

Chapter One

Learning Assemblages

Introduction

This chapter offers a conceptualization of learning. My aim is to consider what learning is, and to begin to think through what that might mean for thinking and writing about urbanism. The theory of learning that I develop is intended to then take shape relationally through the urbanisms discussed in the subsequent chapters. At its most general, learning involves either the acquisition of knowledge or skill, and/or a shift in perception from one way of seeing a problem, issue, relation or place, to another. It is not necessarily explicitly cognitive. Skills can be implicitly acquired, for example, through the experiential practice of craft. Learning embodies a transformation of knowledge, and/or perception, and/or self, and can be a process of control and ordering, or confusion and instability. It can arise from repetition, from performances on the wing, structured training, autonomous experimentation, events that interrupt the 'known' or that lead to a new way of seeing, and more. Rather than presupposing, as Tim Ingold (2000: 416) has put it, that 'a body of context-free, propositional knowledge – namely a technology, or more generally a culture – actually *exists* as such and is available for transmission by teaching', learning emerges through practical engagement in the world (see Lave 1988).

Learning is distributed as, in Callon *et al.*'s (2009: 58) description, 'embodied forms of know-how, knacks, knowledge crystallized in various materials, and craft skills', and is often an uncertain affair, for instance in relation to moments of creativity and invention. As a practice-based distribution, learning involves particular constituencies and discursive constructions, entails a range of inclusions and exclusions of people and

epistemologies, and produces a means of going on through a set of guidelines, tactics or opportunities. As a process and outcome, learning is actively involved in changing or bringing into being particular assemblages of people–sources–knowledges. It is more than just a set of mundane practical questions; it is central to the emergence, consolidation, contestation, and potential of urban worlds. In this chapter, I first offer a conceptualization of what learning is in practice, and, second, consider how we might conceptualize the spatialities of learning through the notion of ‘assemblage’. In doing so, I develop a conception of learning that serves the rest of the book by making three arguments in relation to learning.

Firstly, learning is always a process of translation. This underlines the importance of intermediaries in the production of travelling knowledge; the spaces and actors through which knowledge moves are not simply a supplement to learning, but are constitutive of it. Secondly, and following on from this, learning is not simply a process of translating knowledge through space or accessing stored data, but depends on the (re)construction of functional systems that coordinate different domains. Thirdly, while learning can be structured through the inculcation of facts, rules, ideas or policy models, in substantive practice learning operates as the ‘education of attention’ (Gibson 1979; Ingold 2000). This means that learning can entail shifts in ways of seeing, where ‘ways of seeing’ is defined not simply as an optical visibility, but as haptic immersion. These three interrelated aspects can be summarized as *translation*, *coordination* and *dwelling*. Each step in the argument focuses on the importance of appreciating learning as a distributed process that foregrounds the materiality and spatial relationality of learning. In addition, in each of these three areas there is an important set of ethico-political concerns around how learning occurs, what sorts of urbanisms are privileged, and the potential role of various constituencies within that, including activists, policy-makers and researchers. In order to advance this argument, I will draw on a wide terrain of debates that have approached learning, including within geography, organization theory, science studies, cognitive anthropology, postcolonial studies, and urban studies.

I bring this conception of learning to a particular conception of assemblage. While the concepts of translation, coordination and dwelling are thought of as spatial processes in the chapter, they do not in themselves provide a theory of the spatialities of learning. It is in this context that I use assemblage to highlight how learning is constituted more through sociospatial *interactions* than through the properties and knowledges of pre-given actors themselves, and to think of the spatialities of learning as relational processes of composition. As I will explain, I use assemblage both as a concept and as an orientation by emphasizing three important spatialities of learning. Firstly, assemblage locates the constitution of learning in *relations of history and potential*, or the actual and the possible. Assemblage draws attention to

the particular alignments produced through multiple spatiotemporalities of translation, coordination and dwelling, and to how they are reconstituted through different relations and contexts. Secondly, and following this, assemblage signals how learning is produced not simply as a spatial category, output or resultant formation, but *through doing, performance and events*. Thirdly, and finally, assemblage emphasizes how learning is *sociospatially structured, hierarchalized and narrativized* through unequal relations of knowledge, power and resource. While I illustrate many of the arguments in this chapter through urbanism, I concentrate the discussion on developing a conception of learning assemblage that will be applied to urbanism in the subsequent chapters.

