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Situational analysis and urban theory

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Abstract

Urban geographers have been pursuing divergent theoretical projects. Some have pushed urban theory to become ageographical, the goal being to search out and explain of a globally omnipotent urbanization process. Others have moved in a different direction, seeking to detail how singular constellations of processes produce only particular urban places. This theoretical divergence has led some to question whether middle-range urban theories continue to have purchase today. This paper seeks to contribute to this attempt to rekindle an interest in middle-range urban theory by examining the relevance of Karl Popper's situational analysis to how we understand contemporary urbanization.

Key words

Urban theory, situational analysis, Karl Popper, urban geography, cities

Introduction

Singularity[1] has again disrupted urban theory (Enright, 2020; Jazeel, 2019; McFarlane, 2018; 2019). This return is partly a response to the ever-growing collection of theories that seek to explain the global proliferation of urbanization (Brenner and Schmid, 2015; Fainstein, 1990; Taylor and Walker, 2001). The principal charge against these theories is that they have overlooked their subject's inherent uniqueness (McFarlane, 2018; Robinson 2006). We therefore now have new theories about how Earth has become more dominated by an "urban process" (Brenner and Schmid, 2015; Merrifield, 2013a; 2013b) alongside efforts to think about cities as singularities (Jazeel, 2019). Neither project is without warrant. Continuing urban migration (Haas and Fransen, 2018), economic integration (Dicken, 2015), and technological change (Coe et al. 2010) have demanded urban theorists explain the ongoing urbanization of the planet (Mans, 2014; Robinson, 2005; Sassen, 2010), but the attendant idiosyncrasies have also necessitated singularity is an omnipresent starting point (Schindler, 2017).

The gap created by this divergence can lead you to ask whether middle range[2] (Merton, 1968) urban theories remain desirable (see Robinson, 2016a). For some, the answer is affirmative. For example, Jane Jacobs (2012) suggests we build out middle-range concepts such as the "repeated instance" to help understand how global and local urban processes relate. Jacob's particular concern with the proliferation of high-rise buildings is illustrative. Drawing theoretical muster from Bruno Latour (1993), she argues that we must think about urban repetitions as requiring variance, with "different assemblages of allies in different settings" (Jacobs, 2012: 22). Viewed this way, repeating buildings are understood in a markedly different way to purveyors of architypes such as Henry-Russell Hitchcock and

[1] As in singular events, types and/or phenomenon, not "technological singularity" (see Shanahan, 2015).

[2] Merton (1968: 39) described middle-range theories as "intermediate to general theories of social systems which are too remote from particular classes of social behavior, organization, and change to account for what is observed and to those detailed orderly descriptions of particulars that are not generalized at all."

Philip Johnson (1997[1932]: 35), who famously described their international style as “unified and inclusive, not fragmentary and contradictory.” Jacobs’ “repeated instance” avoids this kind of normative framing by insisting that all instances are fragmentary (see McFarlane, 2021), always simultaneously “from there” and “of here.”

There are obvious challenges with this perspective. When we think of “the urban” as both “from there” and “of here,” it makes it difficult to see what or where “the urban” is. Take “big buildings.” Jacobs (2012) convincingly argues they are neither diffused as architectural models or purely indigenous creations. Rather they result from a “relational effect,” which is itself a consequence of the complex, networked interplay of actors. Big buildings do not therefore get invented in particular places (e.g. the New York offices of SOM) and then exported and installed anew somewhere else (e.g. Jedda). Instead, they emerge from an ever-expanding web of relations. This erring away from diffusion-based explanation inevitably means that urbanization is hard to describe as expanding and spreading (see Brenner and Schmid, 2015; Lefebvre, 2003). But it remains true that big buildings have proliferated globally. It is also true to say there has been a geography to all this (Adams, 2019; Harrison et al. 2021; McNeill, 2008). Theoretical innovations have therefore been required to study the increasingly complex geographies of contemporary urbanization.

Sophisticated theories of networks and relations have helped answer such calls (Graham and Marvin, 2001; McCann and Ward, 2010). Relational theories let us see contemporary urbanization as something akin to an ever more overloaded power strip. Over the past century, we have plugged in more and more appliances (i.e. big buildings, roads, airports, convention centers) to our power strip. In ecological terms, our power strip was designed for four devices, but is now loaded up with multiple extensions and appliances, all of which is strictly against the manufacturer’s instructions. Our urbanizing planet, with its hockey stick climate, becomes equivalent to this overheating power strip, replete with burning fuses and pungent smell of blistered wire. The acrid stench is evidence of a relational effect (Jacobs, 2012), where the failure of one device might well knock out all the others. We therefore have a “network,” but our emphasis on singularity (see Jazeel, 2019) reminds us that the melting tangle of plugs and sockets cannot be described in terms of equivalent components. Our devices (or “big buildings”) do not all come from the same factory, and they are not made of the same materials. They are simultaneously compatible and distinct.

The efficacy of such conceptual metaphors suggests that middle-range theories might be useful in bridging current divides. As McFarlane (2018; 2019) has convincingly argued, ‘a’ new epistemology of the urban seems a doubtful prospect. He proposes “a modest and experimental style of knowing and acting in the world” where fragments of the thing we call “the city” are known in a plurality of ways. I agree, but also think we need to differentiate urban theories by types and explanatory claims. Karl Popper’s (2002s; 2002b) philosophy of science is instructive for both tasks. I will draw on Popper’s theories of demarcation, falsification, and situational analysis to present a method of urban theory building that can, where applicable, develop modest, middle-range theories. The goal of engaging with Popper is not to supplant existing theoretical projects. Rather the primary objective is to develop middle-range explanations beyond the conceptual level (see Jacobs, 2012) and offer a theory-building approach that can be broadly engaged with by all urban scholars.

