Tactical urbanism as a means of testing relational processes in space: A complex systems perspective

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Abstract
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Title:

*Tactical Urbanism as a means of testing relational processes in space: A Complex Systems Perspective.*

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Key Words: Urban Design, Complexity, Emergence, Relational Planning, Tactical Urbanism

Introduction:

Traditional planning strategies, situated within Modernist paradigms, sought to resolve urban problems through methods of instrumental rationality. These assumed problem spaces to be bounded, involving linear processes that could be understood and controlled using an engineering mindset to streamline and optimize processes. Here, *'city planners and the plans they produced assumed that cities were in equilibrium and the focus was almost entirely on implementing some form of blueprint depicting a desired end state’* (Batty & Marshall 2009, p.563). Accordingly, to plan effectively meant to ‘map’ - with the blueprint considered a neutral and objective platform that steered action – rather than a power-laden construct that risked reproducing situations of inequity (Healey 2007).
The failure of these blueprints to achieve desired outcomes, combined with a general shift away from modernist ideology, has moved planning towards more contingent, reflective, and critical stances. These recognize the need to move beyond a faith in master-plans with their end-states, and instead acknowledge unknown, ambiguous futures that are often fragmented, relational and complex (Boonstra & Boelens 2011). Here, environments are conceived not as a static entities situated within containerized Euclidean space and time, but as evolving constructs - constantly produced and reproduced by various actants, holding multiple perspectives (Graham & Healey 1999; Anderson et al. 2012).

This orientation, focusing upon processes, actors, and the dynamics that generate urban form, has been framed as the ‘relational turn’. This turn steers planning away from traditional modes of practice – that privileged physical interventions in the urban setting - to instead focus upon understanding and influencing the **procedural** aspects of change. This implies a new emphasis on identifying flows and strategic convergences that may be stimulated and reinforced to achieve planning objectives, while acknowledging the influence of both human (and non-human) actors. Patsy Healey describes how in this perspective,

…the work of strategy formation becomes an effort to create a nodal force in the ongoing flow of relational complexity. This force is drawn forward through the effort of ‘summoning up’ conceptions of an urban area, in ways that selectively lock together some transecting relations, opening up connectivities to encourage new synergies to emerge, creating a strategy with persuasive and seductive power, that can become itself an ‘actor’ in the ongoing flow of relational dynamics and have affects on materialities and identities. This implies that planning efforts have to abandon the idea that there exist some pre-given spatial ordering principles that can provide a legitimate basis for interventions in the emergent realities of urban areas. (2007, p.228)
Unfortunately, this abandonment of ‘pre-given’ spatial ordering principles, generates a rift between those theorizing about cities, and those generating designs within cities. In order to address this gap, this paper considers how relational perspectives might inform design processes that unfold within urban space.

I come to this research as a North American, practice-based, urban designer. Within this context, planning theory is dominated by denunciations of urban sprawl coupled with advocacy for ‘smart growth’ cities that reclaim a sense of place and vitality (spearheaded in large part by New Urbanists (Grant 2009)). Here, practitioners focus upon methods of achieving ‘good’ urban form as it manifests on the ground (the morphological aspect of urban space), and much less-so with understanding and restructuring the relational forces that underpin form (Moore 2013; Veninga 2004; Gunder 2011). Given the specificities of this context, while remaining intrigued with how relational thinking can inform space-making, my primary concern is with how this effects routines of situated practice - particularly the execution of urban design interventions.

This notion of ‘intervention’ in planning can be framed in two ways. The first concerns intervening within the planning processes itself - who is involved, what are the planning tools, how are power imbalances recalibrated: in short the manner through which plans are conceptualized. The second concerns how specific interventions at the physical level are actualized: how specific built forms are produced in space, and how these interventions - as physical entities - then change the nature of space and relations on the ground. Whereas planning used to be dominated by the latter (the generation of master plans), it has come to be dominated by the former. This rupture between the process versus the substance of planning has meant that, while relational planning considers a ‘variety of complex and reciprocal relations and exchanges’ that underpin planning processes, including ‘money, power, gender, ethnicity’, it has nonetheless abandoned ‘the contemplation of space in any other manner, such as in terms of proportion, pattern, extension, or the spaces between things – in effect, principles that can be used to generate spatial arrangements’ (Milroy 2010, p.24).
In order to help redress this imbalance, this paper suggests a consideration of tactical approaches that may have the capacity to side-step the pitfalls of traditional master planning strategies while nonetheless remaining engaged in the specificities of form, site, program and spatial arrangements in urban settings. The recent pedestrianization of Times Square in New York, is a case in point, demonstrating how a significant shift in design and programming can occur by virtue of tactical approaches – in this case banning cars and instead positioned 376 lawn-chairs (at $15 apiece) in the space. Those opposed to pedestrianizing the intersection had anticipated increased gridlock in the surrounding area, with business owners worrying that a traffic ban would cause a downturn in revenues. Rather then argue the point, the city simply experimented: gathering data that showed the intervention, ‘led to less congestion, shorter travel times, less accidents, more pedestrians, and eventually upped Times Square into the top 10 of world’s most valuable retail destinations’ (Hämäläinen 2015).

While such tactical strategies are beginning to be documented and discussed they are, for the most part, presented as examples of grassroots resistance or community empowerment (Lydon & Garcia 2015). I wish to shift the focus of the discussion to instead highlight how tactical strategies also resonate with relational approaches, but in ways that move from understanding relational forces, towards activating relational forces. As the New York case illustrates, meaningful consensus surrounding change (where skepticism was initially high) might occur through direct stakeholder experience of consequences rather than through discussion, planning, and debate.