Translation: Distribution, Practice and Comparison

Translation offers four perspectives to a conception of the constitution of urban learning through the creation and transformation of knowledge: a focus on distributions; a concern with intermediaries and displacement; as partial, multiple and practice-based; and as produced through comparison. Firstly, translation challenges the diffusion model that traces the movement of knowledge as innovation (Latour 1986, 1999). While the diffusion model focuses on travelling knowledge as the product of the action of an authoritative centre transmitting knowledge, translation focuses on travel as the product of what different actors do in and through *distributions* with spaces and objects, from artefacts and ideas to products and models (Gherardi and Nicolini 2000: 335). That is, translation emphasizes the materialities and spatialities through which knowledge moves and seeks to unpack how they make a difference to learning, whether through hindering, facilitating, amplifying, distorting, contesting, or radically repackaging knowledge. For example, as Chapters 3 and 5 will show, urban activists and policy-makers learn in part by translating knowledge through models and documents that move through multiple spaces, from resource centres and conference meeting rooms to Internet sites and chats over coffee. This serves to remind us that urban learning through translation is not reducible to urbanism *per se*, but to a diverse host of encounters across multiple space-times.

Secondly, and crucially, this draws attention to the importance of various forms of *intermediaries*, and promotes two inseparable relational perspectives: the importance of relations between the ‘near’ and ‘far’ in producing knowledge, for instance in the ways in which the Internet or an exchange of activists or policy-makers may make distant actors proximate; and the agentic capacities of materials in producing learning, for example, the differential and contingent role of urban plans, documents, maps, databases or models in producing, shaping and contesting urban learning (Amin and

Cohendet 2004). These intermediaries matter; translation is open to the possibility of varying degrees of stability and flux. It is not the case that every encounter must always involve change, nor is it the case that every encounter must always involve the recreation of a periphery in the image of a centre. Consequently, translation positions learning as a constitutive act of world-making, rather than occurring prior to or following from engagement with the world. It positions learning as, to paraphrase Derek Gregory (2000) writing in the context of colonial cultures of travel, an *epistemology of displacement* in which travel is not a mere supplement to learning, but constitutive of it.

Thirdly, given the focus on intermediaries and distributions, the geographies of translation centre on the idea of practice. The attention to practice collapses traditional dichotomies that separate, for example, knowing from acting, mental from manual, and abstract from concrete, that continue to contour ontologies of learning (Polanyi 1969; Hutchins 1995; Wenger 1998: 48). If we reject the functionalist view of knowledge as static, bound and fixed, and argue instead for a view of knowledge as social, then the practices and materialities through which knowledge is learnt are brought into view. Learning is a process of heterogeneous engineering that demands a relational materialism; for instance, a range of materials, from commodities and shops to public art, parks and infrastructure, make a difference in the production and movement of urban knowledge (Thrift 2007; Graham and Thrift 2007; McFarlane 2009b). The attention to practice reveals the partial and multiple nature of learning. Learning is territorialized through various forms of inclusion and exclusion, meaning that it can be to varying intensities in or out of the 'proper' spaces (Law 2000). The notion of 'situated knowledge', popularized most notably by Donna Haraway (1991), underlines partiality by focusing on the embodied nature and contingencies of knowledge production. The emphasis on the situatedness of knowledge also reminds us that practice is not simply of the present, i.e. of the immediate encounter in the city, but can also be a practice of individual or collective remembering or imagination oriented towards the past or future. But while situated, this knowledge is also mobile: it is formed not simply in place but through multiple knowledges that run through and call into being various spaces.

Fourthly, and finally, a key form of learning through translation is *comparative* learning. Urbanism, for example, has always been conceived and known comparatively. I am referring here not just to explicit forms of comparison – comparing city A with city B, for instance – but implicit comparisons that to different extents constitute how claims are made about the city. When we read a study of a particular city, we often find ourselves comparing the arguments, claims and instances with other cities that we ourselves study or know of. The implication is that claims about 'the city', or about a particular form of urbanism, are an implicitly comparative claim,

because our claims and arguments are always set against other kinds of urban places, experiences, possibilities or imaginaries. And yet we rarely acknowledge this in urban studies. Here, I am thinking of comparison not as an explicit research methodology, but as an implicit mode of thought that informs how we construct knowledge and theory of the urban – in short, comparison as a crucial site in how we learn about what the urban *is*. Comparison is not just a spatial register of learning cities; there is also a temporal dimension as we learn in relation to our memories of past experiences and cities. Taken together, these four elements of translation – distribution, intermediaries, practice and comparison – identify sites and methods through which learning functions by creating or changing knowledge or perception.

Coordinating Learning

Translation always occurs in relation to multiple sites and objects, meaning that it requires coordination. Anthropologist Edwin Hutchins (1995) showed how distributed knowledge shifts learning from individual decisions or actions to allocations of collective agency, and indeed enables the agency of that collective. This requires, in Hutchins' terms, seeing learning as 'softening' the boundary between individual and environment: 'Learning is adaptive reorganization in a complex system' (Hutchins 1995: 288, 289). In these distributions, different phenomena act as organizing devices in learning, what Hutchins called 'mediating structures'. In cities, these devices might be as varied as language, models, procedures, rules, documents, instruments, traffic lights, market layouts, ideas, discourses, and so on (ibid. 290). They are not, however, necessarily forms of codified knowledge: individuals, such as the leader of an urban social movement, can coordinate different forms of tacit and codified knowledge in the communication of new ideas or strategies to members of the movement (Chapter 2). One example Hutchins used was that of the written artefact. In order to put a written procedure to work, people must coordinate with both the procedure and the environment in which the actions are to be taken. Words, meaning, document and world coordinate with each other over time, producing a kind of 'situated seeing' that makes it difficult to clearly demarcate the individual and the outside (ibid. 300), meaning that it can be difficult to locate learning as 'belonging' to one or the other.