Urban Particularities and Universals

The central tension within urban theory has deep roots, and it is part of the broader philosophical friction between idiographic and nomothetic explanation (Windelband, 2001). Robinson (2005) describes its basic form:

> "Cities have long confounded the best efforts of observers to offer a decisive view of their characteristics. Their very complexity and inherent changeability mean that efforts to fix their meaning come quickly unstuck." (757)

Mumford (1968: 3) made a similar point when he wrote of the city: "No single definition will apply to all its manifestations and no single description will cover all its transformations." Perhaps this explains why philosophers have so often sought to think not about what the city is, but what it ought to be (Schofield, 1999), seeing the actual as unruly and requiring ordering (Le Corbusier, 1985; see Berman [1983]). But, as many thinkers have shown (Davies, 2018; Kiel and Elliot, 1996), uncertainty and non-linearity need not bar theorization. However, when diverging urban theory projects have few ways to dialogue (Addie, 2020; Barnett and Bridge, 2016) such insights can struggle to gain purchase.

The basic contours of our divergence are clear (see Addie, 2020). One urban theory project has pushed politico-economic urban theory into new and sometimes contentious territory (Brenner and Schmid, 2015; Harvey, 2019). This work continues the now long history of explaining "the city" as emerging from (Harvey, 1978), and being a constituent part of (Lefebvre, 2003), capitalist accumulation. The other project, which is more diffuse, is composed of various efforts to understand the particularities of the city (e.g. Jazeel, 2018; Simone, 2019; Oswin, 2018; 2020). In other words, this project is often characterized by an opposition to universalizing generalizations.

That this branching has reemerged should not surprise. Over the past 50 years, we have witnessed dramatic urban transformations. More of the planet's population now lives in cities, the number of large cities has grown, and the geographical influence of cities is more extensive and intensive (see Amin and Thrift, 2017). Life within cities has also become more fragmented (e.g. Labbe and Boudreau, 2011; Low, 2006) and, for many, more difficult (Baum-Snow et al. 2018). Urban theorists have therefore confronted the challenge of explaining the city as it has become more numerous, more diverse, and more unstable. Amin and Thrift's (2017) response has been to conceptualize urbanization as a process of "world-making." Cities, they insist, have served to define much of the planet's last 50 years, arguing the key question we now face is: "… if cities have become world-making, striding out across the world defining the character of human settlement, giving shape to the transformed nature of the Anthropocene, and providing the main impetus behind political economy […], how and why this is so is not self-evident?" (9).

This description of the enigmatic character of urbanization helps explain why theorists now disagree about how to understand "the city." To put it in Amin and Thrift's (2017) terms, it is not entirely clear what has been "striding out". For some, the growth of a heterogeneous urbanization process is to be explained by more nuanced understandings of neoliberalism (Brenner et al. 2010). Proponents of this view maintain that there is a consistent kernel within varying urbanizations. Others (McFarlane, 2011; Robinson, 2016b) have pursued different approaches, often turning to the idea of "assemblage" – itself an elusive concept (see Kinkaid, 2020) – to think about "the city" as a "fragmentary whole" (Deleuze and Guattari, 1996; 16). The view taken is that "agency [is] across the social and the material, and in doing so draws attention to the agency of the materials themselves as processes within assemblages" (McFarlane, 2011; 221). If anything is seen to be "striding out," the paths taken quickly scatter.

Reflecting on these diverging projects, Barnett and Bridge (2016) have argued that there is now a disagreement over what counts as urban theory. They identify Brenner and Schmid's (2015; also see Merrifield, 2013b; Schmid, 2018) work on "planetary urbanization" as an exemplar of deductive urban theory, where the project is focused on refining theories derived from "ideological formulations and common-sense categorizations" (Barnett and Bridge, 2016: 1186). The contrast is then drawn with urban theorists who are united by an effort to "interrupt the deductive assumptions of grand theorizing" (ibid.). This distinction is instructive since it frames concepts like "world-making" (Amin and Thrift 2017) and the "repeated instance" (Jacobs, 2012) as attempts to traverse the divide, being both accepting of urbanization as expansive while, simultaneously, seeing all instances as particular (Žižek [2006] on "parallax" views).

Urban Theory I: Searching for the Core

There is a long tradition of explaining urbanization's core features. Few geography undergraduates will have missed the epitome, the slide containing Burgess' models of Chicago and "the city." As your eyes move from left to right, the abstraction happens, the shoreline of Lake Michigan fades, singularities become generics, and a universal theory emerges. Later quantitative urban geographers would continue this practice (Berry et al. 1964; also see Berry, 2001), often being criticized for the associated erasures of place (Tuan, 1976; Morrill, 1993). This work reached its zenith in the 1960s, but more nuanced urban models continued to be produced (e.g. Couture et al. 2020; Sohn, 2005).

Yet it is not the quantitative modelers that now define the tradition. Rather it is the radicals that emerged from geography's quantitative turn that took up and redefined the task (Bridge, 2014). Since the 1970s, Marxism has been a fountainhead for urban theory, particularly in the works of David Harvey and Henri Lefebvre. Harvey's earlier work contains some of the literature's most deductive urban theorizing. In 1978, Harvey explained his attempt to produce urban theory in the following way:

> "My objective is to understand the urban process under capitalism. I confine myself to the capitalist forms of urbanization because I accept the idea that the 'urban' has a specific meaning under the capitalist mode of production which cannot be carried over without a radical transformation of meaning (and of reality) into other social contexts… I hang my interpretation of the urban process of the twin themes of accumulation and class struggle." (101)

This tallying of urbanization with capitalism was pushed even further by fellow traveler Henri Lefebvre:

> "Here, I use the term "urban society" to refer to the society that results from industrialization, which is a process of domination that absorbs agricultural production. This urban society cannot take shape conceptually until the end of a process during which the old urban forms, the end result of a series of *discontinuous* transformations, burst apart… How could any absolute discontinuities exist without an underlying continuity, without support, without some inherent process?" (Lefebvre 2003: 2)

Lefebvre saw urbanization encroaching across the planet (Merrifield, 2011). Underlying this was capitalism's unquenchable thirst for exploitation. An emerging post-industrial, urban society could therefore not be founded on utopian terms (Mannheim, 2013; Vogt, 2016) and global urbanization was, for Lefebvre, utterly dystopic.