Finally, I wish to consider how tactical strategies might shed new light upon Complex Adaptive System (CAS) approaches of engaging urban issues. Though CAS has entered into planning discussions in various forms – some computational, some procedural, and some theoretical – there is a dearth of research into CAS processes as something that can be operationalized ‘on the ground’. I wish to demonstrate how tactical strategies might be theorized both as advancing a relational spatial ontology, and as exhibiting CAS attributes. This contributes to planning
scholarship by fleshing out conceptual links between CAS and tactical approaches that, to date, have remained largely under-theorized (for exceptions see Silva 2016; McFarlane 2011).

Section One of the paper situates this research within the background of relational planning perspectives. While not intended to provide a comprehensive critical review (which has been undertaken by others - see: Jacobs 2011; Yeung 2005; Graham & Healey 1999), this serves as a backdrop for the ensuing discussion of tactical practices. Section Two introduces tactical approaches, discussing the principles of tactical engagement and providing a series of generic examples. Section Three moves to a more specific illustrative example, which conceptualizes how urban tactics might be positioned as a means of engaging relational forces in situ. Section Four then outlines how this project can be read as a Complex Adaptive System, and how this reading corresponds with a relational approach. I conclude with reflections on both the limitations and contributions of this work.

**Section One:**

**Relational Planning Perspectives: recurrent modes of discourse and story-telling:**

Relational thinking can be seen as an attempt to engage uncertain futures, addressing the fact that envisaged planning scenarios are likely to change by the time plans are implemented. This alternative mode of planning - one that provides more provisional and flexible strategies to manage uncertain and evolving situations - is seen as a corrective measure to the failure of master plans to achieve their specific end states (Balducci et al. 2011).

While relational strategies differ in emphasis, they are united in shifting the emphasis of planning away from the object of planning itself (the physical urban environment), so as to instead attune to the processes and relations that fuse in planning contexts. (Amin & Thrift 2002; Massey 1999; Urry 2003). This turn from form to process, leads relational planners to draw from conceptual sources that have the capacity to inform a process driven ontology. These sources include Complex Adaptive Systems (CAS) theory, with its emphasis on bottom-up processes that lead to
emergence (Holland 1996; Batty 2007); post–structuralism with its ‘planes of immanence’ that capture potential relations through contingent assemblages (DeLanda 2005; Hillier 2008); and communicative theories that emphasize the agency of various human and non-human actants (Innes & Booher 1999; Healey 2007). While these sources differ, all engage with ‘open-ended processes and dynamics rather than static normative forms’ (Graham & Healey 1999, p.625)

Healey and Graham effectively encapsulate the major themes of these perspectives, summarized as:

1. Relational vs absolute theories of time and space (where multiple times and spaces may coexist);
2. Multiple meanings and social realities that construct superimposed spatial realities (as opposed to one ‘objective’ social reality);
3. Networked geographies that imply stretched and compressed geographies, constructed according to infrastructural and performative hierarchies;
4. Power as a significant factor in social agency that produces social/spatial realities – with power playing a strong role in determining which spatial practices are privileged.

There is a great deal of overlap between these themes, with boundaries blurred as practitioners interweave the concepts to differing degrees. What is common is that the planning process - with its previous emphasis on proscribed futures and physical components - is reconceived in relational, contingent and non-linear terms. As part of this reconceptualization, the focus of planning shifts towards an emphasis on the social, political, procedural and power-laden agencies that steer plan decision-making. Once extended into the domain of practice, this becomes instituted in methods that gravitate towards discursive modes – with an emphasis upon acts of dialogue, participation, rehearsal, and storytelling.

This tendency towards discursive modes can be examined through the consideration of a number of influential planning streams, including communicative strategies, post-structural methods, and
computational approaches (which I tentatively situate as a form of narrative). These streams can, respectively, can be characterized by the figures of Patsy Healey, Jean Hillier and Mike Batty. While others could easily have been named, I will focus upon the contribution of these individuals not only because each are acknowledged as having exerted a considerable influence within their respective discourses (which range from the ‘computational to the baroque’ (see de Roo et al. 2012, p.41)), but also because each engage aspects from complexity sciences within their work - albeit in different ways. That said, I wish to argue that ultimately the approaches they represent lead towards speculative discourses rather than physical interventions.

**Communicative Strategies – Patsy Healey**

For Healey, ‘the plan’ is but an outcome of the planning process, which itself results from a networks of complex interactions. Healey thereby champions communicative approaches that permit diverse voices to be engaged and understood – ensuring a more inclusive means of generating dialogue that can thereby offer a fuller understanding of the complex forces underpinning plan-making (Healey 2003). Here, planning refocuses itself around decision-making processes and the power of multiple, inclusive, voices: engaging more players and drawing upon ‘bottom up’, ‘insider’ perspectives, rather than relying upon ‘top down’, ‘expert’, and outsider perspectives. Rather than making plans, the planner is charged with unpacking the communicative processes and governance models that control plan-making. Susan Fainstein, reflecting upon relational trends within planning observes:

> Within communicative theory the planner’s primary function is to listen to people’s stories and assist in forging a consensus among differing viewpoints. Rather than providing technocratic leadership, the planner is an experiential learner, at most providing information to participants but primarily being sensitive to points of convergence. (Fainstein 2000)
This planning mode focuses upon emergent properties, contingent outcomes, and open-ended processes - hence Healey’s employment of the term ‘complexity’. Cities are understood as ‘complex performative arenas, where relational webs weave layers of order between heterogeneous social groups, filières of firms, governance agencies, etc.’ (Graham & Healey 1999). The planner’s role is to structurally intervene within this web of relations, ensuring fair discourse, whilst remaining cognizant that the normative notions of ‘desirable’ end states are contestable. ‘Assessing whether, when, where and how to intervene in these relations in an attempt to make a significant difference to trajectories and outcomes is, in turn, a complex political task’ (Healey 2007, p.186).

