelated components implicitly or explicitly entailed in the pertinent literature; namely, process, actors, purpose, object of reference (issue, for short), goals, structures and procedures, means/instruments, praxis, outputs and outcomes.

Governance is a *process* (driven by the *purpose*[2]) *of steering individuals and/or groups* concerned with an *issue* that requires *collective action* to achieve issue-related collective,

[1] Assemblage Thinking rather than Assemblage Theory is usually used in the literature. Theory negotiates the structure and dynamics of a concept/issue. Thinking denotes an approach to the analysis of various issues guided by a particular concept (cf. Complexity Thinking, Resilience Thinking).

[2] Note that 'purpose' is used here in the sense of commitment of steering (Jessop 2002; Li 2007); i.e. the purpose of engaging in governance, of steering/governing in order to achieve some goals. Purpose is not identical to goals; the latter relate to the issue being governed.

not individual, *goals* (Colebatch 2014; Peters 2014). Steering comprises certain governance functions: goal setting, making goals compatible, steering (governing), attaching resources to and implementing steering mechanisms, evaluating outputs and outcomes, feeding back and securing accountability (Pierre and Peters 2005). Steering is accomplished through formal and informal *structures and procedures*. Actors employ/perform various practices (*praxis*), using material and immaterial *means/instruments*, to deliver *outputs* (preferred end states) which have particular *outcomes* (consequences). Actors represent the politics, structures and procedures the polity and means/instruments the policy dimension of governance[3] (Treib et al. 2007).

The object of reference concerns the 'what' is governed; an issue/situation of common interest to the actors who participate in, or influence, its definition and resolution. However abstractly it may be named (e.g., sector, activity, resource, object), the issue is always embedded in a socioecological milieu in empirical applications. It is characterized by its scope (who and what is involved), spatial and geographical characteristics (spatial unit, boundaries, distribution and scale of interest, environmental, economic, sociocultural, and other features), and temporal characteristics (temporal unit, duration, timescale). More than one theories, reflecting different viewpoints, exist regarding its causes, impacts, effects and their relationships (Briassoulis 2005).

The mode of governance,[4] i.e., the particular way of carrying out steering activities, is characterized using three interrelated criteria: (a) coordination mechanisms used, (b) types of instruments employed, or (c) types of interactions among actors. Hierarchy (command-and-control), market (competition) and networks (communication, participation) are commonly distinguished. These are generalizations rarely encountered in pure form in practice where a variety of modes coexist and interweave depending on the issue, sector and spatiotemporal context; hence, the term 'hybrid governance' (Treib et al. 2007; Colebatch 2014; Howlett and Ramesh 2014; Torfing and Sørensen 2014). The prevailing political regime critically influences the form and mode of governance as it regulates the 'who,' 'what' and 'how' of governance (Jessop 2002).

Different accounts[5] emphasize, conceptualize and operationalize different components of governance and their relationships in particular ways depending on their disciplinary, epistemological, theoretical and ideological orientation. For the present purposes, essentialist/reductionist and relational/nonreductionist accounts are roughly distinguished based on their implicit or explicit ontological assumptions. Table 1 presents a broad-brush comparison between them along the components of governance. Essentialist/reductionist accounts are grounded on positivism and postpositivism, are informed by classical pluralism, rational choice theory and historical institutionalism (Schmidt 2008) and adopt the normative and the rational choice models[6] of governance that are top-down, linear and static.[7] The original hierarchical, top-down conception of governance was succeeded by the post-1990s network/interactive (or, sociopolitical) conception resulting from complex,

[3] 'Governance' and 'policy' are often used interchangeably; however, policies are means used in governance (Peters 2014).

[4] Some authors conflate, or even identify, governance with particular modes of governance.

[5] 'Account' denotes the particular combination of epistemological, theoretical and analytical choices made to study a subject.

[6] Absolute and bounded rationality.

[7] Ostrom (2011) has developed dynamic, nonlinear versions accommodating endogenous changes and transformations.

Table 1 Comparing essentialist/reductionist and relational/nonreductionist accounts of governance

Components of governance	Accounts of governance	
	Essentialist/reductionist	Relational/nonreductionist
Process	Rational, top-down, linear	Relational, bottom-up, nonlinear
	Discrete stages	Blurred stages
Actors	Discrete, reified types/categories	No types/categories
	Prescribed roles, singular memberships	Multiple roles, memberships
Purpose	Top-down, externally determined	Top-down and bottom-up
Object of reference (issue)	Predefined system or network	Open, blurred boundaries
	Discrete, reified components	Variable composition
	Material components missing	Material components included
	Separate from context	Variable, nonlinear relationships
	Functionalist, linear relationships	
Goals	Predefined, top-down, formal/institutionalized	Formal and informal, situated, bottom-up
	Optimization (equilibrium)	Translation of formal goals
		Compromises
Structures and procedures	Predetermined, formal/institutionalized	Predetermined/formal and emergent/informal
Means/instruments	Discrete, reified, formal types/categories	Formal, discrete and informal, variable, contextual and contingent
Praxis (practices)	Implicit, ignored or occasionally mentioned	Explicit; central role
		Place-, time-, issue-specific
Outputs	Predefined preferred endpoints	Emergent, situated
	Discrete types/categories	Nonlinearly related to means/instruments
	Linearly related to means/instruments	
Outcomes	Predefined, fixed (e.g., effectiveness, success/failure)	Emergent, situated
	Linearly related to outputs	Nonlinearly related to outputs

multi-level interactions among state and nonstate actors within policy and governance networks. Statistical/quantitative and formal models of analysis are used. Formal, OSFA recommendations and 'best practices' are usually proposed (Stoker 1998; Ostrom 1990, 1999, 2011; Hooghe and Marks 2001; Folke et al. 2005; Ezzamel and Reed 2008; Levi-Faur 2012; Peters 2014; Torfing and Sørensen 2014).

Relational/nonreductionist accounts developed following the shift from positivist to nonpositivist/relational epistemologies and the poststructuralist/postfoundationalist movement effected by the cultural, communicative, argumentative, relational, practice, spatial and scalar 'turns' in the Social Sciences in the 1980s and 1990s. Critical policy, governance and related geographical research turned to social constructionism and critical realism mainly (Jessop 2005; Newton et al. 2011; McCann and Ward 2013; Bevir 2009, 2013) and pertinent theorizing adopted social, cultural and discursive institutionalism (Stoker 1998; Schmidt 2008), historicism and humanism (Bevir 2013) among others. The deliberative, participatory, decentered, self-governance models of governance, the governmentality and the strategic–relational approach were advanced (Rose and Miller 1992, Hajer and Wagenaar 2003; Jessop 2005; Rhodes 2007; Bevir 2009, 2013; Ezzamel and Reed 2008; Cochrane 2010).

Relational accounts are generally bottom-up, variously emphasizing the process of governing, the socially constructed nature of governance through diverse social practices, the coconstitution of agency and structure, the blurring of boundaries among categories, the role of discourse, negotiation, beliefs, ideas, politics and power. They recognize the multiplicity, heterogeneity/hybridity, complexity, path-dependence, emergence, contextuality and uncertainty of governance phenomena (Torfing and Sørensen 2014; Colebatch 2014). Thick description, story-telling, interpretivist, discursive, institutionalist, comparative and Social Network Analysis (SNA) techniques are employed. Situated recommendations are offered.

The voluminous and variegated governance literature discusses ontological issues, i.e., the 'what,' the object of governance, mostly indirectly and abstractly (Sørensen and Torfing 2004 cited in van Wezemael 2008). Essentialist/reductionist accounts implicitly or explicitly espouse a 'system' ontology. The 'system' is either an organic whole, of various degrees of openness, or a network (policy and governance networks[8]) (Lafferty 2004; Rhodes 2007; Peters 2014; Torfing and Sørensen 2014) comprising human actors only.[9] Accounts of hybrid forms of governance are usually underlain by the system ontology also.