This theory would subsequently be advanced by many others (Brenner, 2019; Brenner and Theodore, 2002; Castells, 1977; Soja, 2000). As the pro-market reforms of Thatcher and Reagan congealed into neoliberal hegemony (Peck, 2010), Marxist urban theory "would seem to be never more appropriate and vindicated in its analysis of the neoliberal global economy" (Bridge, 2014). With such fecundity, a host of derivative theories have been effectively used understand urban capitalist development, including work on finance (Aalbers, 2016), investment (Garcia-Lamarca, 2020), privatization (Christophers, 2019), information technology (McNeill, 2016) and state developmentalism (Shin and Kim, 2015).

Brenner and Schmid (2015) recently prompted intense debate when they introduced the Lefebvre-inspired concept of planetary urbanization. They argued that "cities are extended outwards into their surrounding territories and are woven together via thickening long-distance logistics networks" (Brenner and Schmid, 2015: 155). No part of the planet has therefore been left without an urban presence. Whether looking at the Canadian tar sands or a Kenyan tea plantation, you are witnessing the expansive urbanization that Lefebvre forecast. The result is a geographical disconnect: "If the urban is no longer coherently contained within or anchored to the city-or, for that matter, to any other bounded settlement type-then how can a scholarly field devoted to its investigation continue to exist?" (ibid.) Unmoored from the city, Brenner and Schmid (ibid.) claim a new urban epistemology is required.

This work has received a mixed response (e.g. Davidson and Iveson, 2015; Oswin, 2018; 2020; Ruddick et al. 2018). Whatever the exegetic merits of planetary urbanization, the theory is significant for how it has flipped the predominant geography of abstraction. It echoes Mumford's (1961: xi) assertion that the "…world that has become, in many practical aspects, a city." Brenner and Schmid (2015) see boundless urbanization. Concrete city geographies and inter-city differences are deemed largely irrelevant to the urban theorist. As Barnett and Bridge (2016) observed, whether this project becomes a fruitful avenue will depend on what the attendant theorization is intending to achieve. Critics like Robinson (2016b) have warned that planetary urbanization runs the particularly Marxian risk of becoming enamored "concrete totalities," and thus blinded to empirical complexities by the desire to search out last instance explanation.

Urban Theory II: Solo Cities

Critiques of planetary urbanization are the latest iterations of a longstanding concern about excessively universalizing urban theory. Burgess' concentric zone model generated similar complaints. Shortly after its publication, Quinn (1940: 210) observed that "several sociologists have spurned it as worthless, and a few have branded it as false". The numb of the objection was how Burgess' model predicted homogeneity where little existed (Christgau, 1942). Urban theory debates are therefore no stranger to tensions concerning generalized claims about "the city" and/or "the urban." These tensions are, however, always evolving, with change commonly fueled by innovations in social theory and philosophy.

Scholarly work tracing out urban particularities has its own varied histories (e.g. Ackroyd, 2003) and, by definition, is hard to generalize about. However, we can identify the different ways – via ideas like comparative, assemblages, fragments, singularity – in which urban scholars have recently questioned the universalizing abstractions of other urban theorists. The two main targets of these critiques have been the capital-centric tendencies of Marxist urban theory and the developmentalist/modernist approaches embedded within certain types of Western scholarship.

Comparative urbanism was defined by Nijman (2007) as an attempt to straddle urban theory's core tension. He argued "it aims at developing knowledge, understanding, and generalization at a level between what is true of all cities and what is true of one city at a given point in time" (1). Many comparative studies have been motivated by this desire to understand the growth of cities without losing the insights of postcolonial theorists (Robinson, 2011). Ward (2010) stressed that this comparative analysis is distinct from previous versions. "Traditional" comparative urban analysis tended to be, Ward (ibid.) argues, quantitative and Marxist, repeatedly conceptualizing the city as a bounded, pregiven geographical entity. Contemporary comparative work, or "relational comparative urban studies", is more qualitative and imagines the "[C]ity as open and constituted in and through relations that stretch across space and that are territorialized in place" (ibid. 481).

Such theorization has brought with it the need for new concepts. One concept found useful by many has been Deleuze and Guattari's "assemblage" (Anderson et al. 2012; Jacobs, 2012; McFarlane, 2011; also see Wachsmuth et al. 2011). McFarlane (2011: 206) writes that the concept "is increasingly used in social science research, generally to connote indeterminacy, emergence, becoming, processuality, turbulence and the sociomateriality of phenomena." As a methodological guide the concept has gained increasing traction (Baker and McGuirk, 2016). However, its analytical and political value remains contested. Brenner et al. (2011) charged some assemblage-inspired work with "naïve objectivism," arguing that the concept is of little help when trying to theorize an expansive urbanization process. We must, Brenner et al. claim, remain committed to "forging a critical urban theory that is capable of grasping our global urban world 'by the root'" (238). This reassertion can only be read as a stark rejection of the idiographic interpretations produced by assemblage theorists.