Hutchins' discussion of the written artefact reminds us of the performative role of representation within learning, and insists that learning depends upon constantly *constructing functional systems that coordinate different domains*. Coordination is a process of sociomaterial adaptation. Fischer (2001), for example, showed how an urban planning experiment bridged a range of different interests across space through the assistance of an

interactive electronic table – acting as a coordinating tool to align different actors by enabling people to jointly design and edit an urban layout (Amin and Roberts 2008a: 362). Sennett (2008: 127–9) discussed learning as coordination in relation to ‘domain shifts’, referring to a practice or form being translated through multiple sites. For example, urban plans (e.g. of infrastructure) coordinate domains as different as science, engineering, and social policy by instigating a chain of translation between them. Sennett (2008: 201–5) provided an example of domain shift in relation to the seventeenth-century polymath Christopher Wren, who was tasked with designing a plan for London following the Great Fire of 1666. Wren drew upon his experience as a scientist in his urban plans; he drew upon the principle of circulation of blood to imagine streets as arteries and veins of free-flowing traffic, goods and people (see Joyce 2003); he drew upon telescopic imagery to imagine streets as disappearing into the distance of deep space; and he drew upon microscopic imagery to plan for urban density, for instance in the number of churches for people in different parts of the city. Wren was using the medium of the plan to coordinate domains as different as perspectives from science, including the particular ways of seeing that scientific instruments afford, the body, mobility, infrastructure, services, and the hope that a devastated London could be planned anew. These domain shifts – a kind of ‘reformatting’ (Sennett 2008: 210), or ‘learning-by-switching’ (Grabher and Ibhert 2006: 261) – constitute coordinating devices that involve relays of translation, and that can stimulate the imagination in learning new kinds of urbanism.

The list of urban coordination tools is, then, a long one, and includes sites as mundane as travel timetables or maps as well as policy documents, urban census databases, statistical databases of urban labour markets and investment histories, one-off events like policy conferences, study tours, exchanges of activists, and the town-hall meeting. They can function as what Latour (1999) has called ‘centres of calculation’ in that they combine different forms of knowledge to make calculation possible. Coordination devices are not, of course, neutral: there is often a politics to how they operate and are constituted, especially in relation to how different forms of urban knowledge are coordinated, and in the potential of that coordination to facilitate more socially just – or indeed socially unjust – forms of urbanism. As Chapter 4 will argue, a key coordinating device in this respect is the *urban forum* – a particular type of centralized urban learning environment, explicitly geared towards learning between different actors, including, for example, the state, donors, non-governmental organizations, local groups, researchers and activists. If such urban forums are often sites of exclusion, managerialism and control, they also embody the historical potential of learning between constituencies to develop not just more democratized urbanisms, but more socially just urbanisms.

Dwelling and Perception

Translation and coordination are concepts that provide an insight into how learning is produced and how it operates, but we have said relatively little so far about how learning is *lived*. It is in this context that I use the notion of dwelling to consider how learning emerges through relations between individual or group and the city. If dwelling has experienced some theoretical resurgence in geography (e.g. Elden 2001; Obrador-Pons 2003; Harrison 2007; Jacobs and Smith 2008; Kraftl and Adey 2008; McFarlane 2011a), there has been little attempt to connect dwelling to learning specifically. The work of anthropologist Tim Ingold, particularly in his (2000) book *The Perception of Environment*, is an importance exception here. Ingold (2000) examined learning in relation to skill and dwelling in the premise that people are always part of the process of coming-into-being of the world. From this perspective, a process like urban policy production occurs through attuning perception to sites, documents and events in a process of immersion. This immersion, which Ingold (2000: 154) called a 'dwelling perspective' inspired by Heidegger and phenomenology, insists that worlds are made, whether in imagination or 'on the ground', 'within the current of their life activities'. One implication is that meaning, for instance in relation to an urban policy, is 'immanent in the context of people's pragmatic engagements' with the document, environs, discourse or idea; meaning is located in the relational contexts of people's 'practical engagement with their lived-in environments' (Ingold 2000: 154, 168). As Obrador-Pons (2003: 49) wrote of the Heideggerian *dasein* ['being-there'], *dasein*: 'is always already amidst-the-world. Our involvement, that is, our way of dwelling in the world is mainly practical not cognitive. Being-in-the-world is an everyday skilful, embodied coping or engagement with the environment.' This means that people learn to perceive policy through a practised ability to notice and to respond to changing contexts: the ways in which we know, learn, coordinate, build and negotiate depend not just on the translation or coordination of knowledge, but on what Ingold called, after psychologist James Gibson, an 'education of attention' (Gibson 1979: 254; Ingold 2000: 166–7; Seamon 1993, 1998, 2000).