Relational/nonreductionist accounts are mostly preoccupied with epistemology and pay little direct attention to issues of ontology, often exhibiting a relative disjunction between ontology, epistemology and methodology (cf. Jessop 2005). Implicitly they submit to abstract, fluid, nonreductionist social/historical ontologies such as order, apparatus,[10] regime, field, habitus (van Wezemael 2008; Bevir 2013; Bueger 2017), or to a loose (hybrid) system ontology. Actor-Network Theory (ANT)-based studies adopt the actor-network ontology (Newton et al. 2011; Clarke et al. 2015; Montenegro and Bulgacov 2014). AT studies adopt the assemblage ontology as discussed later.

The inadequate treatment of ontology and the bias toward the system ontology in governance studies may partly explain several issues that are particularly important in empirical studies. These include the question of whether governance is an 'empty construct'

[8] See the definition of governance networks and interactive governance in Torfing and Sorensen (2014).

[9] Ostrom's (2011) IAD framework includes 'resources'.

[10] *Dispositif* is the French term introduced by Foucault (1977).

(Howlett and Ramesh 2014), the role of state and nonstate actors, the question of governance success-failure (effectiveness), the search for modes of governance that fit/match a specific context and the related quest for 'best practices' and good governance (Howlett and Ramesh 2014; Torfing and Sørensen 2014).

These issues reflect the foundational assumptions underlying the system ontology and most mainstream definitions of governance; namely, general, territorially fixed, reified functional categories and dichotomies (binaries) of (human) actors, means, outputs, outcomes and modes of governance; the correspondence of governance functions to types of actors possessing clear, singular roles; discrete stages of the decision process and linear causality (Table 1). Consequently, applied studies assume uniform, predetermined purpose and goals of governance for *all actors*, separate problems from their context, solutions and mode of governance; assume that governance issues are spatiotemporally independent, finding optimum mixes of policy instruments and straightforwardly assessing policy effectiveness is possible and praxis is unimportant.

These assumptions, which are rarely, if ever, met in practice, call into question the system ontology and raise the need for an internally consistent definition of governance. The rest of this paper explores the capacity of the assemblage ontology to deliver this definition and of AT to frame a compleat approach to conceptualize and analyze governance in applied studies.

Assemblage thinking

Assemblage Thinking (AT) is a current of poststructuralist relational thinking, rooted in the philosophy of Gilles Deleuze and his colleague Felix Guattari (Briassoulis 2017a). It is primarily informed by critical realism as it assumes the existence of a mind-independent reality while acknowledging the social construction of sociospatial phenomena (DeLanda 2006; cf. Jessop 2005). Contrary to other relational approaches, it emphasizes ontology over epistemology which is a distinctive feature of the Deleuzean philosophy (Woodard and Jones 2009).

Assemblage,[11] an ontology of becoming, denotes the coming or fitting together of diverse, heterogeneous, material and human components into dynamic, provisional, decomposable, but irreducible wholes to serve a purpose, and creating agency (DeLanda 2006; Anderson and McFarlane 2011; Anderson et al. 2012).[12] Purpose has a deeper-than-operational meaning; it refers to *desire*, the state of unconscious drives *per* Deleuze (Smith 2007), that constantly couples continuous flows and partial objects that are by nature fragmentary and fragmented and which is necessary for the unity of assemblages to be organized rather than random (Deleuze and Guattari 1987).

The heterogeneous components, such as persons, artefacts, plants, organizations, documents, beliefs, technology, are relatively autonomous, have multiple memberships, variable spatiotemporal reach and importance and play material and symbolic/expressive roles (Bennett 2005; DeLanda 2006; McCann 2011; Anderson et al. 2012). Certain components are critical for the maintenance of biophysical and human functions that secure the survival, maintenance and functioning of a socioecological milieu (Briassoulis 2015).

[11] A not-quite-satisfactory translation of 'agencement' used by Deleuze (Phillips 2006).

[12] The term 'assemblage' has been (and it is) used as a simple descriptor in non-AT literature; see, e.g. Rose and Miller (1992); Sassen (2006, p. 5) (note 1).

The composition, form and duration of assemblages are not predetermined and constant; they remain deliberately open (Anderson and McFarlane 2011; DeLanda 2006, 2011). Contingently obligatory *relationships of exteriority* link their components in contrast to logically necessary *relationships of interiority* that characterize and define wholes (DeLanda 2006). Deleuze and Guattari (1987), using the metaphor of 'rhizome,' distinguish nonhierarchical, a-centered and horizontal from hierarchical (arborescent), centralized and vertical connections among components (Bonta and Protevi 2004). Rhizomatic structures are self-organizing[13] while arboreal structures are centrally organized. Both coexist in practice.

Assemblages have *properties* (e.g., density, intensity, connectedness), which are not the sum of the properties of their components. They result from contextual and contingent, complex interactions among components, especially the critical/limiting ones, which exercise their *capacities*, i.e., the powers they possess to affect and be affected ('affects' *per* Deleuze). Properties are actual and known/knowable. Capacities are open and unpredictable since it cannot be foretold how a component may affect or be affected by the innumerable other components with which they associate (DeLanda 2006; Anderson et al. 2012).

The *possibility space* of an assemblage (the phase, or state, space of nonlinear systems) is the set of possible capacities of its (critical/limiting) components (DeLanda 2002, 2006). Within the possibility space, *basins of attraction* develop around *attractors*; i.e., final (minimum) states toward which a system spontaneously tends in the long run in the absence of constraints. Attractors exemplify patterns of behavior and indicate the long-term *tendencies* of an assemblage (DeLanda 2002). Thresholds of critical components represent tipping points between basins. If crossed, a transition occurs to another basin governed by different attractors and populated by assemblages with different identity (DeLanda 2006).

Territorialization/coding and deterritorialization/decoding processes of assembly 'produce' assemblages or break them down. The former concern habitual, routine practices (e.g., of resource use, movement, communication, cooperation.) that hold components together, secure the internal coherence of assemblages and underline the constant *labor* needed to (re)connect heterogeneous components (Li 2007, Baker and McGuirk 2016). The latter modify the capacities and thresholds of components, break down their relationships and disrupt the coherence of assemblages (DeLanda 2002, 2006; Anderson and McFarlane 2011; Anderson et al. 2012). Changes may be gradual (adaptation), represented by movements within the same basin of attraction, or sudden (transformation), involving movement to another basin (Briassoulis 2017a).

The repetition of these processes generates *multiplicities*, i.e., populations of assemblages, of unique, historically contingent individuals that 'define … and progressively specify the nature of a multiplicity as they unfold' (DeLanda 2002, p. 12). A point (state) in a basin represents an actual assemblage, an *individual singularity*, a haecceity (thisness) (DeLanda 2006, 2011). Socioecological milieus have multidimensional possibility spaces, complex distributions of attractors and multidimensional basins of attraction populated by cofunctioning and spatiotemporally overlapping assemblages emerging around attractors. The possibility space, tendencies, practices and mechanisms implicated in processes of assembly are empirically identified only (DeLanda 2011).

Once assemblages emerge, they are real, immanent[14] and establish a territory (Anderson and McFarlane 2011; McCann and Ward 2013). They link the micro, disaggregate

[13] "… for it is always by rhizome that desire moves and produces." (Deleuze and Guattari 1987, p. 14).

[14] Their unity is not externally defined/imposed.

behavior (molecular *per* Deleuze) with the macro, average behavior (molar *per* Deleuze) (Bonta and Protevi 2004; DeLanda 2006). They possess agency, because they act back on their components enabling or constraining their relationships, characteristic identity and flat ontology; i.e., they are unique individuals, differing in spatiotemporal scale but not in ontological status (DeLanda 2006).[15]

Their agency and identity are multiple, composite and distributive, shaped by the capacities of their heterogeneous components. Some assemblages may maintain a fairly stable identity for long, although they do change (Anderson et al. 2012). Power is also multiple, composite and decentralized; there are many, interacting sources of power, not a central governing power (Bennett 2005; Anderson and McFarlane 2011). Finally, causality is emergent and nonlinear, 'located not in a pre-given sovereign agent, but in interactive processes of assembly' (Anderson et al. 2012), immanent and over-determined (many equivalent explanations are possible);[16] different assemblages emerge under different conditions (Anderson et al. 2012).