Assemblage thinking (Brenner et al. 2011; McFarlane, 2011) has now been supplemented with concepts like "fragments" (McFarlane, 2018) and "singularity" (Jazeel, 2018; 2019). McFarlane (2018) has championed "fragments" as a concept for developing modest forms of urban theory, where knowledge is accepted as situational and unstable:

> "I see fragment urbanism as part of a genre of urban knowledge that, as Amin (2013: 207, 206) goes on to argue, posits a 'modest and experimental style of knowing and acting in the world', urban thought 'accustomed to working with partial and adjusted insights'" (4)

The global proliferation of urbanization that Brenner and Schmid (2015) are keen to holistically explain is tied by McFarlane to growing incoherence, and consequently greater limits on the explanatory scope of any urban theory. Where some find an extension of urbanization's capitalist logics, McFarlane (2018) sees a splintering and divergent set of urban processes.

Jazeel (2019) takes this line of argument even further. Inspired by postcolonial theory, he sets out an agenda for urban theorists that completely rejects the generalizing urban theory tradition, arguing "it makes sense to delineate singularity as an ethical imperative for decolonizing geographical knowledge" (2). The dismissed tradition is intimately tied to developmental and colonial thought. A set of methodological approaches are then set out to reorientate urban scholarship towards singularities:

> "It should be clear by now that the work I want the singular to do is to ostensibly pull disciplinary Geography back from an intellectual culture of subsumption that reduces examples and cases to exchangeable instances, or conceptual givens, for the benefit of a disciplinary theory culture located in the EuroAmerican heartland." (7)

Singularity is used here to insist on epistemological pluralism. The colonializing Enlightenment notion of reason is rejected and replaced with an understanding that knowledges are irreconcilably plural. The scope of urban theory therefore becomes limited by cultural, social, and political factors. This perspective is nothing other than a radical transformation of what others (e.g. Storper and Scott, 2016) think of as urban theory and, potentially, an end to urban theory's central tension.

Where now?

Attempts to bring into dialogue these diverging urban theory projects have differed in focus. Scott and Storper (2016) have staunchly reasserted the idea of there being general urban processes, defending the idea of the "urban-land nexus." Addie (2020) makes a similar attempt to claim universal and particularistic urban theorization can be reconciled by refuting critics of planetary urbanization. His argument being that an "open dialectical mode of abstraction" can address the numerous particularistic criticisms aimed at the concept. Wyly's (2009) concerns have been more methodological, revolving around a defense of generalizing quantitative methods. Barnett and Bridge (2016) have sought to sidestep the whole tension by taking inspiration from John Dewey's pragmatism. They argue that "thinking problematically about the concepts of urban inquiry involves attending more carefully to why it matters to know about urban issues in specific situations" (16). These are all valuable attempts to maintain a productive relation between urban theory's idiographic and nomothetic tendencies. However, there are to date few attempts to develop middle-range theoretical approaches that produce justified generalizing claims about contemporary urbanization.

The following sections fill this gap by drawing on Karl Popper's philosophy of science. Popper's epistemological distinctions and prescriptions for the social sciences can productively inform urban theory debates by (a) demonstrating when and where scientific generalization is appropriate, and (b) ensuring that we differentiate between the types of theories we produce.

Popper's Scientific Inquiry

Karl Popper's work has never received sustained attention within geography. During geography's radical turn, Popper's (2012[1945]) observation of there being totalitarian tendencies within certain philosophical traditions drew fleeting interest. Olsson (1972) wrote in defense of Popper's anti-utopianism, whereas Smith (1979) dismissed Popper's critiques of Marx as second-hand regurgitations from *Readers Digest*. Popper's most well-known idea, falsification (2002a[1963]), is regularly dropped into retellings of geography's histories, but rarely enjoys enduring engagement. James Bird's (1975; 1985) examination of how Popper's ontology maps onto geography's human/physical divide is, to date, the discipline's most sustained consideration. Bird argued that Popper's "three world" ontological distinction (see below) was a productive way for geographers to conceptualize how different parts of the discipline (i.e. physical and human) connect.

Beyond Bird's work, Popper's thought has never been central to geographical inquiry. This is not unusual. Despite his renown, Popper is rarely taken seriously in the social sciences (Gorton, 2012). It is not hard to see why. Popper's prescriptions are often underdeveloped (ibid.). His philosophical critiques also made few friends. *Open Society and Its Enemies* (Popper, 2012[1945]) traces the totalitarianism within Plato's thought, identifying its influence in both Hegel and Marx (and their followers), thus

designating them inheritors and purveyors of "the craziest mystifying nonsense" (247). Popper's intellectual allies, such as Friedrich Hayek, are now seen by many as neoliberalism's consigliere[3]. He was also a spiky character, even his friends described him as difficult and arrogant (Magee, 1999). It is therefore fair to say that Popper today represents a thoroughly unfashionable thinker. Nevertheless, Popper's work demands a reckoning (see Edmonds and Eidinow, 2001).

Popper (2002a; 2002b) famously argued that falsification, not verification, de-marked science from non-science. Scientific hypothesis could only ever, he claimed, be proven false. This simple inversion has provided the best answer yet to David Hume's induction problem. In the late 1700s, Hume argued that enumerative induction has no rational basis. The repeated empirical validation of a theory could not provide scientific proof; a lesson Popper's contemporaries in the Vienna Circle did not heed. Popper argued that it is only through demarking one type of theory from another that we can have meaningful discussions about the utility of different types of explanation. He proposed a deductive method for producing scientific knowledge:

> "… the method of critically testing theories, and selecting them according to the results of tests, always proceeds on the following lines. From a new idea, put up tentatively, and not yet justified in any way—an anticipation, a hypothesis, a theoretical system, or what you will—conclusions are drawn by means of logical deduction. These conclusions are then compared with one another and with other relevant statements, so as to find what logical relations (such as equivalence, derivability, compatibility, or incompatibility) exist between them." (2002a[1959]: 9)

Falsification is thus very hard on theories, testing them with the intent of disproving them. Consequently, it is hard on the researcher, demanding that they are consistently willing to abandon one theory for another.