In this education of attention, learning through dwelling entails shifts in perception, a way of seeing that is haptic – sensed, embodied, practised – and which positions learning as a changing process of perceiving how to use the affordances of documents, objects and situations. What matters most about dwelling, as Heidegger (1971) suggested in relation to housing, is that people must *learn* to dwell. Perception creates knowledge that is practical because it is based on whatever activity the person is currently engaged in: 'to perceive an object or event is to perceive what it *affords*' (Ingold 2000: 166; emphasis in original). As Lingis (1996: 14, cited in Harrison, 2007: 631)

argued through Heidegger: 'To see something is to see what it is for; we see not shapes but possibilities.' Or, as Hinchliffe *et al.* (2005: 648) wrote in relation to how their perception of the landscape shifted in their research in urban wildlife: 'As Latour (2004) might say, we had started to learn to be affected. We were bodies in process, gaining new ways of looking, a new set of eyes (or newly conditioned retina), a slightly more wary nose, a different sensibility.' Learning, then, involves not just technical competence, but developing forms of relatedness to objects. The world, argued Ingold (2008: 1797) in a later essay, is not just occupied by already existing things, but *inhabited*, i.e. 'woven from the strands of their continual coming-into-being'. We might consider, for instance, how urban infrastructure comes to matter through particular uses and practices, as Susan Leigh Star (1999: 380) argued in relation to water infrastructures: 'The cook considers the water system as working infrastructure integral to making dinner. For the city planner or the plumber, it is a variable in a complex planning process or a target for repair.'

We are not particularly far away here from Bourdieu's (1977) work on *habitus*: the ways in which people learn specific dispositions and sensibilities over time that are particular relations to their environment, thereby enabling and inhibiting different kinds of learning and action. Ingold (2000) traced this education in the production of skill as a practice-based form of fine-tuning. There is a set of ethico-political concerns here around how people learn to dwell in the city, for example, in whether people choose to participate in fair trade and recycling, whether they practise a hospitable openness to difference as cosmopolitan dwelling, or whether and how they are involved in local activism or political engagement.

There is a range of different modes of learning through dwelling that we might identify. Amin and Roberts (2008a: 366), writing about organizational learning, identified several: craft/task knowing, involving repeated practice and close supervision; professional knowing, involving internalizing codified knowledge while developing a 'feel' for the professional habitus; epistemic/creative knowing, based less around a sense of community than a shared problem; and virtual knowing, often driven by enthusiasts with weak or anonymous personal ties. Importantly, they argue that the success of organizational learning cannot be reduced to spatial proximity: '... what determines the texture of ties or trust is not spatial proximity, but the nature of contact, intermediation, and communicative complexity involving groups of actors and entities' (Amin and Roberts 2008a: 366; 2008b). This emphasis on process rather than proximity disrupts the often bounded, 'earthy' baggage of connotations that dwelling carries – the danger in the concept of dwelling that Ingold himself has acknowledged of a stubborn connotation of 'snug, well-wrapped localism' (Ingold, 2008: 1808; and see Hinchliffe 2003; Rajchman 1998). But in unsettling the spatiality of learning through dwelling, we need to be equally mindful of the multiple temporalities of

dwelling. While dwelling focuses attention on how learning emerges through engagement with the everyday city, this does not mean that learning is reducible to the present moment. In dwelling the city, people draw upon previous experience or memories, and the multiple temporalities and rhythms of the city itself help to shape the possibilities of learning through dwelling, from rhythms of day and night, to capitalist cycles of growth, collapse, shrinkage and decay, to the rhythms of long-term migration.

We are left, then, with a theory of learning based on three interrelated ongoing processes: translation, or the relational distributions through which learning is produced as a sociomaterial epistemology of displacement and change; coordination, or the construction of functional systems that enable learning as a means of coping with complexity, facilitating adaptation, and organizing different domains of knowledge; and dwelling, or the education of attention through which learning operates as a way of seeing and inhabiting urban worlds. These three areas are inextricably co-constitutive and dependent; if learning involves the translation of knowledge across space-times, it must none the less be coordinated, and if learning requires organizational devices, it must none the less be lived through everyday practices of dwelling. But, despite the constitutive presence of spatiality to each of these three concepts, this schema of learning as translation–coordination–dwelling falls short of providing a theory of the spatialities of learning. In the next section, I foreground the spatialities of learning by asking what sort of spatial grammar might be used to conceptualize the spatialities of urban learning. It is in this context that I use the concept of assemblage.