Healey aims to navigate this complex realm of social dimensions, as opposed to the built complexity of the physically manifested city. It follows that analyzing the city is essentially a discursive task, concerned with unpacking the social and political aspects of plan-making, compared to a traditional ‘taking stock’ of the physical components of urban form and character. The planner’s role thereby shifts from that of expert advisor on morphological aspects of the city, to that of mediator working to foster just and inclusive dialogue regarding the city (Healey 2003, p.108). The resulting conversation then becomes the means used to legitimize any ensuing planning action. That said, while Healey argues that the planner’s role is to intervene in ‘guiding trajectories’, she stops short of developing tools that would inform acts of intervention themselves.

Post-Structural Methods – Jean Hillier

A second perspective on the integration of relational thinking into planning practice can be represented by Jean Hillier’s work. Hillier considers how post-structuralism provides planners with a conceptual umbrella for relational planning, ‘concerned with structuring processes and the undecidable relations or connections between structures and agencies’ (Balducci et al. 2011, p.487). Like Healey, Hillier is interested in planning process situated within relational contexts, but she focuses on the non-linear, uncertain and contingent aspects of this relational space. In
contrast to communicative approaches, Hillier eschews binary distinctions between actors, instead employing shifting and contingent differentials. Further, discussions are framed more around potentialities (or ‘the virtual’) rather than specific, stabilized relations: ‘foresighting’ more than ‘forecasting’ (Hillier 2011; Sheppard 2008). Here the focus shifts to speculations regarding multiple trajectories of becoming, tracing how trajectories interact to form temporary, stabilized relations.

Hillier considers environments from a complexity perspective, regarding them as, ‘assemblies of a multiplicity of heterogeneous components, in which heterogeneity or difference plays a crucial productive role in the driving of fluxes.’ (Hillier 2005, p.276). Space accordingly, is ‘a multiplicity which brings together characteristics of externality, simultaneity, contiguity or juxtaposition’ (Hillier 2005, p.282). The philosophies of Deleuze and Guattari, and in particular their notion of assemblage 1, are then adopted as a means to speak of this multiplicity, characterized by wholes that are provisional, contingent, and relational, that come into being and dissolve in accordance with the energies and fluxes they are subject to: ‘these assemblages are never fixed or stable, but always in a process of making or unmaking. Such instability (mobility) means that there is always potential for innovation, an eventful differentiation. As such, it is also assumed that assemblages have distributed agency (Jacobs 2011, p.416). To comprehend this agency and its generative potential, Hillier relies upon cartographic processes outlined by Deleuze and Guattari. These cartographies ‘map connections’ and illustrate ‘relations and forces’. Accordingly,

‘one may be able to anticipate the potential power of force relations between the various actants and what they might become capable of achieving. Cartography as a process would request strategic planners to diagram and engage the interconnections between elements, to experiment with them and anticipate potential tensions and conflicts. What new assemblages might eventuate? What strategic agencements? (Hillier 2011, p.515)

1 This notion of Assemblage is roughly equivalent to the concept of Emergence in complexity adaptive system theory (see Anderson & Mcfarlane 2011; Sheppard 2008). Even the phrase ‘complex adaptive assemblage’ has been proposed (Dovey 2012).
In this reading, ‘mappings’ are largely metaphoric, as they trace socio-political forces that remain largely invisible, rather than relations and forces that are physical in nature.

Within this political/spatial context, the planner’s role is to trace the relevant actors at play, anticipate the significance of various relations amongst these actors, and finally intervene at appropriate system leverage points in order to successfully steer potential trajectories (Hillier 2011, p.516). But in practice ‘mappings’ are outlined primarily through discourse, where scenarios are debated and futures are ‘rehearsed’ in ways that draw attention to particular relations and benefits (Hillier 2008, p.30). Accordingly, the post-structural planner’s task, according to Torill Nyseth, is primarily to: ‘stage the discourse’; ‘open minds up to new ideas’; ‘give voice to new actors’; explore ‘methods of active invitation’; and engage ‘diverse sets of views’ (2011, pp.581–88). Through such discourses Hillier’s meshworks are enriched as the dynamics between, ‘the withs and withouts’, ‘power plays’ and ‘insurgencies’ (2005, p.288) are unpacked. She states, ‘these tracings then become part of the map’ (2011, p.513).

I wish to emphasize that this ‘mapping’ engages the complexity of the social, rather than the complexity of the (physically) spatial. Jeff Malpas notes this conceptual slippage in spatial geography, arguing that it blurs the lines between physical and discursive spaces. He cautions that, ‘few thinkers, no matter what the discipline, have given serious attention to the phenomenon of space… [they] have tended instead to deal with various forms or modes of space – to spatialities rather than to space as such.’ (Malpas 2012, p.226). He considers geographer Doreen Massey’s views as representative of this stance since,

what interests Massey is less the understanding of space than the social or political consequences of any such understanding. One might thus argue that what Massey offers is not a more adequate theorization of space, but instead a theorization of spatial rhetoric and of spatial imagining as this forms the core of a spatial politics. (Malpas 2012, p.228)
Overall, post-structuralists tend to maintain a focus on mapping socio/political assemblages - motives, histories, actors and cross sections of power – that serve as the backdrop for plan decision-making. At the same time they refrain from the mapping of morphological assemblages - buildings, landmarks, streets, or bridges – that situate planning in physical space. This centers the role of planning in modes that work to define the design problem (through discursive tracings) rather than implement the design solution (through spatial interventions).

Interestingly, Deleuze and Guattari’s mappings might equally be employed to trace physical artifacts – ones situated within the concrete phenomena of the city (as Manuel DeLanda (2000) has demonstrated). Notwithstanding this potential, in instances where post-structuralists explicitly consider material artifacts, they do so in ways that equivocate all material aspects - such that the agentic materiality of a railway ticket is no less significant then that of a public square (McFarlane 2011b). While conceptually this perspective is in keeping with a non-linear ontology, in which seemingly minute details may be implicated in activating broad outcomes – the so-called ‘butterfly effect’ - the resultant ‘flattening’ of all urban aspects has been criticized as making it near impossible to prioritize action (see Storper & Scott 2016, p.23).