Popper argued his philosophy applied as much to the social sciences as it did the natural sciences:

> "The only course open to the social sciences is to forget all about the verbal fireworks and to tackle the practical problems of our time with the help of the theoretical methods which are fundamentally the same in *all* sciences. I mean the methods of trial and error, of inventing hypotheses which can be practically tested, and of submitting them to practical tests. *A social technology is needed whose results can be tested by piecemeal social engineering*." (2012[1963]: 376)

Science should be approached as a process of trial and error, or rather conjectures and refutations. Bold hypothesis should be formulated, and then rigorously falsified. By subjecting hypotheses to this treatment, Popper thought we could distinguish between meaning and truth. Science, he thought, searched to develop objective (falsifiable) truths. These truths consist of "conjectural theories, open problems, problem situations, and arguments" (Popper, 1972: 73). This contrasts to "meaning", where definitions are used to produce undefined concepts. An example of this might include "art", where we use concepts like "creative works" to invest the idea with meaning. But "art" remains undefined, and it

[3] The politics of Popper's work are the subject of continued debate, with him read as both a right- and left-leaning figure.

is often impossible to find agreement of whether something like Tracy Emin's unmade bed constitutes "art." Both meaning and truth are indispensable, but they are not equivalent.

Here is Popper's suggestion about how we go about demarking knowledges:

> "Thus my proposal was, and is, that it is this second boldness, together with the readiness to look out for tests and refutations, which distinguishes 'empirical' science from non-science, and especially from pre-scientific myths and metaphysics" (Popper, 1985: 122)

The difference between science and non-science is therefore slight: "the transition between metaphysics and science is not a sharp one" (Popper, 1985: 123). Popper's theory of demarcation separates knowledge into objective and subjective types. The latter "consists of certain inborn dispositions to act, and of their acquired modifications" (ibid. 72). Objective knowledge consists of "justifiable belief, such as belief based upon perception" (ibid.), it being "objective" because our understanding of it is premised on falsifiable theories. The difference between the scientist and the believer therefore concerns both their object and method: "*Scientists try to eliminate their false theories, then try to let them die in their stead. The believer – whether animal or man – perishes with his false beliefs*" (ibid. 74: *emphasis in original*).

Popper on the Social Sciences

During the twentieth century, Popper (2012) saw a worrying abundance of inductive reasoning and psychologism. Popular theories about society were, he argued, often based on flawed theorizations, making them at best pseudo-scientific and, at worst, authoritarian dogma. One part of Popper's response to this philosophical and political crisis was "situational analysis," an epistemological schema designed to allow for a more scientific analysis of the social world (see Gorton, 2012).

Popper's designs for the social sciences set out with two key assumptions. First, that any scientific theory must be constantly proposed and falsified. Second, that any scientific theory of the social world will be insufficient for understanding its immense complexity. Social science would therefore come with significant caveats and its claims would be inherently modest. This second cautionary assumption was premised on Popper's thoughts on how "background knowledge" limited the scope of scientific explanation (2002a; 2002b). He argued that every proposed theory brings with it a host of attendant assumptions[4]. You cannot, he argued, subject all these assumptions to falsification at once. Inquiry must therefore always be piecemeal and iterative: we are always employing theories to test other theories, and we cannot know they are all sound at the same time. Popper was therefore extremely keen to demonstrate what Taleb (2010) has more recently called epistemic limits.

Theories built out of situational analysis are to be thought of as best guess explanations, not uncontestable claims about true reflections of concrete realities: "Theories are nets cast to catch what we call 'the world': to rationalize, to explain, and to master it. We endeavor to make the mesh ever finer and finer." (Popper, 2002b: 38). Popper's situational analysis therefore embraces Samuel Beckett's

[4] This, Popper (2002) claimed, was one reason why situational analysis was distinct from grounded theory. Background knowledge includes our own preconceptions.

mantra of “Try Again. Fail Again. Fail Better.” In other words, situational analysis is designed to produce modest, but justified, theoretical claims about an immensely complex and dynamic world.

Popper’s ontology reinforces this point. He thought it was necessary to distinguish between three different parts of the world. “World 1” is the world of physical objects. “World 2” is the world of consciousness. “World 3” emerges from the interaction of World 1 and World 2. Popper uses the analogy of the spider’s web for World 3 (Popper, 1985: 63) and argued that “world 3 is largely *autonomous*, even though we constantly act upon it and are acted upon by it” (ibid. 64). Popper’s key claim about World 3 is that it objectively and autonomously exists. An example includes the unread book: “it contains objective knowledge, true or false, useful or useless; and whether anybody ever reads it and really grasps its contents is almost accidental.” (ibid. 67) This book is therefore the outcome of organized thought (i.e. World 3 object) in material form (i.e. World 1).

By making these ontological distinctions, Popper claimed that some parts of the world are more open than others to scientific explanation. He urged social scientists to focus on World 3 and identify those parts of it that contained objectively identifiable thought content (Gorton, 2012). As products of human agency, Popper thought World 3 contained a host of rationalities. It is important to emphasize that Popper’s view of rationality is empty. He does not presume a particular human rationality (i.e. the rational economic actor), but simply the presence of reasoned organizing structures. Popper uses highway regulations as an example of one such institutionalized rationality. These are highly institutionalized and practiced rationalities, but they are also distinct from one nation/state to the next. Where parts of the world have these rational structures (e.g. books, algorithms, institutional structures, government regulations and policies) they can be subjected to situational analysis.