Despite its growing usage, the faculty of assemblage to enunciate concepts has been inadequately exploited. As Deleuze and Guattari (1984:16) argue, 'concepts are only created as a function of problems which are thought to be badly understood or badly posed … without which they would have no meaning and which can themselves only be isolated or understood as their solution emerges.' Moreover, 'there are no simple concepts. Every concept has components and is defined by them. It therefore has a combination [chiffre]. It is a multiplicity … "(Deleuze and Guattari 1984, p. 15). Each component, in its turn, can be grasped as a concept with its own components. "Concepts … are never created from nothing.' (Deleuze and Guattari 1984, p. 19).

Concepts have *endoconsistency* and *exoconsistency*. Endoconsistency, a defining trait of a concept, implies that its finite, distinct and heterogeneous components are inseparable. Exoconsistency concerns the relationship of a concept to other concepts because 'in any concept there are usually bits or components that come from other concepts, which corresponded to other problems …' (Deleuze and Guattari 1984, p. 18). Concepts are not static; they have a history and a becoming that involve their relationships to other concepts. 'In fact, having a finite number of components, every concept will branch off toward other concepts that are differently composed but … answer to problems that can be connected to each other, and participate in a cocreation. A concept requires not only a problem through which it recasts or replaces earlier concepts but a junction of problems where it combines with other coexisting concepts' (Deleuze and Guattari 1984, p. 18). This resounds 'meaning holism' according to which 'concepts derive their meaning from their location in a web of concepts' (Bevir 2013, p. 28).

Although 'a concept is defined by its consistency… it is self-referential; it posits itself and its object at the same time as it is created.' (Deleuze and Guattari 1984, p. 22). Therefore, 'positional enunciation is strictly immanent to the concept because the latter's sole object is the inseparability of the components that constitute its consistency and through which it passes back and forth' (Deleuze and Guattari 1984, p. 23). However, 'what (the concept) knows is the pure event, which must not be confused with the state of affairs in which it is embodied.' (Deleuze and Guattari 1984, p. 33). In AT, then, all concepts are reconceptualized as assemblages because 'concepts are concrete assemblages, like the

[15] In contrast, in hierarchical ontologies, each level represents a different ontological category (DeLanda 2002).

[16] 'Redundant causality' (DeLanda 2006).

configurations of a machine' (Deleuze and Guattari 1984, p. 36); hence, 'a concept is what the assemblage determines it to be' (Deleuze and Guattari 1987, p. 229).

Assemblage-based studies of governance

Overview

Since the early 2000s, AT is increasingly being employed in policy and governance studies. Thirty-four articles published in refereed journals between 2007 and 2018, employing AT to study governance (primarily) and policy (secondarily) were selected for review from a larger universe covering related areas such as organization studies, management and planning, which were not considered due to space limitations. The articles concern urban, regional, global, geospatial, agri-environmental and environmental governance, natural resources management, forestry, land use, energy, policy transfer, international relations. Their topics include multi-stakeholder initiatives, climate change, bioenergy, biological economies, cleantech development, urban carbon, indirect land use change, marine spatial planning, illicit drug use, counter-piracy, geoprivacy, citizenship (global, environmental), social housing, neighborhood development. The studies use 'governance' with varying frequency[17] in the broad sense mostly. Some employ it as a background concept, without explicitly defining it, or interchangeably with 'policy making.' Table 2 presents the articles coarsely grouped according to their strength of employing AT, judged by the use of primary (Deleuze-Guattari and/or DeLanda[18]) or secondary AT literature.

Different readings of 'assemblage,' ranging from simple to elaborate, are encountered under various designations: assemblage, relational assemblage (Albrecht et al. 2017); biofuel, geopolitical, (shifting) global (Aurora-Jonsson et al. 2016), translocal assemblage (Kohne 2014; McFarlane 2009); policy assemblage (Prince 2010; McCann and Ward 2013; Haarstad 2016), governance arrangements (Haarstad 2016), spatial assemblage of power (Allen and Cochrane 2007) or hybrid governing arrangements (Davies 2013). Its dominant understanding and use are descriptive as a provisional, situated, relational arrangement of heterogeneous components that remains open in contrast to predetermined wholes/essences. The studies focus on particular features of assemblage to differing degrees. Several studies employ assemblage as ontology, in the Deleuzo–Guattarian sense, and other emphasize its value as an analytic driving the research methodology (Baker and McGuirk 2016). With rare exceptions, assemblage-based are not compared to other relational approaches (e.g., ANT) to the analysis of governance. The following discussion critically examines how these studies conceptualize, analyze and offer guidance on governance and related issues from the AT perspective.

(Re)conceptualizing governance

The thrust of the studies is on reconceptualizing governance using AT concepts. Governance is not conceived as a top-down, hierarchical and linear but as an emergent,

[17] From one to several times.

[18] DeLanda's articulate, tractable and accessible account of Assemblage Theory is often used in governance applications.

Table 2 Assemblage-based studies of governance (chronologically ordered by group)

References	Theme	Topic	Deleuze-Guattari	DeLanda	AT literature	Remarks
Strong						
Bueger (2017)	Global governance	Counter-piracy		✓	✓	Analytical power of assemblage theory for understanding complexity of global governance
Nel (2017)	Forest management	Carbon forestry	✓	✓	✓	Two axes of assemblage: material/expressive; territorialization/deterritorialization
Nel (2015b)	Forestry governance	Forestry	✓		✓	Deleuze and Guattari (1987); little secondary literature
						Two axes of assemblage
						Hybrid governance
Lester (2012)	Colonial governance	George Arthur; transition from humanitarian to development discourse	✓	✓	✓	Deleuze and Guattari (1987); scanty secondary literature
						Two axes of assemblage
						Historic geography, personality
McCann (2011)	Urban governance	Urban policies	✓		✓	Multiplicity of modes of governance
van Wezemael (2008)	Network Governance	Major and minor politics	✓	✓		Two axes of assemblage
						Reconceptualizes governance networks
						Molar/molecular: major/minor governance
Hillier and van Wezemael (2008)	Urban governance (indirectly)	Public Finance Initiative	✓			Deleuzean-inspired theoretical framework
						Relational networks
						Tracing actors and connections

Table 2 (continued)

References	Theme	Topic	Deleuze-Guattari	DeLanda	AT literature	Remarks
Moderate						
Fairbanks et al. (2018)	Marine spatial planning	Enclosure			✓	Focus: human actors Emergent, indeterminate nature of MSP assemblage Territorialization, Li (2007)'s practices
Baker and McGuirk (2016)	Policy analysis methodology	Critical policy research			✓	AT as methodology: methodological practices to address multiplicity, processuality, uncertainty, nonlinearity, contingency
Bouzarovski et al. (2015)	Infrastructure planning	Natural gas transit in Europe	✓	✓	✓	Theorizing transnational energy governance Territorialization and coding SNA techniques
Koster (2015)	Urban governance	Citizenship, social housing	✓		✓	Deleuze and Guattari (1987) Governance assemblages: how networked wholes claim a territory and what they produce
Nel (2015a)	Environmental management	Biopolitics	✓		✓	Deleuze (1992), secondary literature Assemblage: heuristic to understand complex interactions; de-re-territorialization Governance assemblages
McCann and Ward (2013)	Policy transfer	Policy mobility BID (business PPPs)	✓		✓	Policy assemblage

Table 2 (continued)