Accordingly, Hillier offers limited guidance on conducting any form of physical intervention, suggesting only that planners shift their focus away from prescriptive plans and towards performative outcomes (Hillier 2008). She advises that planners examine, ‘via detailed interventions, how different innovations may perform in different spatio-temporal circumstances’ (Hillier 2008, p.34). She remains, however, non-specific as to the means with which to execute these ‘detailed interventions’, saying only that this calls for ‘creative, nonconformist ways of thinking and working, proceeding by intersections, crossings of lines, encounters’ (Hillier 2005, p.284). We will return to this thought later.

Computational Approaches – Mike Batty
Turning to a very different planning perspective, Mike Batty has been at the forefront of investigating how cities can be conceived as complex systems, with their dynamics unpacked through the use of computer simulations. He has spent decades developing agent-based and cellular automata models that can also be viewed as a means with which to engage a relational ontology. Here, Batty (as representative of computational modelers in general) explores potential urban trajectories and possible futures (Manson & Sullivan 2006). The models are adjusted through testing interaction rules amongst agents in the model (within a certain range of limits), adjusting input parameters (services costs, real-estate costs, population incomes, etc.), and surveying the outcomes of these various parameter sets. These simulations offer glimpses of ‘possible futures’ that may also predict particularly stable outcomes that remain robust in the face of shifting rule or parameter sets. This may also suggest plausible leverage points that push an urban system towards a particular (favored) and potentially robust trajectory.

That said, these trajectories, due to the non-linear forces at play, cannot be controlled with any degree certainty. While the models may provide insights into the dynamics of how various decisions or actions play out, their predictive power remains limited. This, in part, is due to inherent constraints on the modeler’s ability to faithfully calibrate model dynamics, as well as limits regarding what the model does or does not include. Often, datasets are incorporated simply because of their availability, rather than because they are representative of the most salient factors. Further, even if all relevant datasets were to be available, other problems ensue. As models became more complex to account for more variables, ‘data requirements exploded to the point where it became impossible to even calibrate, never mind validate, such models’ (Batty 2009, p.53). Discussing these inherent limits, Batty and Torrens state that, ultimately ‘such models are pedagogic... demonstrations of what is possible, and in the last analysis, provide vehicles for discussion... for argumentative discourse.’ (2005, p.763)

Were it possible to calibrate the models, we would still be left with determining (in a deliberative manner) which goals or parameters to prioritize (by assigning with computational ‘weight’).
Models allow different potential futures to play out, but the selection of which future we wish to try and enact remains dependent upon decision-making processes wherein we gauge which potential story is most desirable. Batty and Torrens therefore observe that selecting interaction rules mirrors ‘decision-making’ processes in policy-making environments, and that a meaningful modeling of one may be predicated upon a modeling of the other (2005, p.763).

Accordingly, Batty has begun to explore how computational models might be used to explore the dynamics surrounding decision-making ‘trade-offs’ in planning consultation environments (Batty 2013). This work, while in its nascent state, shifts perspectives from modeling physical environments to modeling their associated decision-making contexts. It thus echoes the kinds of communicative and post-structural processes outlined above. Hence, whereas Hillier speaks of a kind of ‘mapping’ that would trace power agencies within a planning context, Batty interprets this as assigning algorithmic rules to these interactions, translating the map into a simulation that can be re-programmed and refined. Hillier describes how,

... the political practice of spatial planning [is to] to ‘test out’, via detailed interventions, how different innovations may perform in different spatio-temporal circumstances. The complex interplay of factors at any specific conjuncture nevertheless means that successful intervention cannot be guaranteed. There are always too many unknowns to give certainty. [but]... they offer an opportunity for creatively experimenting with a range of different articulations of these issues. (2008, p.34)

Her statement might equally be attributed to Batty, whose work involves a ‘testing-out’ - via computer models steered by algorithmic rules - of various scenarios, paying attention to how different circumstances and different ‘computational weights’ of these might affect outcomes. Like Hillier, Batty acknowledges the practical limits of this approach given the endless number of factors that might influence a particular model. However his models, like Hillier’s mappings, ‘offer an opportunity for creatively experimenting with a range of different articulations of these issues’ (Ibid, p.34)
Despite a very different starting point then that taken by Healey and Hillier, I suggest that Batty’s computational work ultimately moves strikingly close to one that centers upon providing tools to facilitate discourse. Here, as Batty himself acknowledges, models are useful, ‘as much for their exploratory and discursive value in a wider participatory process of developing robust but contingent knowledge than for their ability to generate good theory’ (2009, p.56). In contemplating ‘The Limits to Prediction’ Batty and Torrens therefore suggest that a ‘particularly useful’ application of models is that of ‘story telling’ used to ‘structure discussion and debate’ generating ‘what if?’ scenarios’ (2005, p.762).

Ultimately, while the ‘front end’ work of modeling engages bottom-up and complex interactions to produce stories and provide insights for planning or thinking about interventions, the physical enactment of interventions ‘on the ground’ remains ambiguous, and likely top-down. Models may provide stories of potential futures, but the planner is still left with the task of operationally intervening – within a context that is physically situated – to steer some of these stories into fruition. At the point when physical intervention becomes necessary, it is unclear what tools are to be employed, and how these differ in nature from those instrumentalized within top-down plans. Further, there is no way to reliably predict the level of correspondence between policy ‘rules’ in the model and the actual effects of policy implementation ‘on the ground’.