World 3 objects are found in various forms, so in Popper’s later work he writes about World 3.1, 3.2, 3.3. etc. They include material (e.g. infrastructure, buildings) and immaterial (e.g. concepts, theories) objects. What cuts through these objects is that they “exert a causal or an instrumental effect upon physical things” (Popper, 1978: 154). The epistemological challenge for the social scientist is how to extract from a dynamic world an understanding of how World 3 objects exert structuring effects. We should, he argued, focus on “objective thought content:”

> “The objective thought content is that which remains invariant in a reasonably good translation. Or more realistically put: the objective thought content is what the translator tries to keep invariant, even though he may at times find this task impossibly difficult” (ibid. 156)

Popper is here writing about repeatable rationalities that come wrapped up in various (textual) forms. For example, a skillful writer may state a regulative idea succinctly in a single sentence, where it might take another writer an 8000-word paper to convey the same thing: different textual forms containing the same, or very similar, thought content.

In something as complex as the city or an urban process, there will be a spectrum of World 3 objects operating, each with differing degrees of fixity and influence. Gorton (2012) argues that social science is therefore well-served to focus on particular World 3 entities: “Popper argues that the central criterion establishing the reality of an entity is causal efficacy in the observable material world. Abstract entities – including social institutions, traditions and norms – meet this criterion…” (Gorton, 2012: 3). The latter highlights a particular problem facing urban theorists. Some aspects of urbanization involve highly regulated situations and others do not. Gorton (2012) identifies institutionalization, both formal and

informal, as a key differentiating feature. Where the objective contents of thought (i.e. World 3) become institutionalized (i.e. routinely fixed into social practice), we can assume these phenomenon are more open to explanation via falsifiable theories. Where things are less fixed and/or institutionalized, they will be less open to scientific explanation.

Popper's three world ontology offers a framework to think about "the city" and "the urban" in ways that inform current urban theory debates. "The city" is an object, an identifiable physical space that manifests from human activity. It is a World 1 entity brought about by World 2 processes producing World 3 objects. "The city" is comprised of countless World 3 objects. Over time, it is safe to say these products have accrued, expanded, and become interwoven. For example, London today is a material space that contains objective thought content from both Roman settlement and today's global city. These interact to produce certain types of urban environments and processes.

We can extend this conceptualization to "the urban." If we take turn-of-the-century urban sociology, we find "the city" bringing about "the urban" in the form of consciousness and social relations (Simmel, 2012). In Popper's terms, this is the remaking of World 1 by World 3 objects produced a new World 2. This urban consciousness has subsequently become decoupled from "the city" and gone onto reshape World 3 and World 1. Popper can therefore be seen to have followed Durkheim (2014: 27) in arguing that modern societies are shaped by the coercive influence of what Popper called World 3 objects and what Durkheim called "social facts." Popper's contribution was to demonstrate that social facts/World 3 objects have a life of their own. Once they are out there circulating, it is impossible to foresee their full consequences.

By acknowledging how World 3 objects variously provide social structuration, we can start distinguishing between the types of urban problems we study and the types of epistemologies we produce. The approach therefore serves as a tool to understand the varying strengths and weaknesses of a disaggregated urban theory (see McFarlane, 2021), to thus provide a useful means for avoiding false equivalencies. This latter point applies to both scientific and non-scientific explanation (i.e. Popper's demarcation), as well as varying levels of confidence we can have in scientific theories.

The point of making these epistemological distinctions is not to denigrate different forms of knowing. Rather, and in rather pragmatic terms (see Gaille [2021] on Peirce's aligned philosophical pragmatism], we must seek to find the right tool for the task at hand. In the next section I illustrate how situational analysis can be applied by drawing on Koertge's (1979) interpretation of Popper's method. Once I have outlined the basic procedure of situational analysis, I will briefly apply it to a hypothetical case study of municipal fiscal crisis. This choice is motivated by my empirical specialisms, but it should be noted that municipal fiscal crisis occurs in a highly institutionalized context, to therefore lend itself to situational analysis (see Gorton, 2012). As McFarlane (2021) convincingly demonstrates for other, often less institutionalized, parts/fragments of the urban process will require other epistemological approaches.

Outlining Situational Analysis

Popper's prescriptions for the social sciences were heavily influenced by his circumscribed admiration of Marx (see Gorton, 2012). Koertge (1979) used this insight to develop a four-stage description of Popper's situational analysis model[5]:

1. Description of the Situation: Agent A was in a situation of type C.

2. Analysis of the Situation: In a situation of type C, the appropriate thing to do is x.

3. Rationality Principle: Agents always act appropriately to their situations.

4. Explanandum: (Therefore) A did x.

These four steps parallel Marx's method. You describe the phenomenon (e.g. waged labor), analyze what is happening (e.g. a seemingly freely made transaction), examine how the actors understand/rationalize their situation (e.g. the capitalist must maximize profits, the worker's bargaining is constrained), then develop an explanatory hypothesis (e.g. conflicting class interests/struggle). What Popper also wants us to acknowledge, contra Marx (see Hudelson, 1980), is that there are unavoidable limits to the scope of any such hypothesis. It therefore becomes the job of falsification to identify the limits of any theoretical proposition.

Step 1: Description of the Situation: Agent A was in a situation of type C – involves identifying the situation which the agent finds themselves. This is analogous to problem solving, whereby Agent A must decide about action in particular/delineated circumstances (type C).

Step 2: Analysis of the Situation: In a situation of type C, the appropriate thing to do is x – involves a rejection of determinacy. We cannot, Popper claims, presume to know what any agent is trying to achieve. Popper insists on what he called "methodological determinism." Agents change, situations change. History is, for Popper (2002), always open even despite the growing collection of World 3 objects that structure our lives. Understanding the rationality of agent A in situation type C therefore demands a broad survey of how an agent's action is conceived:

> "By saying that a response is rational […], I mean (i) that it was arrived at through a methodical appraisal of the set of possible solutions; (ii) that a description of both the problem-situation and the appraisal process could in principle be verbalized by the actor; (iii) that the person acted as he did because of the appraisal process (i.e. if a better alternative had been presented to him he would have taken it)" (Koertge, 1979: 90)

Accepting that Koertge's effort to account for unconscious motives, intentionality, and errors of judgement may be unfinished (see Koertge, 1979), this remains a useful set of analytical guidelines.