Assemblage Space

We can think about assemblage in a variety of ways. There is a general usage of assemblage as a description of how different elements come together. This sense of assemblage contrasts with a more explicit rendering of assemblage as a concept for describing unity across differences – a name for relations between objects that make up the world through their interactions. And there is assemblage as an approach, an orientation that operates as a way of thinking of the social, political, economic or cultural as a relational process of composition, and as a methodology attuned to practice, materiality and emergence. These are not necessarily mutually exclusive positions; we can think of assemblage as both orientation to the world (e.g. a form of thinking about urban policy production) and as an object in the world (e.g. an urban policy, house, or infrastructure). In offering a conception of learning as assemblage, I am working with both these senses of assemblage as orientation and assemblage as object. But, as part of both these positions, I am also thinking of assemblage as broadly political – as a way of thinking about not just how learning is produced, but

how cities might be learnt differently, i.e. assemblage as a means of continually thinking the play between the actual and the possible (Chapter 6; McFarlane 2011b).

As a general currency, assemblage is increasingly used to connote, expansively, indeterminacy, emergence, becoming, processuality, turbulence, and the sociomateriality of phenomena. It is, then, part of a more general reconstitution of the social field as materially heterogeneous and practice-based (Schatzki 2001; Latour 2005; Massey 2005; De Landa 2006; Thrift 2007; Anderson and Harrison 2010). As a descriptive term for transgressing modernist dualisms like nature-culture, body-technology, or physical-political, it often functions as a *style* of knowledge production alert to compositional alignment and realignment (Phillips 2006). In urban geography, assemblage has been deployed in various ways: as a descriptor of sociomaterial transformation in accounts of urban siconatures, cyborg urbanisms, or urban metabolisms (e.g. Gandy 2005; Swyngedouw 2006); as a means for thinking through the contribution of actor-network theory for rethinking the city, for example in Fariás's (2009) usage of assemblage as a basis for decentring the city and rendering urbanism as a multiplicity of processes of becoming, sociotechnical networking, and heterogeneous collectivity, building on Deleuze and Guattari's (1981) notion of *agencement* – the alignment of different elements; and in relation to urban policy mobilities, including the relations between travelling policies and their localized substantiations (e.g. Allen and Cochrane 2007, 2010; Ong 2007; Sassen 2007; Fariás and Bender 2009; McGuirk and Dowling 2009; McCann and Ward 2011).

While I would resist the temptation to view the disparate usages of assemblage as a historical common field, there are, as Venn (2006a: 107) argued, a set of emphases that many uses of the concept share, including 'adaptivity rather than fixity or essence ... co-articulation and compossibility rather than linear and discrete determination ... and the temporality of processes'. Assemblage, then, has become a vocabulary for describing the productivist alignment of different sources, but is rarely itself an object of conceptual elaboration. As a general working definition I use the Deleuzian conception of assemblage as 'a multiplicity constituted by heterogeneous terms and which establishes liaisons, relations between them' (Deleuze and Parnet 2007: 52). For Deleuze, the only unity of assemblage is that of 'co-functioning: it is a symbiosis, a "sympathy". It is never filiations which are important but alliances, alloys; these are not successions, lines of descent, but contagions, epidemics, the wind' (ibid.). This means that urban actors, forms or processes are defined less by a pre-given definition and more by the assemblages they enter and reconstitute. To take an example that will feature in Chapter 5, nineteenth-century urban sanitation infrastructure made possible new discourses of public health and practices of private hygiene – the component parts were constituted through the interaction between infrastructure, discourse and practice. Or, to take a different

example, urban policy recommendations might depend upon learning particular statistical knowledges about specific domains of urban life, such as health or education – again, these assemblages exist through their interaction.

The individual elements define the assemblage by their co-functioning, and can be stabilized (territorialized or reterritorialized) or destabilized (deterritorialized) through this mutual imbrication. But this is not to say that an assemblage is the result of the properties of its component parts. It is the *interactions* between components that form the assemblage, and these interactions cannot be reduced to individual properties alone. As a form of spatial relationality, assemblage thinking is attentive to both the individual elements *and* the agency of the interactive whole, where the agency of both can change over time and through interactions. Rather than being exhausted by specific interactions, the parts may provide future resources for, or be altered by, the assemblage. The changing nature of assemblages through interactions is one of the ways in which, as Manuel De Landa (2006: 10–11) has argued, assemblages operate as wholes characterized by ‘relations of exteriority’. The other sense in which assemblages are characterized by relations of exteriority is that component parts may be detached and plugged into a different assemblage in which its interactions are different. Learning is an assemblage constituted through interactions that emerge through processes of translation, coordination and dwelling. As a spatiality of learning, assemblage departs from three broad starting points.

