

Creating Synergy between Sustainable Transitions and Assemblage Urbanism

by
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Declaration

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Abstract

The primary aim of this research project is to contribute to an epistemological settlement within social theory, which is necessary if transdisciplinary research is to lead the transition to sustainability. This study begins with a review of the critical literature that interrogates the social structure underpinning the efficacy and ethics of knowledge production in the social sciences. It explores whether a cosmopolitan interpretation of conjectural, historical narratives removes the demeaning binaries that conventional sociology assigns to critical literature. A study of available literature is done to determine if the logical conclusion of the critical enquiry into the epistemology of sociology is the collapse of the deeply entrenched 'primitive classification' of the social science discipline. It is suggested that this establishes the primacy of the use of the transdisciplinary, classical political economy (CPE) analytical framework within social theory. The literature on the Cambridge CPE school is reviewed and it is concluded that the core of the transition to sustainability should be the embedding of the economy into society, the fair distribution of economic surpluses and the pursuit of human well-being. This study shows that operationalising this approach requires the exploration of heterodox economic growth theory, expanded sustainable development frameworks, alternative forms of urban governance and the exploration of the relationship between critical urban theory and assemblage urbanism.

This study then reviews literature suggesting that the value of an assemblage urbanism perspective is that it allows the expansion of the methodical and analytical apparatus of critical urban theory. It is concluded that the appropriation of assemblage thinking into critical urban theory does not represent an alternative to the ontology of critical urban theory. Instead, this study reveals that the adoption of the Cambridge CPE perspective as an informant of critical urban theory allows a heterodox notion of critical thought to drive critical urban scholarship. It is suggested that the synchronisation of assemblage thinking and critical urban thinking is only possible by adopting a transdisciplinary approach. Finally, this study suggests that a provincialised perspective of significant aspects of urbanism in the Global South provides a sound base for conceptualising an African perspective of urbanism.

Opsomming

Die hoofdoel van hierdie navorsingsprojek is om 'n bydrae te lewer tot die vind van 'n epistemologiese skikking of vergelyk in die sosiale teorie indien transdissiplinêre navorsing die leiding met die transisie na volhoubaarheid wil neem. Die uitgangspunt van die studie is 'n oorsig oor die kritiese literatuur wat die sosiale struktuur ondersoek waarop effektiwiteit en etiek rakende kennisverwerwing in die sosiale wetenskappe gebou is. Die studie stel ook ondersoek in of die gebruik van veronderstelde historiese narratiewe wat aan die hand van kosmopolitiese perspektiewe geïnterpreteer word, die vernederende binêre opposisies, of tweedeligheid, wat tradisionele sosiologie met kritiese literatuur in verband bring, uit die weg ruim. 'n Studie van die beskikbare literatuur word gedoen om te bepaal of die logiese gevolgtrekking waartoe die kritiese ondersoek na die epistemologie van die sosiologie kom, op 'n verbrekking van die diep gewortelde 'Primitiewe Klassifikasie' binne die dissipline van die sosiale wetenskappe dui. Daar word aangevoer dat dit die voorrang vir die gebruik van die transdissiplinêre ontledingsraamwerk in die klassieke politiese ekonomie (KPE) bevestig. Die literatuur oor die Cambridge CPE school word ondersoek en die gevolgtrekking word gemaak dat die verankering van die ekonomie in die samelewing, die billike verspreiding van ekonomiese surplusse, en die nastrewing van menslike welstand die kern van die transisie na volhoubaarheid behoort te vorm. Die studie dui aan dat die operasionalisering van hierdie benadering die volgende vereis: die verkenning van die heterodokse ekonomiesegroei-teorie, uitgebreide volhoubare ontwikkelingsraamwerke, alternatiewe vorme van stedelike regeerpraktyk, en die verkenning van die verhouding tussen kritiese stedelike teorie en samevoegende verstedeliking.

Die studie ondersoek literatuur wat beweer dat die waarde van 'n samevoegende verstedelingsbenadering daarin lê dat dit vir die uitbreiding van die metodologiese en ontledingsapparaat in kritiese stedelike teorie voorsiening maak. Die gevolgtrekking is dat die gebruik van samevoegende denke in 'n kritiese stedelike teorie nie 'n alternatief daarstel vir die ontologie van kritiese stedelike teorie nie. Volgens hierdie studie bied die ontlening van die Cambridge CPE-perspektief, as toeligting by kritiese stedelike teorie, 'n meer heterodokse idee van kritiese denke-gedrewe stedelike wetenskaplikheid. Daar word geredeneer dat die sinchronisering van samevoegende denke en kritiese stedelike denke slegs moontlik is deur 'n transdissiplinêre benadering te volg. Laastens voer hierdie studie aan dat 'n geprovinsialiseerde perspektief op belangrike aspekte van verstedeliking in die sogenaamde globale suide 'n stewige grondslag vir die konsepsualisering van 'n Afrika-perspektief op verstedeliking bied.