**Section Two: An Introduction to Tactical Strategies**

The perspectives outlined above point to a significant gap between modes that stage the planning problem, and mechanisms used to implement the planning solution: between ‘rhetoric and action’ (Fainstein 2000, p.460). To summarize, all the approaches above consider cities to be complex systems of interactions in which prediction is almost impossible. Nonetheless, in each case planners focus upon rehearsing, outlining, or modeling scenarios surrounding potential trajectories. Little specific guidance is provided into how one might then move on from understanding the problem space to enacting the problem solution. Here policy decisions would seem to be the right instrument, but while policy decisions may help steer development
trajectories, they too are subject to unintended consequences, where the desired trajectory is disrupted despite all the best efforts at ‘forecasting’.

These unintended consequences are part of the problem of ‘solving’ problems within complex environments. If cities are complex, then seeking to exert control over outcomes may well be antithetical to their fundamental nature. Interventions - however well intentioned - are derived from attempts to understand potential scenarios, actants or simulations, but cannot address the basic uncertainty of relational contexts. The next part of the paper therefore proposes to set relational forecasts aside and instead examine the potential of relational enactments. Before clarifying this distinction, I wish to offer the following snapshots of strategic interventions that may help ground the ensuing discussion:

... for two weeks in 2012, 41 pianos in Toronto, Ontario were modified by 41 artists and distributed within the city. Each piano bears the invitation, ‘Play me, I’m yours’. The instruments’ respective locations became sites of impromptu concerts, sing-a-longs and discussions;

... for three weeks in the summer of 2012, ‘Pop Rocks’ transformed one block of downtown Vancouver into an informal lounge. Robson Street was closed to traffic and instead occupied by a series of enormous bean bag chairs, protected by umbrellas that invited citizens to ‘socialize, rest, eat, or read a book in the heart of downtown’ (Vancouver 2012);

and

... in 2012, ‘Popuphood’ in Oakland, California, began to transform vacant storefronts into vibrant businesses. The small business incubation project provided free initial leases for start-ups, thereby lowering their risks of entering the marketplace. Organizers concentrated these enterprises onto one specific block, creating a sustained flow of clientele and promoting synergies

2 Concept developed by Luke Jerram
between stores. Following the initial pilot period, successful enterprises transitioned to permanent status with long-term leases, thereby promoting ‘visibility, vibrancy, and safety, block by block’ (Popuhood website).

The above provide a sampling of what has been dubbed ‘tactical urbanism’ (Lydon & Garcia 2015). Here, transformation of an urban site is provisionally tested prior to committing to large-scale investment, but if successful, these interventions can ossify into permanent projects. While the specifics of tactical projects differ, their execution strategies are similarly orientated in that they: create juxtapositions (by developing novel spatial connections that draw together a variety of actants); probe lightly (by undertaking low risk investment explorations prior to committing to permanent actions); and explore widely (by pursuing multiple spatial potentials quickly and nimbly).

The next section illustrates how such tactics might provide an alternative manner whereby planners might engage relational processes. Here, instead of working to trace, simulate, or unravel the complexity of cities, planners would instead create the circumstances whereby city designs might emerge directly through the harnessing of complex adaptive processes.

Section Three:

City Crossing Competition: Steering Complex Processes in situ

The task of city planning has become less one of producing the simple order of ‘rational’ urban plans, but one of how best to generate and maintain the functional complexity – or complex functionality – traditionally possessed by cities…The somewhat paradoxical challenge of planning then becomes one of how to ‘plan’ a kind of complexity that seems to have arisen ‘naturally’ in traditional cities, without planning. (Marshall 2012, p.192)

What follows is a discussion of a competition submission that engages Tactical Urbanism and Complexity thinking in a deliberative manner. The submission was prepared by an urban design
and architectural practice\textsuperscript{3} of which I was a member. The work provides a ‘thought experiment’ illustrating how one might physically intervene within an urban setting, while nonetheless remaining open and responsive to contingent, complex, and relational urban forces. Rather than a plan, the project posits a process that gradually unfolds, leading towards more ‘fit’ outcomes. It can be read as operationalizing Hillier’s call, (referenced earlier), for \textit{creative, nonconformist ways of thinking and working, proceeding by intersections, crossings of lines, encounters’}. What follows outlines the scope of the project, after which the work is positioned in relation to complexity theory.

In 2004 the City of Winnipeg in Canada launched an ideas competition to revitalize the Portage and Main intersection (the junction of the city’s major traffic arteries) that for years has been closed to pedestrians in order to facilitate vehicular movement. The original closure resulted in storefronts shifting underground, exacerbating urban conditions that were already leading to desolate streetscapes both at the intersection and in the surrounding neighborhood. The competition brief emphasized that the project was intended to instigate revitalization beyond the confines of the site, the surrounding area being characterized by surface parking lots and a surplus of empty storefronts.

It was evident that the competition organizers were seeking a ‘signature’ project to be inserted at the intersection. Our team, however, believed that problems of the intersection were the result of systemic issues distributed across the downtown as a whole, and that any intervention merely targeting the intersection itself was doomed to failure. We considered the site as a significant node within a relational network, and felt that failures of the node could only be addressed by dealing with the network in its entirety – in particular the fact that there were insufficient resources activating this node.

\textsuperscript{3} Cohlmeyer Architects, Winnipeg, Manitoba, Canada
Our urban analysis aimed to identify and map territories of untapped relational potential, including urban sites that, despite being located in the city’s core, were vacant or underutilized. The competition site was framed as being but one amongst many undervalued and under-programmed areas that might be reclaimed through an alternative conception of the city. This led our group to map seven classes of underutilized urban terrains, catalogued as: rooftops to inhabit, walls to scale, streets to claim, plazas to program, surfaces to alter, businesses to infest, and lanes to liven. The list was intended to evoke different forms of urban potential, without pre-determining any particular site as a targeted area. In this sense, the list is both generic and specific, offering a classification of morphologically distinct urban spaces, without pre-determining how each might be used.