References	Theme	Topic	Deleuze-Guattari	DeLanda	AT literature	Remarks
Prince (2010)	Policy transfer	Creative industries (New Zealand)		✓	✓	Practices of assembly; translation; multi-scalar
						Policy, not governance, focus
Li (2007)	Forest management	Community forest management	✓		✓	Deleuze and Guattari (1987), Foucault
						Labor of assembling; six practices of assembly; material/expressive roles, situatedness
Weak						
Albrecht et al. (2017)	Energy governance	Bioenergy policy in Europe			✓	Governance assemblages
						Power topologies, relational governance processes
						Policy transfer; 'translation loops'
Sawatzky and Albrecht (2017)	Energy governance	Renewable energy policy for islands			✓	Governance assemblages, 'translation loops,' policy mobility
Aurora-Jonsson et al. (2016)	Climate governance global governance	REDD+ global citizenship			✓	Climate assemblages, REDD+ assemblage
						Thick description
						Citizenship reconceptualized as assemblage
Haarstad (2016)	Urban energy governance	Low-carbon mobility (Europe)		✓	✓	Urban low-carbon mobility policy assemblage
Crampton (2015)	Geospatial governance	Big data, privacy			✓	Little secondary literature; Foucault
						Material/discursive components
						Privacy as geopolitical assemblage

Table 2 (continued)

References	Theme	Topic	Deleuze-Guattari	DeLanda	AT literature	Remarks
Palmer and Owens (2015)	Environmental governance	Biofuels Indirect land use change (ILUC)	✓		✓	Deleuze and Guattari (1987); little secondary literature ILUC assemblages Thick description Place-based policy for environmental governance
Kohne (2014)	Environmental/land use governance	Multi-stakeholder initiatives (MSI) Sustainable palm oil, land conflicts			✓	Power, practices, mechanisms of access to the MSI MSI governance: multi-sited, translocal phenomenon
Dowling et al. (2014)	Local governance	Retrofitting cities Australia			✓	Scanty secondary literature; Foucault Mostly indirect use of AT notions Governance: multi-scalar assemblage of actors, scales, techniques/mechanisms of retrofit
Davies (2013)	Environmental governance	Cleantech clusters green economy		✓	✓	DeLanda (2006); little secondary literature Cleantech cluster assemblages
Le Heron et al. (2013)	Biological economies	Wine economy Australia			✓	Assemblage: conceptual metaphor Process of assembling, emerging practices, connections, immanence, experimentation Sectoral and territorial governance

Table 2 (continued)

References	Theme	Topic	Deleuze-Guattari	DeLanda	AT literature	Remarks
Rosin et al. (2013)	Regional governance	Provenance Regional transformation	✓		✓	Territorialization processes Indirect discussion of regional governance; transformation from sheep- to tourism economy
Prince (2012)	Policy transfer	Geographies of governance, consultants			✓	Particular policies are realized within sociomaterial assemblages Ethnographic methods
Cochrane (2010)	Regional governance	Sustainable communities South-East England			✓	Governance processes of assembly; negotiation Regional political assemblage around sustainability discourse
Allen and Cochrane (2007)	Regional governance	Spatial assemblages of power				Broad poststructuralist literature (Jessop, Massey) Regional assemblages of power defined by practices
Very weak						
Koster and van Leynseele (2018)	Development	Brokerage, brokers	✓		✓	Deleuze and Guattari (1987) Agentive practices of brokers; role in making diverse assemblages
Grossmann and Haase (2015)	Neighborhood development	Neighborhood change	✓	✓	✓	Deleuze and Guattari (1987), DeLanda (2006) Descriptive; AT concepts not elaborated Assemblage Thinking combined with Complexity Thinking
Gabriel (2014)	Urban political ecology (UPE)	Socionatural assemblages			✓	Uptake of assemblage in UPE

Table 2 (continued)

References	Theme	Topic	Deleuze-Guattari	DeLanda	AT literature	Remarks
Lewis et al. (2013)	Biological economies	Region-shaping initiatives			✓	Assemblage to emphasize connections, relations and labor to bring/keep components together
						Enactive research, experimentation
Lockwood and Davidson (2010)	Environmental governance	Natural resource management			✓	Little secondary literature; Foucault
						Hybrid governance: comanagement, public–private, social-private partnerships
						Community-generated regimes
						Governmentality, hybridity

Strong, substantial use of assemblage ontology and AT 'vocabulary' to conceptualize-theorize and analyze governance; primary and secondary AT literature

Moderate, use of selected AT notions; emphasis on methodology; primary literature optional

Weak, use of a few AT notions; primary literature optional

Very weak, acknowledging and/or simply using 'assemblage' as descriptor; little use of primary and secondary AT literature

multi-scalar, multi-stakeholder and multi-sited sociospatial process, a dispersed form of rule.[19] Heterogeneous components are assembled into looser, more negotiable sets of political arrangements for the purpose of governing an issue. The resulting formations 'may not be as internally coherent and unassailable as they often seem' (McCann 2011, p. 145) and 'not necessarily what anyone intended' (Prince 2012, p. 193).

Governance is not extrinsic to a 'system,' externally imposed and practiced through formal, territorially fixed institutions only. It is immanent as the 'more fluid, evolving and innately unsettled/unsettling sets of relations' (Palmer and Owens 2015, p. 18) among material and human components, assembled via a hybrid regime of negotiated practices in particular ways, for particular interests and purposes,[20] at particular places and times simultaneously produce the assemblage and its heterogeneous governance (McCann 2011; McCann and Ward 2013; Nel 2017). The discussion focuses on the particular assemblage, the veritable invention (Deleuze and Guattari 1987, p. 406), stresses the situated, diffuse and fragmented ways governance is 'made' (Le Heron et al. 2013; Lewis et al. 2013; Nel 2017) and geographies of governance are constructed (Prince 2012).

The objects of reference, the issues, are not treated as 'monoliths' (McCann 2011). The constitution of the pertinent assemblages is detailed to varying degrees as the cases of counter-piracy (Bueger 2017), multi-stakeholder initiatives (MSIs) (Kohne 2014), carbon forestry (Nel 2017), natural gas transit (Bouzarovski et al. 2015) and Vancouver's drug strategy (McCann 2011) illustrate. Multiple, heterogeneous, relatively autonomous, human and material, formal and informal, fixed and mobile, local and supralocal, past and present components are selectively emphasized. Formal governance structures, procedures, means and instruments are assemblage components. The material and expressive/discursive roles of the components, their capacities to act and be acted upon (affects) and their contingently obligatory relationships of exteriority are underlined, depending on the case, to show *what the assemblage does, how it produces governance.* The emphasis on the material and the symmetry between material and human components[21] underlines the sociomateriality and hybridity of governance processes (Prince 2010, Bueger 2017). However, most studies still focus on human actors and agency, considering their goals and priorities not predetermined and fixed but negotiated in practice.

The scales on which issues arise and are handled are not considered as pregiven, territorially fixed levels of hierarchical spatial arrangements, but as relationally constructed. As Allen and Cochrane (2007, p. 1162) have eloquently argued and demonstrated, 'the governance of regions, and its spatiality, now works through a looser, more negotiable, set of political arrangements that take their shape from the networks of relations that stretch across and beyond given regional boundaries. The agencies, the partnerships, the political intermediaries, and the associations and connections that bring them together, increasingly form 'regional' spatial assemblages that are not exclusively regional, but bring together elements of central, regional and local institutions.' Scales fold into one another and interpenetrate in complex ways as in the case of urbanization that 'is not (only) a local process, but also one associated with globalisation, national state policies, etc.' (McCann and Ward 2013, p. 5). Dowling et al. (2014, p. 19), similarly, identify the involvement of different levels of government in retrofitting policies toward carbon reduction in Australian urban

[19] Policy making is conceived similarly (McCann and Ward 2013).

[20] Purpose is used in the sense of will to improve a situation (Li 2007).

[21] No pre-determined priority between them.

areas, concluding that 'institutions governing carbon in the city encompass and exceed the urban scale, folding into and through each other in complex ways.'