Firstly, as an orientation, assemblage is an attempt to emphasize that urban learning is constituted by relations between history and potential, or the actual and the possible. Here, I am referring both to the crucial role of urban histories in shaping trajectories of urban policy and economy, habits of practice, and ways of going on – and therefore the context for urban learning – and to the potential 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 therefore to create different possibilities for learning. Potential signals the relation between the actual and the possible in learning – between the city that is known and the city that might be or could have been – and thereby speaks both to the urban imagination, the sense of possibility that the city can generate under varying conditions of restraint and inequality. As Nicholas Tampio (2009: 385) has argued, assemblage, for Deleuze, was oriented towards *actualizing* ideals of freedom and equality. As a means for thinking the spatialities of urban learning, assemblage draws attention not just to an ecology of relations, but more to the *particular urban alignments* formed through the multiple spatiotemporalities of translation, coordination and dwelling. At particular moments and for certain durations, different exteriorities can enter into the constitution of assemblages, only to change or disperse at a different time or from a particular ‘angle of vision’ (De Landa 2006; Li 2007). If elements of this reading of assemblage connect with

certain conceptions of network, it is worth highlighting the broad contrasts between assemblage and the notion of network.

In relation to actor–network theory (ANT), for example, assemblages are relations not just of stability and rigidity, but of excess, flux, and transformation. This is not to say, of course, that ANT studies only emphasize rigidity and stability, but that the emphasis is often on these forms. As Ong (2007: 5) argued in relation to assemblage and neoliberalism:

Although assemblage invokes nexus, it is radically different from concepts such as ‘network society’ or ‘actor network theory’ that seek to describe a fully fledged system geared toward a single goal of maximization. ... The space of assemblage is the space of neoliberal intervention as well as its resolution of problems of governing and living.

Assemblage connotes transformation, or the work of reassembling, thereby focusing attention on the possibility of invention and potential. Invention here operates not necessarily as something new but, as Barry (2001: 211–12) has argued, arrangements in which objects or devices become:

... aligned with inventive ways of thinking and doing and configuring and reconfiguring relations with other actors. ... What is inventive is not the novelty of artefacts and devices in themselves, but the novelty of the arrangements with other objects and activities within which artefacts and instruments are situated, and might be situated in the future.

While for ANT the network delimits focus to the interaction between individual parts, assemblage is more attentive to the changing agency of both the parts and the alignments. Assemblage implies a greater conceptual openness to the unexpected outcomes of disparate intentions and activities.

However, the conception of assemblage offered here is not one that is intended to function as an alternative to the notion of network in actor–network theory. Indeed, if ANT has often been preoccupied with the stabilization of networks, the focus has been increasingly on an ‘ethos stressing fluidity, transformation and ambivalence’ (Van Loon 2006: 310). But as Legg (2009) points out, even ANT’s main protagonist, Bruno Latour, has distanced himself from the persistent tendency to connote network with rigidity and to undermine the complexity of relations such as structure/complexity or human/non-human. If assemblage differs from some ANT readings of network in that it attends both to change and rigidity, it none the less exists in similar conceptual terrain, attempting to confront the complexity of sociomaterial relationality.

Secondly, as a conception of urbanism, assemblage emphasizes how learning is produced not as simply a spatial category, output, or resultant formation, but as a process of doing, performance and events. There is no

necessary spatial template for assemblage; the spatiality of assemblage is that of sociomaterial alignment, which brings into view a range of spatial forms, from those generated by historical processes of capital accumulation and social polarization, to random juxtapositions and disruptive events, and predictable daily and nightly rhythms of activity, atmosphere and sociability. Although the specific character of assemblage is a product of interactions, assemblages are not reducible to events or practice, but must be understood in the context of their historical production and transformation. At different moments of time, learning within and between sites and actors may require different kinds of labour and are more or less vulnerable to collapse, or to reassembling in different forms. As Bennett (2005: 461) pointed out, drawing on Deleuze and Guattari (1987), this underlines the agency not just of each member of the assemblage, but of the groupings themselves: the milieu, or specific arrangement of things, through which forces and trajectories inhere and transform. The different 'parts' of a learning assemblage do not interact atomistically but as co-constituting relations that define one another. For all that this underlines the spatiotemporality of assemblage, it is worth noting here that for some Foucauldian scholars the temporality of assemblage is that of the ephemeral rather than the *longue durée* (e.g. Rabinow 2003; Li 2007; Legg 2009). For Rabinow (2003: 56), assemblage is an 'experimental matrix of heterogeneous elements, techniques and concepts' that disappears in years or decades rather than centuries. Longer lasting 'problematizations' – what he calls 'grander problematizations' – connote less a sense of emergence and more a sense of resultant formation, and their form is that of the apparatus or *dispositif* (see Li 2007; Legg 2009). In contrast, while assemblage does emphasize emergence, I do not assign any particular temporality to assemblage, nor any necessary level of stability. Rather than opposing assemblage to apparatus, I prefer to think of how forms of power, rationality and intelligibility structure and enclose urban assemblages, or – to use a Deleuzian language of assemblage – territorialize, deterritorialize or reterritorialize (De Landa 2006; Dovey 2010). Assemblages can be made singular through the action of particularly powerful agendas or groups, even if there is always, to varying extents, the potential to be otherwise. Elements are drawn together at particular conjunctures only to disperse or realign. What this begins to outline is a conception of urban learning assemblages of actual and potential urbanisms located in emergent material practice, shaped by trajectories of urban history, and which are not characterized by any necessary pre-given spatial or temporal templates.