A similar exercise was undertaken to catalogue different kinds of urban programs. Given uncertain futures, designating specific programs – such as ‘hair salon here’, ‘housing there’ - was seen as counter-productive. Instead, a catalogue of seven programmatic ‘classes’ was identified, aiming to capture the diversity of urban actions. These were (provocatively) labeled as: urban play, urban voyeur, urban voice, urban cheap, urban trade, urban sin, and urban extreme. Again, the classes were somewhat generic in that ‘urban voice’ might manifest in a variety of forms: a billboard, a speaker’s box, or an open-air concert, for example. Notwithstanding, the category of ‘voice’ is specific in that it connotes the role of the city as place that fosters dialogue (arguably a mode through which conviviality is achieved). The urban program classifications were thus not intended to be literal, but instead serve as a kind of provocative catalogue: one used to instigate discussion regarding different kinds of actions or programs that promote civic vitality, while remaining open to the ways these might be actualized.

We then turned to consider medieval town precedents: spaces that evolved incrementally over centuries through trial and error, gradually yielding urban structure tuned to the needs of occupants (Alexander 1979; Rudofsky 1987). We felt these precedents offered clues for understanding how evolutionary processes might permit appropriate civic form to be ‘self–
generated’ out of competing interests. We nonetheless recognized that, given today’s rapid pace of development, the ability to test ideas incrementally would need to be re-conceived.

In the absence of long time periods that would permit successive generations of spatial iterations (each learning from the last), we therefore created a mechanism to activate a multitude of parallel spatial iterations, accelerating the speed by which the urban network might ‘learn’. We introduced ‘seven days of the week’ as an iteration generator that would cycle through civic permutations. Over the course of a year we assumed 356 parallel ‘probes’ of urban potential. Each of these might be of differing duration and magnitude, but a broad variety of probes would be insured.

Our proposal thus assembled three kinds of forces interacting in a relational manner—contingent times, contingent programs, and contingent sites—brought together in various permutations and combinations. The 7 x 7 x 7 matrix (Figure 1) of space, time, and action formed the conceptual underpinnings of this relational schema, one that could explore potential spatial trajectories. The matrix behaves as a kind of permutation or assemblage generator: prompting explorations of novel ways in which to explore the latent potentiality of various sites and thereby determine which sites, programs, and times might be most productive.

*Figure 1: 7 x 7 x 7 matrix or relational possibilities (Image credit: Cohlmeyer Architecture Ltd):*
Instead of presenting fixed relations, the matrix is intended to evoke of the kinds of acts that might occur as temporal, spatial, and programmatic contexts intertwine in unexpected configurations. Solid lines highlight the potentiality of particular programs manifesting on particular days and on particular sites. Dashed lines suggest the migration of programs to different locations. Shaded amorphous areas suggest catalytic relations emerging amongst different sites and programs. The ambiguity of the map is intentional, corresponding with the ambiguity of the terrain being mapped. Here, the matrix might be read as a kind of operative analogue to the kinds of tracings that Hillier refers to when speaking of forecasting scenarios, a ‘plane of consistency [where] all possible events are brought together and new connections are made and unmade continuously’ (2008, p.31). Accordingly, it is not the relations themselves that matter, but rather the processes whereby specific relations assemble into emergent wholes.

In order to operationalize the diagram, intersections are contemplated, prompting discussion of
what ‘happening’ might manifest in a given instance. For example, the act of ‘urban play’ might be activated on the territory of ‘streets to claim’ and tested at a moment in time - a Sunday in May. The nature of play, its particular site, and the moment during which this iteration is activated are not specified, but the diagram begins to suggest unexpected options. What might one use a roof for on a Tuesday in November? What street might perform as an urban beach on a Saturday in July, or be appropriated as a cross-country ski route on Sundays in December? The selection of which interaction to enact would not need to be deliberated upon at length, but could simply be enacted at random in response to the ‘what if’ prompts of the matrix itself. In this way, unexpected trajectories would be set in motion leading to new, unexpected outcomes.

The 7 x 7 x 7 matrix thereby resonates with an assemblage perspective in geography where, ‘urban actors, forms or processes are defined less by a pre-given property and more by the assemblages they enter and reconstitute’, and where emphasis is placed upon, ‘the depth and potentiality of urban sites, processes and actors’ (McFarlane 2011a, p.209). Here, agency is extended to consider the material properties and capacities of particular settings, and we become interested in the framing of ‘potentialities’. This refers,

both to the intensity and excessiveness of the moment— the capacity of events to disrupt patterns, generate new encounters with people and objects, and invent new connections and ways of inhabiting everyday urban life—and to the potential of urban histories and everyday life to be imagined and put to work differently, whether in the form of blueprints, models, dreams or hope for a better city, or in the capacity of random connections to generate the possibility of new ideas, encounters and collectives. (McFarlane 2011a, p.209)

Within this context, the planner is charged with helping produce and accommodate a range of spatial explorations: activating the urban environment such that a variety of programmatic trajectories can be tested in temporary, strategic manners. Planning would thus involve creating
a more permissive regulatory environment wherein particular zones could be designated that allow for the staging of various actions. The planner would act as curator, relying upon a creative brainstorming of options (which could easily engage stakeholder input). But rather then needing to make a deliberative choice between ideas - weighing (or modeling) their respective pros and cons - the planner would simply assist individual actors in provisionally testing one action after another – each in the 'light, quick, and cheap' manner associated with tactical interventions.

As tests are deployed, information and insights about particular urban strategies would be gained, with successes or failures evaluated based upon actual scenarios unfolding, not forecasted scenarios being deliberated. The planner would then help determine the evaluative metrics needed to determine an intervention’s relative merit, success, or failure. These metrics could include both observational and statistical data: the number of people drawn to an area; problems created due to new traffic flows; reported business spin-off benefits; complaints reported due to incompatible neighbors – to list but a few examples. Based upon these metrics the planner would help guide subsequent iterations: perhaps an event attracts many people but also noise complaints and could therefore be tested at an alternative location or on an alternative date. The planner’s role would become one of ‘strategic choreographer’, curating a series of urban ‘happenings’.