Territorialization and deterritorialization are the processes of assembly most often emphasized in the studies that stress praxis, the practices and the associated mechanisms ('technologies') employed to perform governance functions, often drawing on Li's (2007) influential paper.[22] The practices point to the practical work needed, 'the on-going labour of bringing disparate elements together and forging connections between them' (Li 2007, p. 263) in order to 'make' the assemblage and its governance. The critical and pivotal role of practices is lucidly illustrated in McCann's (2011) study of Vancouver's drug strategy, Allen and Cochrane's (2007) discussion of regional governance, Kohne's (2014) exploration of MSI's, Albrecht et al.'s (2017) interpretation of power in EU energy governance, Nel's (2017) carbon forestry research in Uganda and Bouzarovski et al.'s (2015) study of natural gas transit governance in the EU.

The outputs/products of the processes of assembly (e.g., housing, urban carbon reduction) and their outcomes (costs/benefits, effectiveness, sustainability, territory, etc.) are reconceptualized as assembled; they are relational, situated, fluid, uncertain complex sociomaterial constructions, what the assemblage produces. Thus, Koster (2015) shows how the social housing governance assemblage in the Netherlands produces subsidized housing for lower-income families that generates territorially fragmented citizenship agendas, thus, problematizing the methodological nationalism prevalent in citizenship research. Aurora-Jonsson et al. (2016) argue that the making of REDD+[23] assemblages produces new global commons, turns villagers into entrepreneurs and responsible (global) environmental citizens, changes the substance of citizenship, thus, raising serious issues regarding the emergent new global citizenship.[24] Policy transfer (or, policy mobility) research (Prince 2010, 2012; McCann 2011; McCann and Ward 2013) offers insights into the making of sociomaterial assemblages that produce policies at specific places and times that, simultaneously, construct geographies of governance, resulting in often 'uneven and chaotic geographies' (Prince 2012, p. 193). Palmer and Owens' (2015) analysis of GHG emissions from Indirect Land Use Change (ILUC) caused by biofuel production brilliantly demonstrates that 'ILUC emissions cannot be viewed as intrinsic characteristics of particular types of biofuels… Instead, both GHG emissions and the biofuels to which they are supposedly tethered will always represent separate, independent products of a place-specific set of complex interrelations and co-dependencies' (p. 23).

Several studies focus on and conceptualize power and authority as decentered and distributed, being assembled within governing arrangements (assemblages) through various capacities, such as to create and disseminate information, knowledge and values and to regulate access to governance means (Davies 2013; Kohne 2014). Allen and Cochrane (2007) introduced the 'regional assemblages of power' as fluid, relational institutional settings constituted by actors possessing different types and amounts of power but all being 'part and parcel of a "regional" assemblage of political power that is defined by its practices, not by some predefined scalar arrangement of power' (p. 1170). Echoing this concept, Albrecht

[22] The practices are: "(1) forging alignments, (2) rendering technical, (3) authorizing knowledge, (4) managing failures, (5) anti-politics, and (6) reassembling" (Li 2007, p. 263).

[23] REDD+ (Reducing Emissions by Deforestation and Degradation) is a climate instrument implemented in several third-world countries.

[24] See also, Crampton (2015) and Newman and Clarke (2009) for a discussion of (geo)privacy and publicness, respectively.

et al. (2017) used the notion of 'power topologies' to explain how the higher level EU bioenergy policy 'is built relationally in each context, … its policy presence and influence … is modified by rationalities, power relations and geographical particularities within each contextual translation loop.' (p. 80). Koster and van Leynseele (2018) note the important role of agentive brokering practices in influencing the distribution of power within (shifting) policy and governance assemblages. Nel (2015b) notes the diverse agencies (state, international donors and NGOs, colonial societies) constituting the territorialized assemblages and the 'oscillating centralisation and decentralisation of power over forestry territory' (p. 2301) in Uganda.

Finally, the studies highlight the distributed agency among the intertwined human and nonhuman components[25] of emergent policy and governance assemblages. This is vividly exemplified in several applications including the New Zealand creative industries (Prince 2010), the urban low-carbon transitions (Haarstad 2016), the biological economies (Le Heron et al. 2013; Lewis et al. 2013), the MSIs (Kohne 2014), the biofuels-related ILUC (Palmer and Owens 2015), carbon forestry in Uganda (Nel 2017) and the counter-piracy case (Bueger 2017). Once assemblages emerge, people use and vest them with meaning (Kohne 2014), thus, confirming that the governance of an issue is a continuous process of coconstitution and coevolution of all components.

Summarizing, the studies make selective use of the AT/Deleuzean conceptual apparatus (for comprehensive accounts, see Bonta and Protevi 2004; Colebrook 2004). Their majority does not make strong use of AT (Table 2). AT notions most widely used are heterogeneity, multiplicity and hybridity of human and material components, territorialization/de(re)territorialization, practices of assemblage, temporality, spatiality and emergence. AT concepts that are indirectly, less often, less rigorously or not used at all include purpose (in the Deleuzean sense of desire), immanence, real (actual-virtual); molar and molecular, rhizomatic/arborescent connections and the associated notion of smooth/striated space, exteriority, coding/decoding processes, flat ontology, properties, capacities (affects), tendencies. Finally, the broader socioecological milieu is rarely conceived as a multiplicity comprising heterogeneous assemblages, thus, overlooking the interdependence of governance issues.

Analyzing governance and offering guidance

Analysis concerns the description of the 'making' of assemblage(s); i.e., their composition, processes of assembly, practices and mechanisms, cofunctioning multiple trajectories and modes of governance, outputs and outcomes. As Bueger (2017, p. 9) notes this focus on 'how the spaces of governance are made … also broadens our horizons in terms of which empirical material we consider,' underlining the important role of the researcher in setting up the assemblage (cf. Carolan 2013).

Mixed methods approaches are commonly employed, emphasizing thick description, ethnomethodology, narratives, discourse analysis and historical analysis (Bueger 2014; Palmer and Owens 2015; Aurora-Jonsson et al. 2016; Baker and McGuirk 2016). SNA techniques have been also used (Bouzarovski et al. 2015). The development of analytical techniques is lagging behind conceptual developments. Differential Geometry and

[25] E.g. actors, institutions, policy instruments, policy ideas, documents and networks, existing infrastructures, materials, agricultural products, artefacts, etc.

Topology have yet to be utilized to operationalize possibility spaces, attractors, basins of attractions, etc. (DeLanda 2002, 2006, 2016).

Counter to system-based approaches, AT-based studies reject OSFA recommendations, 'best practices,' sociotechnical 'fixes,' optimum mixes of instruments, modes of governance that best fit a context and formal assessments of effectiveness. Only place- and time-specific guidance is considered meaningful. As McCann (2011, p. 145) puts it 'In terms of possibilities for political action, it is the heterogeneity, multiplicity and relatively incoherent nature of social formations which must always be stressed, because it is only on the basis of such an understanding that effective strategies can be enacted for democratic social change.' As the analysis of Australia's hybrid regime of Natural Resources Management (Lockwood and Davidson 2010), ILUC-related GHG emissions (Palmer and Owens 2015), urban low-carbon governance (Haarstad 2016), carbon forestry governance in Uganda (Nel 2017), US Marine Spatial Planning (Fairbanks et al. 2018), among many others, illustrate, an assemblage-based analysis helps identify multiple openings and alternatives to address (more than one) governance issues at specific places and sociocultural contexts. This is achieved by identifying assemblage components that have to be removed or added (e.g., actors, products, crops, policy instruments.), practices and associated mechanisms that have to be modified (e.g., by becoming more inclusive), relationships that have to adjusted (e.g., among sectors, organizational levels, communities.) and new relationships that develop. Contrary to conventional, technocratic approaches favoring 'fixed,' predetermined solutions, assemblage-based approaches engage with the emergent and indeterminate nature of sociospatial issues and phenomena, revealing opportunities for things to happen differently.