Thirdly, and finally, urban learning assemblages are sociospatially structured, hierarchalized and narrativized through profoundly unequal relations of power, resource and knowledge. Rather than a kind of crude opposition to structural hierarchy, the spatialities and temporalities of urban learning assemblages – for instance in relation to policy or

development formations – can be captured, structured and storied more effectively and with greater influence by particular actors or processes than by others. As the examples cited above of Gandy (2005) and Swyngedouw (2006) have in their different ways vividly demonstrated, power, political economy and sociocultural exclusion are central to how urban assemblages are produced. For example, Gandy (2005) showed how the cyborg figure allows a critical purchase on connections between body, technology, exclusion and violence. Whether in the functioning – or non-functioning – of infrastructures as life-support systems; or in the sociomaterial militarization of society through the technologically-enhanced urban soldier, the destruction of civic infrastructure, or the radical extension of surveillance technologies through cities (Graham 2008, 2009); or in the ‘decybordinization’ to bare life of the marginalized through violence, impoverishment and disease, Gandy (2005: 32) showed how certain forms of urbanism have the power to destroy, reduce and enable particular forms of urban life. Swyngedouw (2006), in his critical elucidation of urbanization as the de-territorialization and reterritorialization of metabolic flows, argued that unequal relations of power allow particular actors to defend and create their own urban environments along lines of class, ethnicity, race and gender. As he wrote (2006: 106):

Under capitalism, the commodity relation and the flow of money veils and hides the multiple socioecological processes of domination/subordination and exploitation/repression that feed the urbanization process and turn the city into a metabolic socio-environmental process that stretches from the immediate environment to the remotest corners of the globe.

As I hope to show throughout the book, and examine in detail in Chapter 6, assemblage can serve as a conceptual tool for illuminating a critical geography of urban learning.

Assemblage focuses on emergence, and in doing so drives critical attention to why and how particular forms of urban learning become dominant over others, for example, why and how certain forms of knowledge travel while others are marginalized. For instance, in relation to urban policy, recent years have witnessed a dominance of very particular forms of ‘creative’ or ‘smart city’ – particular images of the learning city – which are made to travel at the expense of others (Florida 2002, 2005; Peck 2005). Hollands (2008) attempted to recuperate the discourse of ‘smart cities’ from what he saw as its elitist and exclusive imaginaries, and considered what an alternative conception of the travelling ‘smart city’ might look like. In outlining a progressive and inclusive smart city, Hollands (2008: 312) asked how do discourses of the ‘smart city’ ‘relate to the “less” smart/creative sections of the population? ... [W]hile smart cities may fly the banner of creativity, diversity, tolerance and culture, the balance appears to be tipped towards appealing to knowledge and creative workers, rather than using IT and arts

to promote social inclusion.’ In response, he provisionally offered two urban learning assemblages that a progressive smart city might strive for. First, he argued, any notion of the progressive smart city must start with people and their existing knowledge and skills, rather than beginning with technology. This requires positioning information technology to ‘empower and educate people, and get them involved in a political debate about their own lives and the urban environment that they inhabit’ (Hollands 2008: 315), an imperative that entails working hard to involve different people in both the role and the activities of information technologies. Secondly, there needs to be a shift in the balance of power between the use of technology by business, government and communities, to provide more opportunities for enhancing citizen participation and in local decision-making. In this sense, information technology (IT) could potentially be used to facilitate a ‘virtual public culture’ (ibid.). Rather than allowing the smart city label to mask underlying urban inequalities, then, Hollands (2008: 316) seeks to expose and evaluate smart city discourse and to offer an alternative conception of smart cities that ‘take much greater risks with technology, devolve power, tackle inequalities and redefine what they mean by smart itself’. ...