While the project remains speculative (submitted to an ‘ideas’ competition), a growing number of more circumscribed precedents for this kind of schema have been adopted by various municipalities. Lehtovuori and Ruoppila (2012) discuss a variety of instances where municipalities actively employ tactical experimentation to test projects that can then be made permanent. Montreal, for example recently used temporary trials to test the viability of car-free streets. Here, the first year is treated as a trial, whereupon ‘the city observes how well the space is used, as well as the effect on motor vehicle traffic and local businesses’ (Schmitt 2017). Over the long-term the city then makes permanent changes based upon these observations.
The proposed scheme echoes this process, but does so in a way that is, swifter, more extensive, and more exploratory. A series of civic permutations are unleashed in the environment across interacting parameters of space, time, and function. Each acts as an iterative trial: a probe investigating a particular time and place’s latent potentiality to support specific functions. The success or failure of the probe in turn provides valuable information about a given environment’s suitability for longer-term interventions. The initiative might ‘die off’ due to lack of support, ‘stabilize’ to become a permanent intervention that incurs greater investment (such as occurs in the Montreal example), or potentially replicate, as probes test the ‘carrying capacity’ of the urban environment to support a similar intervention across multiple sites. While speculative, the project also begins to point to how relational and tactical perspectives might meet and reinforce one another in urban settings. The next section elaborates upon this theme as it relates to field of Complex Adaptive Systems (CAS) Theory

Section Four: Urban Tactics as Complex Adaptive Unfolding: the matrix as ‘engine of complexity’

CAS theory is an extensive topic in and of itself, and space here does not allow for a full exploration of its themes. The interested reader can consult a wide range of easily available sources (Heylighen 1999; Kauffman 1993; Holland 1995), but a brief outline of key concepts is offered here. CAS theory has its roots in the natural sciences where it is used to study how bottom-up systems, composed of multiple actors or ‘agents’ are able to ‘self-organize’ in ways that generate fit, novel, and ‘emergent’ global properties in the absence of top-down control. These emergent properties are not predictable based on the inherent features of the individual elements of the system, but nonetheless emerge as a result of their interactions. Agents in CAS alter these interactions in response to information, feedback, and adaptation mechanisms, gradually retaining ‘fit’ protocols (Kauffman 1993; Holland 1995). CAS unfold in a non-linear manner - since a small change in circumstances at the agent level might, due to amplifying feedback, unfold so as to generate large differences at the global level. Accordingly, CAS
concepts both correspond with and feed into a relational ontology – with stable entities being constituted by means of highly contingent relations and interactions.

The illustrative project serves to highlight ways in which tactical planning might be situated as a methodology used to optimize, accelerate, and streamline CAS processes within the urban milieu. The project suggests how tactical interventions might explore space, using strategies that echo evolutionary search processes. In this reading, propositions about ‘fit’ urban interventions are provisionally tested and the city is allowed to ‘learn’ (in an evolutionary sense) about which sites are best suited for particular programmatic functions. Further, unlike in relational approaches outlined earlier (which each engage aspects of CAS), potential spatial trajectories are explored in situ: the adjacencies that are plotted, the network proximities that are explored, and the actor/relations that are engaged are not rehearsed, they are enacted - in real places, in real times.

Figure 2: Iterations and feedback loops that support evolution of fitness:

Figure 2 illustrates how the matrix engages processes described in CAS theory. Here, each project or ‘probe’ is conceptualized as an agent testing various programmatic/survival strategies within a given site. These probes are light, quick, and cheap (for example a temporary painted bicycle path), and able to quickly strengthen or abandon a given strategy. For every iteration (or state) feedback is gained about how particular sites (likened to niches) might be conducive to hosting particular programs (likened to species). Feedback is calibrated by monitoring various
metrics that pertain to how well potential energy flows (people, goods, capital, etc.) are captured, transformed, and re-circulated within a given context.

Such criteria begin to give shape to what CAS refers to as a ‘fitness landscape’ (Pigliucci 2008). This is a metaphoric terrain that illustrates how well a ‘fit’ exists between a particular agent strategy and the parameters of the ‘niche’ it finds itself within. Here, each ‘peak’ or site/niche within the landscape hold different latent capacities to support particular agent activities (although these latent capacities also change over time in response to relational forces). The landscape includes numerous peaks, representing many kinds of viable niches that agents might occupy. These have different heights, corresponding with different degrees to which they are viable for a particular behavior. The more intensely viable a particular strategy is within a given context (meeting multiple criteria or metrics to a high level) the higher it sits upon a peak.  

To illustrate - perhaps shopkeepers in a particular locale are resistant to any kind of change, and complain regardless of what is proposed: this would constitute a flat terrain within the fitness landscape. Perhaps a given site consistently draws large crowds for films on the weekend, but parking pressures preclude success on weekdays, this might represent a moderate peak, but one that can nonetheless be settled. Multiple iterations of spatial strategies bred through feedback combined with continuous probes of unexpected crossings of programs, times, and sites, together help generate data regarding each site’s latent potentials and constraints. Here, observing whether or not a change in behavior pushes an agent higher or lower on a fitness landscape (such as observing that the identical activity succeeds on a weekday but fails on a weekend) provides information that then steers the next iteration. As information is gained regarding the success or viability of a particular strategy (perhaps car-racing is simply unpopular, no matter where and when it is tested), selective pressure begins to weed out or displace weak

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4 Dittmer (2014, p.393), describes concepts analogous to fitness landscapes in Assemblage theory: possibility spaces with a range of capacities, but also certain tendencies, and ‘singularities’ (the peaks that tend to actualize).
fits while strengthening those that are strong. Functions begin to settle in these ‘fit’ locales, resulting in an emergent, functional, urban terrain.