Assemblage Thinking: a compleat approach to the situated study of governance?

The application of AT in governance studies is in early phases but warrants further examination because it portends a more sensible engagement with the 'what' and 'how' of governance. Aspiring to demonstrate that this radical perspective constitutes a compleat approach to the situated study of governance in empirical applications, this section first notes the conceptual affinities between governance and assemblage, presents an internally consistent conceptualization of governance, outlines the contours of a concomitant AT-based methodology and discusses an alternative approach to governance that transpires.

Governance and assemblage: conceptual affinities

Interactive/network, hybrid, experimentalist and self-governance accounts mark a break with formal/hierarchical conceptions of governance and implicitly problematize the system ontology[26] (Sabel and Zeitlin 2007; Peters 2014; Colebatch 2014; Howlett and Ramesh 2014; Torfing and Sørensen 2014). These accounts prioritize epistemology and theory over ontology and formal over informal actors, overlook the material aspects of governance and downplay the relative autonomy and multiple roles of actors. They, nevertheless, recognize that 'there is no single version of governance but rather … a general question about steering that needs to be answered empirically.' (Peters 2014, p. 303). The call for a shift to

[26] Some accounts mention 'governance assemblages' but not in the AT sense.

'action which creates governing' (Colebatch 2014, p. 314), i.e., to practices, echoes Jessop et al.'s (2008) quest for polymorphy in sociospatial theory and complex-concrete analyses, reflecting a latent quest for relational ontologies, particularly the assemblage ontology.[27]

The studies reviewed often justify the choice of AT by drawing parallels between governance and assemblage (Bouzarovski et al. 2015; Palmer and Owens 2015; Bueger 2017; Nel 2017) that suggest their affinities. The correspondence between the components of governance and assemblage lends support to this claim. Both concepts are defined as processes driven by some purpose/will; of steering to guide issue-related collective action (governance), of assembling components to constitute an issue (assemblage). Both involve actors; assemblage encompasses material, besides human, actors and actors from all levels and times. Governance aims at satisfying particular goals. The constitution of assemblages implies the achievement of certain, although not predefined, goals. Both governance and assemblage emphasize praxis, the practices actors employ to steer their commons affairs (governance) and to bring and maintain the components together or take them apart (assemblage). In other words, governance and assemblages are not pregiven wholes, they are assembled by means of and emerge from those practices producing outputs and outcomes that are, similarly, not predetermined. These affinities suggest the capacity of the integrative assemblage ontology to underpin an internally consistent and workable conceptualization of governance, an answer to the question 'what is governance?'

Reconceptualizing governance

Following Deleuze and Guattari's (1984) reasoning, the concept of governance is a response to an issue that arises within a socioecological milieu,[28] such as an urban, rural or other areas, over a period of time. Consequently, governance is specific to that issue *and* meaningful only for those who *desire* to steer their pertinent affairs toward, however shifting and fluid, common goals. Desire is the core, pivotal consideration in applied studies, securing the consistency of governance, because it interweaves the place- and time-specific 'who,' 'what,' 'where,' when' and 'why' of an issue producing a unique assemblage, an individual singularity, which enunciates and coevolves with its actual governance. This underlines the critical importance of identifying and describing the assemblage; the governance of the issue is immanent to it, it is what the assemblage determines it to be.

The diversity of 'desires' and common interests implies that diverse actualizations of the governance of an issue materialize, i.e., several issue-related *governance assemblages* emerge within the same milieu and time period. Therefore, the governance of an issue is not unitary, predetermined, externally decided and implemented. *It is a multiplicity defined and coproduced* by the governance assemblages that continuously unfold and constitute the issue in a socioecological milieu (governance-in-context). Take the example of water governance. Several assemblages emerge around different uses of water by different users (consumers, producers, intermediaries) desiring to steer their common water affairs, who variously and idiosyncratically combine biophysical and human components from a focal and other milieus to advance their goals.

[27] Post-2010 versions of the IAD and SES frameworks (Ostrom 2011) problematize the constitution of pregiven entities, implicitly suggesting the suitability of the assemblage ontology.

[28] 'Milieu' is used instead of 'system' because 'system' connotes more-or-less territorially fixed boundaries and structure.

Governance assemblages denote the provisional, situated, unique compositions continuously emerging from the process of heterogeneous components coming together for the purpose (desire) of steering to achieve particular, issue-related common goals. Some are overt while other are covert/shadow assemblages with characteristic composition and processes of assembly. They comprise human and material,[29] mobile and fixed components from all levels and times (Table 3). Human actors have goals differing in priority that reflect diverse translations of general, higher level goals (e.g., sustainable development) and inevitable negotiated compromises. The assemblage components play multiple roles, have overlapping memberships and participate in several governance functions during the steering process. For example, water bodies belong to several assemblages depending on water use; public administrators are simultaneously water regulators and water consumers. Formal and informal structures, procedures and means/instruments are assemblage components, either (pre)existing (e.g., water legislation, water levies) or devised during the process (e.g., watershed councils, community protests). The formal ones originate in different policy domains (environmental, economic, etc.) and are shared with several assemblages where they are selectively and provisionally combined to serve particular goals.

Contingently obligatory relationships link the relatively autonomous components (e.g., water, institutions, values.) within a governance assemblage. Linkages may be arborescent, dictated by formal rules (e.g., user-specific water quotas), or rhizomatic, informal and situated (e.g., illegal water abstraction, water-intensive project opposition), depending on component capacities (affects) and goals.

Components interact and perform governance functions employing diverse, socioculturally determined, intermingling, formal/institutionalized and informal/customary practices that activate territorialization/coding and deterritorialization/decoding processes. Their repetition generates *multiplicities*, i.e., populations of governance assemblages, located within basins of attraction developing around issue-related *governance attractors*. These can be considered as the modes toward which the long-term governance of the issue tends in the absence of constraints, such as hierarchy, markets, networks, other modes and their combinations. They represent the long-term *tendencies* of a governance assemblage. Customary and official water use rules, under a given water demand and technology, maintain water governance assemblages. Changes in demand, institutions, technology, etc., precipitate changes in these assemblages and the mode of water governance, e.g., from hierarchy to market or networks.

The outputs (e.g., water savings) and outcomes (effectiveness, sustainability, equity, etc.) of governance are uncertain and situated, determined by the unique assemblage. A priori set policy targets (e.g., per capita water use) and actual outputs and outcomes are often at variance. Conflicts and situated compromises among practices within and between assemblages judge the actual implementation of means/instruments. Predictable/planned (e.g., waterworks) and unpredictable/autonomous changes in components (e.g., new water users) and their nonlinear relationships[30] modify the attractors (e.g., from state control to water markets), the diverse assemblages continuously emerging around them and the associated basins of attraction. Moreover, the agency of existing assemblages may block corrective interventions to change governance arrangements if they diverge from current practices (the inertia of formal and informal institutions). Changes from public water management to water markets often meets with considerable resistance.

[29] Symmetry is assumed between them.

[30] Due to lagged and asynchronous responses of the assemblage components.

Table 3 Composition of governance assemblages—indicative list

Biophysical	Manmade/material	Immaterial	Collective	Individuals
Geology, relief, soil	Materials	Landscape (all kinds)	Firms	Locals
Air	Landesque capital	Genius loci	Administrative bodies	Entrepreneurs
Water	Settlements	Entrepreneurship	Civic organizations	Bureaucrats (local, global)
Ecosystems	Buildings	Legislation	NGOs	Leaders, personalities
Plants	Building complexes	Policy instruments	Professional organizations	Employees
Forests	Uses of land	Customary rules		Transient actors
Animals, birds, fish	Transport, technical, etc., infrastructure	International agreements	Informal groups	Future generations
	Social infrastructure (schools, hospitals, etc.)	Values, lifestyles (local, global)		
	Technology (general, specialized)	Past legacies		

The biophysical and human components of a socioecological milieu are assembled around different issues with the purpose/desire to govern them, generating various interrelated issue-specific governance assemblages. Issue-related governance functions get entangled and interact among them because issues are interdependent; thus, governance activities in one assemblage have repercussions on other assemblages for the same and/or different issues. Goal setting for water resources is inevitably related to goal setting for biodiversity, tourism development, etc. Economic instruments targeting water issues are entangled with those concerning land values, water rights, etc.