Step 3: *Rationality Principle: Agents always act appropriately to their situations* – Popper claimed his understanding of rationality was empty. The basic insight here is that humans tend not to act arbitrarily. Rather they consistently use reason to problem-solve (Koertge, 1979: 93), and sometimes they institutionalize these decisions and actions. Situational analysis therefore identifies how human action results from deliberations under certain contexts (i.e. how did the action emerge as a rational thing to

[5] Koertge (1979) also offered an advancement of this model, transforming it into an eight-stage model to account for agent competency and theory testing. Since the focus here is on an exegesis of Popper's work, I will restrict my explication to the simpler four-stage model.

do?). Popper's analysis therefore constructs two types of explanation (see Koertge, 1979). The first is derived from understanding what the rational thing to do was for agent A in situation type C. The second develops on this to say that in type C situations, agent A will more than likely do the same (i.e. produce a falsifiable proposition). The more empirical content a theory accounts for, the more powerful it claims to be. Of course, when any theory attempts to explain more and more instances, it likely becomes easier to falsify, to thus make theoretical claims derived from situational analysis somewhat self-correcting.

Step 4: *Explanandum: (Therefore) A did x* – the final step of situational analysis involves the formulation of a falsifiable theoretical statement: in situation C, agent As will do X. This serves to codify the assumed rationalities operating in the specific area of inquiry. This type of statement is the substance of middle range theory, being an attempt to speak beyond the particular case (see Merton, 1968; also see Burton et al. 1993). By asserting, via the hypothesis, a codified relation between agent A and situation C, the generalizable claims can be contested/falsified by other cases.

Illustrating Situational Analysis

For illustrative purposes, I will develop a brief hypothetical situational analysis of a US city – Newville - in severe fiscal distress. There are numerous examples of US cities in fiscal distress: New York City (Tabb, 1982), Detroit (Bomey, 2016), Orange County (Baldassare, 1998), Vallejo (Davidson and Kutz, 2015). I opt to develop a hypothetical example to keep our focus on the situational analysis procedure, not the particularities of any documented cases.

Step 1: Description of the Situation: Agent A was in situation of type C
Our agent A is Newville, a hypothetical US municipality. Our type C situation is fiscal crisis. Within the US context, a fiscal crisis is primarily generated by a cash flow problem: not enough funds (e.g. collected tax revenues) available to pay creditors (e.g. employees and bondholders). Newville is therefore confronting a problem situation: it must try and find a way to pay its creditors. Newville and fiscal crisis need to be understood as World 3 objects. In other words, they are products of human action and political coordination, and thus are highly institutional entities and situations. Describing situation type C therefore involves surveying the various ways that the actions of agent A are conditioned, motivated, and delimited.

Step 2: Analysis of the Situation: In Situation of type C (cash flow), appropriate thing to do is x
Newville does not have the cash needed to pay its creditors. It must therefore take unusual steps. Quite what the appropriate course of action is for Newville will depend on a variety of factors. This is where Popper's empty rationality assumes importance. A situational analysis assumes that agent A, Newville, will try and chart the most reasonable course of action. This is analogous to assuming that Newville actors will try to arrive at the best, most justifiable, decision. In this hypothetical case, Newville will likely try and resolve its budgetary problems without jeopardizing core governmental functions or inflicting greater harm. Only with a close examination of Newville's situation can this type of rationalization be understood.

Situations are therefore critical to defining actions. For Newville, the "best decision" criterion will be heavily influenced by legal and political determinations. US local governments are primarily creations of

state governments, so municipalities operate within state-based legal frameworks. For example, not all states allow municipalities to use Chapter 9 of the Federal Bankruptcy Code. A similar set of constraints exists with budgetary regulation and oversight, with states such as Michigan and North Carolina imposing emergency managers and financial monitoring on municipalities (Maher et al. 2023). By tracing out just what type of situation Newville finds itself operating in, we can come to an understanding of how it chooses certain actions over others.

Step 2 therefore involves a (re)construction of decision-making relating to an identifiable problem situation. By following Newville through the process, the analyst builds an understanding of how a "rational" solution to fiscal distress was arrived at. In Newville, this might involve a decision to file for Chapter 9 bankruptcy protections. Imagine that Newville had arrived at a fiscal position whereby it could not work with existing partners to overcome its crippling cashflow problem. The city council therefore, with state permission, opted to file for bankruptcy. This then placed the city within the hands of Federal Bankruptcy Court, whose job it is to find a reasonable settlement between the obligor (i.e. city) and creditors (e.g. labor unions, bondholders, service providers).

Step 3: Rationality principle: agents will always act appropriately in their situations
With Newville's situation analyzed, the next step is to develop a hypothesis about the city's response. Popper wanted social scientists to develop an understanding of how, among the possible range of actions, agent A reasoned their way to take action x. For hypothetical Newville, this involved exploring the range of options it had available. We can assume that illegal options were not seriously considered by the rational municipal government. However, the city would have to fully consider those options it thought reasonable and practicable. This could include taking out bank loans, (re)issuing debt, decertifying collective bargaining agreements, cutting services, staffing reductions, raising sales or property taxes, selling assets, and so on. It could also include filing for Chapter 9 bankruptcy protections, and subsequently using court-appointed power to restructure existing financial obligations.