The process of generating variants of programmatic strategies is thus analogous to exploring the fitness landscape, searching for emergent criteria for success, and gradually gaining feedback about the kinds of behaviors needed to address more and more fitness parameters (thereby climbing higher peaks), while simultaneously exploring multiple peaks (thereby ensuring heterogeneous programming). Emergent site strategies that inhabit high peaks by capturing site synergies in ways that attract crowds, support businesses, and avoid generating unintended negative consequences (noise complaints, traffic congestion, etc.), could then be permanently instated. Planners would monitor successes and failures, gain insight into the emergent criteria surrounding the fitness landscape, steer subsequent iterations and finally, help determine which interventions to make permanent.

**Conclusion:**

> A successful and sustainable evolutionary system will clearly be one in which there is freedom and encouragement for the exploratory search process in behavior space... a result of the existence of a capacity to explore and change. (Allen 2012, p.87)

While tactical approaches have gradually entered into discussions regarding urban strategies, little to date has situated this approach within broader theoretical contexts. Where this has occurred, the emphasis has been on the ‘grass-root’ and empowering aspects of this strategy – the ‘whos’ of enactment. Less attention has been paid to the ‘hows’ of enactment: with tactical interventions situated as insertions within a pre-existing entanglement of relational forces that are subsequently altered and reconstituted. Further, while some tactical projects are conceived as prototypes that might become permanent, little work has reflected upon how this prototyping might be executed in a more systematic manner and thereby leveraged as a tool for planners.
Finally, the links between tactical enactments and CAS processes, while noted by some, have not yet been clearly theorized.

The schema illustrated here is intended address these gaps. It positions Tactical Urbanism as a much more explicit strategy, capable of ‘fine tuning' the placement of long-term interventions by leveraging the self-organizing and emergent capacities of CAS. Intended as a thought experiment, the details of the project need not be taken as literal. Rather, they point to how planning activities might be reframed such that they actively determine an area's capacity for future adaptation and innovation. Here, planners might,

enhance the system’s adaptive capacity by increasing the diversity of an area's spatial functions and structures. Obviously, not all developments will be equally successful in every area. We therefore speak of strengthening the ‘pluripotential' of an area or region. It is a matter of stimulating the diversity of development that link in with the current potential of the area. Embracing diversity, and therefore increasing flexibility and the possibilities for responding to uncertainties, could create more opportunities for future innovations. (de Roo & Rauws 2012, p.220)

The project outlines an alternative way of engaging with relational planning, offering a kind of ‘engine of complexity' (Marshall 2012, p.191) that explores potential trajectories of city-making via a systematic exploration of territorial pluripotential. Within this framework, it is the relations in space that ultimately determine what succeeds. But these relational potentials first need to be activated by planners and urban designers, in manners that enable ‘a process that to some extent includes design, but is also evolutionary, involving generative, selective and adaptive processes’ (Marshall 2012, p.205). CAS dynamics are actively engaged to steer these moves, fostering evolutionary strategies in explicit rather than implicit ways (Mehmood 2010).
In this process, concepts of contingency, experimentation, and ‘lines of flight’ are embraced. But while these terms echo those invoked by Healey, Hillier, and Batty, here they are used to describe physical enactment rather then the planning of enactment, or a turn from ‘discourse to practice’ (Whatmore 2006), that is materially situated.

This explicit engagement between materiality and CAS has recently appeared in the work of others, notably Colin McFarlane, who considers both informalities and tactical environments (2011b; 2011), and Kim Dovey, who has framed an understanding of the material nature of informal settlements using CAS (2012). In other work I have also considered how specific instances of emergent districts provide insights into the relations between CAS and material potentiality (self citation, 2016). These explorations contribute new conceptual resources pertaining to the situated and specific nature of urban design, one that considers, ‘urban planning as an act of interference: a practice of physical interventions in the materiality of the city’ (Boonstra 2012, p.16).

While the schema provides an illustration of how CAS processes might be enacted in material contexts, clearly it is not intended as a ‘cure all’. The schema brings other challenges to the fore, including questions surrounding the reframing of the planner’s role, a lack of explicit guidelines on how projects might be selected as trials and instigated, and new deliberative issues surrounding the ‘weighting’ of evaluative metrics (though at least data associated with these metrics would be actual, not speculative). Further, the agility of the schema to be viably deployed within a range of planning contexts and for different kinds of physical interventions needs more consideration. Thus, while the schema might easily test locations for pocket parks (using moveable play equipment), how might it test transport routes? How long should tests run – the schema speaks about iterations of different duration, but what would determine the duration required to obtain viable feedback? And as the schema relies upon agent tests that can be ‘light, quick, and cheap’ must it be limited to small-scale works or might large-scale infrastructures be creatively partitioned into more ‘nimble’ and responsive components that test scenarios. While one might
easily intuit how a bicycle route could be provisionally tested, more creative means would need to be deployed when considering ‘thick’ transport systems such as trains. Perhaps a permanent light rail transport route might be ‘simulated’ using traditional bus lines along temporary/painted lanes?

Finally, I present experimentation as an ‘innocent’ act – but if normalized, might it selectively be used to undermine safeguards within the planning process? Given, there have been fruitful experimental or ‘special’ zones created as planning alternatives (such as those accommodating New Urbanism codes in North America or facilitating experimental residential areas in Almere, Netherlands). But there have also been instances where ‘exceptional’ zones have been selectively designated in ways that undermine democratic access to space (Uitermark et al. 2017). If experimentation is adopted as a planning approach, then what safeguards must be in place to mitigate risk?

It is not my intention here to attempt to frame all of the limits, but rather to open up a conversation that speculates about the possibilities. The schema provides an illustration of how one might engage with planning on the ground, through and with contingency. My hope is that is suggests alternative tools for engaging with relational geography, while also bridging the methodological gap that separates the subject and the object of planning.

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Popuhood, Home. *Popuhood*.