Finally, governance relates, but is not identical, to policy making, planning and management because its components are shared with the components of these concepts that answer to problems related to governance (the exoconsistency of the concept of governance). For example, goal setting is indispensable and common to planning and governance but planning is an instrument used to steer a milieu toward desired end states.

Recapitulating, an internally consistent definition of governance reads as follows. Within a socioecological milieu over a period of time, the governance of an issue (object of reference) encompasses the multiple, intermingling processes during which heterogeneous, human and material components from various levels and times, *desiring/interested in* steering certain issue-related common affairs, get together in provisional, unique governance assemblages to carry out the governance functions necessary to achieve common goals, employing *multiple practices* in conjunction with the governance of several other interdependent issues. In other words, *the governance of the issue is a multiplicity coproduced with the governance of other issues.* Its composite, distributed, situated and dynamic nature blurs the distinction between issue and solution, issue and context, 'stages' of the governance process, outputs and outcomes. They are all what the governance assemblages determine them to be.

The mode of governance, an emergent property of a governance assemblage, is reconceptualized as a multiplicity constituted by the modes of governance of the diverse assemblages developing around an issue. Hence, it is not singular and predetermined but multiple, composite, distributed and situated. More importantly, the mode of governance is meaningful for a particular assemblage with which it is uniquely coconstituted, not for a 'system,' as mainstream studies assume.

Contours of an AT-based methodology

The main contours of an AT-based methodology for applied studies of governance are sketched below based on conceptualizing governance as multiplicity. The presentation, informed by DeLanda (2002, 2006, 2011, 2016) and the AT literature, is inevitably general and indicative of the direction an AT-inspired analysis of governance might follow. A focal socioecological milieu (SEM, for short), i.e., a focal area and a sociospatial hierarchy associated with the issue of interest, and a time period are provisionally delineated. The SEM is a multiplicity constituted by multitudinous assemblages emerging to serve some purpose. Because it is impossible to identify all assemblages populating it, the study provisionally focuses on the strategic ones related to the issue of interest and selected interrelated issues. The thrust of the methodology is on the description and analysis of the multiplicity of governance assemblages. This is not a one-off but a continuous process involving revisions of the initial descriptions and assessments as new information reveals 'new' assemblages.

The methodology comprises four main stages that do not follow a neat linear order though; there are continuous feedbacks and loops among them.[31]

Stage 1: General description of the focal SEM
Stage 2: Evolution of the SEM; detailed description of phases
Stage 3: Analysis of the mode of governance and other properties of the governance assemblages in each phase
Stage 4: Guidance for the design of optimal governance assemblages

Stage 1 thoroughly describes the characteristics of the biophysical and human components of the focal SEM over the entire study period with adequate temporal detail to support the description of its evolution in the next stage and to identify selected interdependent/associated issues to be considered further in the analysis.

Stage 2 details the evolution of the SEM and of the (governance) assemblages formed within the study period. More specifically,

(a) the main phases of the SEM[32] are identified and described,
(b) for each phase, the issue-related basin (or, basins) of attraction developed around a particular attractor[33] (or, attractors) are identified and the possibility space of the assemblages are described; i.e., the associated critical/limiting biophysical and human components (capacities, thresholds that have been or may be reached or crossed, changes) and other important variables and contingencies,
(c) within each basin, characteristic issue-related assemblages, associated with diverse desires to govern the issue of interest, as well as selected issue-related assemblages for interdependent/associated issues are identified,
(d) the assemblages are described (see below),
(e) the relationships among issue-related and interdependent/associated assemblages are identified as well as
(f) adaptations (within basin) and transformations (movements between basins) that have taken place over the study period.

For *each assemblage*, its open and revisable composition, the processes of assembly and their evolution over time are described/assessed to help determine their place and movements within a basin of attraction. This description explicates the material and human components from all levels and times (Table 3) and the arborescent (formal/institutionalized) and rhizomatic (informal/autonomous) linkages among them over the study period. The contingently obligatory relationships among components and the processes of assembly underlying these relationships as well as their evolution within this time period are identified.

From the viewpoint of analyzing governance, the description of the issue-related and associated assemblages in Stage 2 reveals by means of which components and how, i.e., via which practices, the various governance functions have, or are, been performed and with what effect (outputs and outcomes). Moreover, it reveals the entanglement of governance functions between issue-related and associated assemblages and, thus, embeds the analysis

[31] A similar methodological approach can be found in Detsis et al. (2017).
[32] The phases of the SEM during a study period are defined on the basis of their identity that is considered a key property of a socio-ecological milieu (Detsis et al. 2017).
[33] Such as combinations of particular resources, economic activities, modes of governance.

of the focal milieu and the issue-related governance in the context of the governance of all other interdependent, cofunctioning and coevolving issues.

Stage 3 deepens into, on the one hand, the situated analysis and explanation of the actual mode of governance and other properties (e.g., density, intensity, connectedness) of the governance assemblages identified before, as well as of their changes, and, on the other, the assessment and explanation of the outputs (provisional 'end' states) and outcomes obtained. It, thus, helps reveal the contextual and distributed nature of the mode of governance of the issue of interest and draw preliminary conclusions regarding its effectiveness with respect to achieving the goals set, among other concerns.
Stage 4 builds on the preceding analysis in order to offer guidance for the design of desirable governance assemblages under trend continuation and alternative future scenarios from the viewpoint of various interests (reflecting their desires for particular governance outputs and outcomes). By following the procedure in the reverse, changes in issue-related and associated assemblage components and in processes of assembly (practices and mechanisms) can be suggested that may foster the emergence of desirable governance assemblages.

Employing this methodology demands attention to two critical issues, at least. First, the delineation of the focal socioecological milieu and the choice of the study period should be based on a thoroughly developed timeline and periodization and on deep knowledge of the study SEM. Special caution is needed to handle the data issue since data are collected on the basis of administrative spatiotemporal systems of reference, which do not generally coincide with the focal SEM. Second, a full-blown application of the methodology requires the development of additional analytical techniques for use in Stages 2 and 3 mainly to capture the dynamics of the multiplicity under study, besides the methodological practices and associated techniques mentioned in the 'Analyzing governance and offering guidance' section. Combining qualitative techniques with the analytical resources of Differential Geometry and Topology is perhaps the most demanding research challenge to deliver a compleat analytical apparatus for the study of governance and other assemblages.

Governing multiplicities

Conceiving governance as multiplicity changes the way governance issues are conceptualized, analyzed and handled because the 'who, what, when, where and why and how' of socioecological and other problems are reconceptualized. The effectiveness of policy interventions is meaningfully assessed only in the space of concrete assemblages, within which they are constituted to serve a purpose, thus, rendering effectiveness situated, composite and distributed. General measures of effectiveness are pointless because they overlook purpose (desire) and refer to a 'system' that does not exist.

From the viewpoint of state authorities, the governance challenges arising in practice flow from the difficulties to steer the multiplicity of entangled assemblages; i.e., to govern multiplicities either for single issues or for socioecological milieus. Single-issue governance involves steering the multiple issue-related assemblages to secure that the pertinent governance functions are performed effectively and address the goals of each assemblage. The governance of a socioecological milieu involves steering to secure the effective performance of the governance functions of the diverse, cofunctioning assemblages associated with various, interdependent issues and meet the goals of each assemblage.

An approach to governing multiplicities may be elaborated by adapting and combining within the AT framework Jessop's (2002) metagovernance, Dietz et al.'s (2003) adaptive governance and Flyvbjerg's (2001) phronetic approach. Metagovernance 'involves rearticulating and "collibrating" the different modes of governance… It is the organization of the conditions for governance in its broadest sense and involves the judicious mixing of market, hierarchy, and networks to achieve the best possible outcomes from the viewpoint of those engaged in metagovernance.' (Jessop 2002, p. 108).