In his account, Hollands discussed the actual and potential urbanisms of ‘smart cities’ and set them against an alternative urbanism that is inclusive and people-centred. The specificity of assemblage here lies in this relation between the actual and possible city: as a mode of critique, assemblage is both an *analytic* that continually asks ‘how have particular forms of urban learning become dominant and made to travel, and how might urbanism have been produced differently?’, and an *orientation* towards alternative forms of urban learning. In focusing on urban production, assemblage offers one route for thinking through urban potentialities – alternative, more socially just urbanisms that might otherwise emerge and travel. Many of the urban learning assemblages I encounter in this book are translocal in nature, and while all assemblages are to varying degrees translocal, I write of ‘translocal assemblage’ to underline this relational spatiality. I purposively use ‘translocal’ rather than ‘global’ here.¹ This contrasts, most obviously, with Ong and Collier’s (2005) influential edited collection, *Global Assemblages*, which focused on the articulation of ‘global forms’ as territorialized assemblages (where ‘form’ refers to abstractable technologies as different as neoliberalism, citizenship, democracy, or international regulations). For Ong and Collier (2005: 4), assemblages are material, collective and discursive relationships, and in focusing on the specificities of global forms in particular sites they are interested in the formation and reformation of assemblages as political and ethical ‘anthropological problems’.

¹ There are broad echoes here of M.P. Smith’s (2001: 17, 19) reading of ‘translocal’ as ‘multi-sited’ formations of ‘social actors engaged in a reterritorialized politics of place-making’, although my focus, as I will make clear, is specifically on the idea of urban learning assemblages (see also Clifford 1997: 7).

In an important passage, Ong and Collier (2005: 12) clarify the relation between global form and assemblage, including the question of their spatial templates:

In relationship to 'the global', the assemblage is not a 'locality' to which broader forces are counterposed. Nor is it the structural effect of such forces. An assemblage is the product of multiple determinations that are not reducible to a single logic. The temporality of an assemblage is emergent. It does not always involve new forms, but forms that are shifting, in formation, or at stake. As a composite concept, the term 'global assemblage' suggests inherent tensions: global implies broadly encompassing, seamless and mobile; assemblage implies heterogeneous, contingent, unstable, partial and situated.

This passage is a useful specification, particularly in its emphasis on assemblage as a composite, contingent and emergent concept. And yet, despite their stated intention of avoiding characterizing forms as 'global' and assemblages as 'local', assemblage is substantiated in this account as a set of 'reflective practices' through which global forms are subjected to critical questioning. In this move, the distinction between 'global' and 'local' resurfaces. It is in this context that I am using the prefix 'translocal' as an attempt to emphasize the blurring of that scalar distinction in the production of urban learning assemblages (and in this sense, as a distinction from the scalar distinction of assemblage found in De Landa's (2006) ontology, *A New Philosophy of Society: Assemblage Theory and Social Complexity*).

As a compositional unity – not necessarily of internal coherence but of elements aligned together (Li 2007; McGuirk and Dowling 2009) – assemblages are constituted by relations of history and potential, and of doing and performance, and are structured through unequal relations of knowledge, power and resource. As a spatiality of learning, assemblage focuses attention on how translation, coordination and dwelling are spatially composed and aligned. Assemblage is attuned to the emphasis with translation on sociomaterial spatial distributions, on the territoriality or enabling capacities of coordination, and on dwelling's focus on the immersion and affordances of everyday urbanism.

Conclusion

The critical purchase of the concept of urban learning assemblage is not simply a call to know more of cities, but to unpack and debate the politics of learning cities by placing learning explicitly at the heart of the urban agenda. This learning and relearning is based on three processes: translation, or the relational and comparative distributions through which learning

is produced as a sociomaterial epistemology of displacement and change; coordination, or the construction of functional systems that enable learning as a means of coping with complexity, facilitating adaptation and organizing different domains of knowledge; and dwelling, or the education of attention through which learning operates as a way of seeing and inhabiting the world. I have outlined a notion of assemblage as a spatial grammar of urban learning focusing on the constitution of learning through relations of history and potential, doing and performance, and structured (although not delimited by) inequalities. Assemblage connotes the processual, excessive, and performative; it is a conception of the spatialities of urban learning as an unfolding of distinct sociomaterial rationalities and processes through emerging and unequal milieu. Urban assemblages are not simply a spatial category of learning, nor are they outputs or resultant formations. Instead, assemblage focuses on how learning operates through doing, performance and events. At different moments in time, particular forms of urban learning may require different kinds of labour and are more or less vulnerable to collapse, or to reassembling in different forms.

While this chapter has developed a conceptualization of learning assemblages, it is only through subsequent chapters that particular manifestations of urban learning assemblages will emerge. As Olds and Thrift (2005: 202) have written in a different context, assemblages will function quite differently across different contexts, 'not because they are an overarching structure adapting its rules for the particular situation, but because these manifestations are what the assemblage consists of'. The next chapter begins this process of applying urban learning assemblages to urbanism by charting a range of ways in which everyday urban life is produced by, demands, and is contested through different forms of urban learning.