Let's say Newville opted to file for Chapter 9. It did so because it reasoned that independently negotiating settlements with hundreds of competing creditors was an impossibly difficult task. Now, it is certainly possible to imagine other possible decisions, particularly if a different situation existed. For example, an ideologically driven city council could pursue bankruptcy to force more favorable collective bargaining agreements, the rationale being that this freed up monies to spend on economic development and/or lower taxes. The point of Step 3 this therefore not to dismiss other potential explanations or engage in inductive generalization. Rather, the goal remains to generate an understanding of what constituted appropriate action, upon which a falsifiable proposition can formulated.

Step 4: Explanandum: therefor A did x
The final step involves using our conclusions about Newville's rational actions to develop a falsifiable statement. For Newville, this might be something like the following: for a city (agent A) suffering severe fiscal distress and unable to pay its creditors (situation C), where the state government allows, the city will use Chapter 9 bankruptcy protections (action x) to restructure its financial obligations. This is a limited and basic hypothesis. However, it is capable of being tested and falsified, to thus potentially have predictive value. If desired, we could attempt to build a more powerful explanandum. We could follow

through the rational actions of Newville's city council to understand who wins or loses via bankruptcy. If we trace out the process a bit further, we might find that it is rational for the bankruptcy court to impose the greatest losses on bondholders, and by extension bond insurers. It might then be possible to say more about agent A in situation C. Of course, when we expand the scope of the explanandum, it must account for more and more social processes, to thus make it more likely to be falsifiable.

Conclusions

Merton (1968: 39) describes middle range theories as those that explain more than the particulars of an individual case. Popper's situational analysis encourages theory building from the particular and the production of generalizing statements whose reach is self-regulated via a procedural insistence on falsification. Much of this will be familiar to readers well-versed in epistemology debates (see Earp and Trafimow, 2015; Fanelli, 2009). It is therefore worth emphasizing that the significance of Popper's situational analysis derives from the philosophy that underpins it, and how this philosophy helps us understand the role(s) of middle range theorization in urban scholarship.

When Popper developed his thoughts about social scientific inquiry he was motivated by an acknowledgment of social complexity and dynamism. Popper saw that humans were constantly engaging with their environment and creating thought products (i.e. World 3) that, in turn, set in motion further changes. Social theories would have to accommodate this dynamism: "According to my view, we may understand the grasping of a World 3 object as an active process. We have to explain it as the making, the re-creation, of that object." (Popper & Eccles 1977: 44). This making and remaking ensures theory building is a fraught process. The shelf life of most social theories is likely short. However, we may persist with a certain theory because it is the best of all the theories we have; it's the best guess we can come up with. Koertge (1979) uses this conclusion to argue:

> "Perhaps a sharp division between falsifiable theories which are subject to direct experimental refutation and metaphysical postulates which can only be criticized in an indirect way (…) can not be applied in a neat, straightforward way to actual scientific systems. Perhaps it must be replaced by a spectrum ranging from highly falsifiable scientific theories, such as Newton's Laws, to the regulative principles of metaphysics…" (94)

This is relevant because it highlights how different parts of the city and/or urban process will have a different relation to falsification (also see McFarlane, 2021 on epistemological diversity and urban theory). Highly structured phenomenon may be explained by theories that have high truth content (i.e. they are hard to falsify). In other domains, we may have to do with more specialized and/or less scientific theories. Put differently, we must acknowledge that falsification, and thus the strength of a theoretical explanation, works along a spectrum.

Depending on the part of the (urban) world you are trying to explain, the ability to provide an encompassing theory (i.e. non-falsified and high empirical content) will vary. Popper's philosophy therefore contributes not by resolving all theoretical differences. Rather, it gives us a means to productively recognize and negotiate them. Situational theory, although designed to produce social scientific knowledge, also makes room for what John Keats (2023), in 1817, called "negativity capability," the ability to resist explaining what is unreachable by fact and reason. For example, Popper's three world ontology necessitates epistemological diversity, even to the extent of acknowledging that myths are likely the only way to understand certain parts of our world.

Popper's philosophy therefore helps make apparent epistemological issues that have been underexplored within urban theory. Geographers and urban theorists have used philosophical and theoretical innovations to develop new ways of understanding cities and urbanization. In doing so they have generated valuable insights. However, there have been few substantive reflections upon the types of knowledge being produced. While it is productive to acknowledge the plurality of urban theories (McFarlane, 2019), and the unlikelihood of finding any singular theoretical approach (Jazeel, 2019; McFarlane, 2021), we should also be making epistemological distinctions. Saying, for example, that all urban processes are ultimately defined by capitalist accumulation can make sense of incredibly complex urban changes, but it is highly likely to be falsifiable hypothesis. We must therefore recognize such explanations as "subjective knowledge," not to denigrate or demote[6], but to understand what kinds of claims are being made, and how they might be used, debated, and contested. Similarly, claiming that all urbanization is singular (see Jazeel, 2019) is something that can be tested via falsifiable hypothesis developed via situational analysis.

Situational analysis, and its underlying philosophy, has much to offer urban scholarship. Two contributions are worth reiterating to conclude. First, by bringing with its Popper's epistemology, situational analysis provides tools to differentiate between theories and knowledge claims. Second, situational analysis offers a method to produce middle-range theories that can be engaged with by those interested in both nomothetic and idiographic explanation. Popper's thought therefore assists us in avoiding the relativist trappings of theoretical pluralism and helps to align generalizing explanations with complex urban realities. Critically, it can do so without recourse to the rigid claims of earlier engagements with scientific explanation in geography (Castree, 2005). We can let a plurality of urban theories bloom and know the differences between them.

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[6] Popper did not adopt the logical positivists fact/value binary. Nor did he share Milton Friedman's related ideas about "objective" economic science.

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