Adaptive governance denotes governance emerging either as adaptation or as transformation of social organization to better achieve collective goals (Dietz et al. 2003; Folke et al. 2005; Chaffin et al. 2014). It stresses and responds to the complexity, diversity, inherent uncertainty and difficulty to control socioecological systems. It, thus, focuses on experimentation, social networks, learning, collective action and conflict resolution. It is operationalized by means of adaptive comanagement systems, 'polycentric institutional arrangements, which are nested quasi-autonomous decision-making units operating at multiple scales' and 'devolution of management rights and power sharing that promotes participation' (Folke et al. 2005, p. 449).

Finally, Flyvbjerg's phronetic approach builds on Aristotelian phronesis (practical wisdom) and emphasizes value rationality (to balance instrumental rationality), ethics, interpretation, judgment, situatedness of knowledge, decisions and action, participation, power relations and praxis.[34] This implies that 'to be effective in policy work, practitioners have to be able to deploy the appropriate knowledge in any specific context.' (Tenbensel 2006 cited in Colebatch 2014, p. 312).

Common to all three ideas is the application of phronesis in making decisions. Their AT-based adaptation and combination drops the assumption of a system and reified modes of governance and replaces them with the issue or milieu multiplicity and emergent modes of governance in the assemblages that constitute it. The effective governance of this multiplicity calls for *AT-based adaptive phronetic metagovernance*. This translates, on the one hand, in the deliberate, continuous and experimental (re)organization of the conditions for governance to reflexively guide the adaptations and transformations of the emergent issue-related assemblages, and the associated modes of governance. On the other, it calls for action that provisionally fosters situated synergies and strikes trade-offs to reconcile their multiple, inevitably conflicting purposes, goals and governing practices. The need may, thus, arise to (re)design adaptive comanagement apparatuses around issue-related assemblages that provoke the phronetic, strategic and situated choice of components, mechanisms of assembly, coordination and conflict resolution to enhance the probability of producing desirable situated outcomes[35] under spatiotemporally fluid and uncertain conditions (cf. Torfing and Sørensen 2014).

The multiple, composite and distributed agency of assemblages implies that finding effective starting points for designing and implementing policy interventions is not feasible in general because of the complex interactions within and between assemblages. The only realistic strategy is to explore the implications of intervening in one assemblage on all other assemblages and be prepared to cope with the repercussions, aiming to prevent assemblages from being locked-in 'problematic' states or facilitate the transition to other more desirable states.

[34] Cf. Kooiman et al. (2005).

[35] From the viewpoint of both the assemblages and the multiplicity,.

Concluding remarks

The value of the integrative assemblage ontology and analytic and the promise of AT for the situated study of governance are summarized below to demonstrate that, compared to approaches founded on the system ontology, AT offers a unifying, but not totalizing, template for empirical applications, that may partly explain its recent popularity.

Assemblage enables a veritable portrayal of real-world governance phenomena, unlike the abstract and reductionist system ontology, embodying their hybridity, multiplicity, immanence, fluidity and complex dynamics. It introduces the material alongside the human components in theoretical discourse and analytical resources, recognizes their multiple roles, memberships, interrelatedness and cofunctioning in socioecological milieus and emphasizes the centrality of purpose and praxis in the 'making' of governance.

AT offers a unifying conceptual apparatus that pulls together different aspects of governance phenomena into a cohesive framework (Nel 2017) and, simultaneously, offers methodological orientation for the analysis of governance (Bueger 2017). It focuses on the haecceity, the nonreplicable, unique assemblage that enunciates the actual (mode of) governance enacted to serve the issue-related purpose (or desire for) of governing at a specific place and time. It addresses the coconstitution, inseparability and situated combinations of the 'who,' 'what,' 'where,' 'when' and 'why' of an issue and the spatiotemporal interdependence and coproduction of governance issues and related functions. Thus, AT speaks to the quest for complex-concrete analyses (Jessop et al. 2008), sector specificity (Peters 2014), and issue specificity (Bache 2003).

Contrary to system-based approaches that start from a predetermined system, AT-based approaches are experimental and processual, starting from the multiplicity of issue-related assemblages in a socioecological milieu. AT-based analysis rejects taxonomies and binaries, and, thus, the separation between problem and context, problem and solution, problem and governance, types of actors, goals, outputs and outcomes, formal spatial and temporal levels, stages of the decision process, formal and informal governance. They are all coconstituted and determined in the space of the emergent assemblages. Consequently, AT-based analysis does not endorse conventional (quantitative) techniques that analyze linear relationships between policy measures and outputs in a predefined system using predefined, general purpose measures but fosters alternative, mixed methods techniques.

Three important implications of the multiple, composite, situated and distributed AT-based conception of governance are noted. By showing *for whom the governance of what is and how*, it makes clear that issue-related governance is relevant only to those *desiring* to steer certain common affairs, thus, answering Peters' (2014) question 'is governance for everybody.' Moreover, it reveals the role of politics and power in determining the mode and outcomes of governance, an issue that system-based, essentialist/reductionist approaches commonly ignore. Finally, it answers the question 'what is the most appropriate mode of governance that best fits an issue in a given setting' (Howlett and Ramesh 2014; Torfing and Sørensen 2014) by stressing that it is what the unique issue-related assemblages determine it to be. It is dynamic, continuously adapting to changes in the constitution of the assemblages and entangled with several other issue-related modes of governance.

It follows that OSFA, portable recommendations, flowing from the system ontology, are pointless. The empirically determined state, properties and tendencies of the issue-related assemblages and the capacities of their components suggest alternative routes to elaborate and, most importantly, practice/implement context-specific, provisional 'solutions.' These involve interventions to modify the components, their relationships and the basins

of attraction to encourage the emergence of assemblages that may better respond to the issue(s) at hand.

Finally, the AT perspective resolves the dilemma if governance is an empty construct (Howlett and Ramesh 2014) or signifier (Colebatch 2014) or a slippery concept (Torfing and Sørensen 2014) that echoes a system ontology. Governance has multiple actualizations, being continuously 'made' in situations where human and material components assemble to answer the need (purpose) to steer issue-specific common affairs, via situated practices, to achieve common, although variously conceived and translated, goals.

Future research faces multiple challenges to take the AT-based study of governance further and cover those issues that were beyond the scope of the present paper. A complete review of the literature including books, book chapters, and academic papers and covering policy, planning and management, besides governance, issues are, first, needed to produce a comprehensive account of the state of the art that covers the diversity of thematic areas and specific subjects within them. Second, at a deeper level, a thorough examination of the diverse theoretical approaches to governance, which this study roughly grouped into essentialist/reductionist and relational/nonreductionist accounts, should explore their implicit or explicit ontological assumptions and the linkages with their epistemological theses and associated methodologies. A comparison of the AT with other relational, such as ANT, approaches and associated ontologies may further support its conceptual and analytical suitability for the study of governance.

More comprehensive and thorough engagement with the whole conceptual apparatus of assemblage theory will contribute new conceptualizations and theorization of diverse issue- and milieu-related governance themes and issues. Extant theories of governance may be rethought/reformulated by dropping numerous (implicit at least) system-related assumptions and conceptualizing governance as multiplicity constituted by intermingling formal (arborescent) and informal (rhizomatic) assemblages.

The proposed methodology needs detailed elaboration to produce a coherent assemblage-based approach for use in applied studies in conjunction with the development of new quantitative and qualitative techniques. Theoretical elaboration and empirical testing of the AT-based adaptive, phronetic metagovernace approach in diverse thematic, issue and geographical settings will expose its performance and value. Empirical research, more generally, will productively test the proposed theoretical and methodological explorations and demonstrate the practical value of AT for decision support.

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