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List of acronyms and abbreviations

ACCORD	African Centre for the Constructive Resolution of Disputes
ACLED	Armed Conflict Location and Event Data
AfDB	African Development Bank
ANT	actor-network theory
CPE	classic political economy
EGM	Expert Group Meeting
GDP	gross domestic product
GNI	gross national income
ICA	Infrastructure Consortium for Africa
ICT	information and communications technology
IMF	International Monetary Fund
MDG	Millennium Development Goals
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
OEEC	Organisation for European Economic Co-operation
OOF	other official flows
OSAA	United Nations Office of the Special Adviser on Africa
SDG	Sustainable Development Goals
UN	United Nations
UNDP	United Nations Development Programme

UN-Habitat	United Nations Human Settlements Programme
UPE	urban political ecology
WBG	World Bank Group

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Chapter One: Introduction, research problems, method and thesis outline

1.1 Section One: Background

For the first time in history more people live in cities than in rural areas (Beall & Fox 2009). Cities of unprecedented size have emerged and in 2010 there were nearly 4 000 cities with populations of more than 100 000 (Angel 2012) and 27 with populations in excess of 10 million (Kennedy *et al* 2015). Statistics like these typically form the basis of evidence presented in support of the symbolic generalisations underpinning the Urban Age narrative (Brenner & Schmid 2014). The second wave of urbanism was the acceleration of rural to urban migration from 1950 onwards (Beall & Fox 2009) but this is not the most thought provoking aspect of the urbanism trend. The aspects that are most significance in this study are, firstly, the natural increase of urban populations (Swilling & Annecke 2012) and the polymorphic, variable and dynamic nature of the socio-spatial dimension of urbanism in the Global South (Brenner & Schmid 2014). The second aspect is the acknowledgement that urban informality has become the new norm (Alsayyad 2004), which has been exacerbated by growing urban unemployment as a result of an insufficient economic demand for labour (Gordon & Turok 2005). The third issue is the actual governance of the delivery of public goods in urban spaces (Jaglin 2013) and the extent to which this represents the rallying of Veltemeyer's (2010) precariat to challenge the urban petit bourgeois complicity in accepting an incomplete unravelling of the effects of colonialism (Fanon 1961). These aspects potentially have significant implications for ongoing efforts to conceptualise a transition to a sustainable socio-technological epoch (Swilling & Annecke 2012).

The implicit connection to the trends in social theory – particularly economic, political and environmental sociology during the post-World War II period – inferred by the temporal dimensions of urbanism in the Anthropocene, is plainly apparent. The meta-narratives of sociology and its pseudo-disciplines of environmental sociology, economic sociology and political sociology (Lizardo 2014) are fertile grounds for spawning symbolic generalisations (Pieterse 2015; Beall & Fox 2009) that may be adequate for informing global development compacts, but are completely inadequate for the substantive realisation of the great leaps of progress promised by these types of global compacts.

1.2 The Global South: What and why?

The Global South commonly refers to the loose aggregation of low- and middle-income countries from Latin America, Asia and Africa (Beal & Fox 2009). To describe these countries crudely, they share a post-colonial development trajectory characterised by a 'late', 'blocked' or 'incomplete'

transition to a modern industrialised economy (Swilling 2013); globalisation has meant ‘little more [to them] than exploding slums and a new international division of labour’ (Swilling & Annecke 2012:115); and their post-colonial deal did not necessarily include economic sovereignty (Stiglitz 2012; Fanon 1961). The neo-liberal, macroeconomic agenda was operational before the lost decades of development that characterised the experiences of a host of African countries during the deployment phases of the Age of Information (Perez 2007; Easterly 2001). This happened despite the reservations expressed by the fractured band of Marxist-inspired critics that sought to insert class, power relations and social justice into development theory discourse (Beall & Fox 2009). The aim here is not to frame the Global South as a geographic container, but rather as an epistemological location in which to craft the provincialisation of dominating theory (Lawhon, Ernston & Silver 2014). The contextual prominence of the Global South in sustainable urban-development discourse is attained because, by 2050, the largest anticipated growth in urban populations on the planet will be in sub-Saharan Africa and the Indian subcontinent (Angel 2012).

1.3 City-making: Deliberating the production of space

Concomitantly, the trajectory of critical urban theory was dominated by the critique of schools of thought rooted in the dynamics of First World urbanism (Alsayyad 2004; Angel 2012; Swilling & Annecke 2012) and these were shown to be embarrassingly ill-equipped to deal with the fact that urban informality had become the new norm in the developing world (Alsayyad 2004; Beal & Fox 2009). The acknowledgement of this led to critical urban theorists appropriating assemblage theory from various social theory disciplines (Brenner, Madden & Wachsmuth 2011). Assemblage theory is a descriptive term used for the coming together of heterogeneous elements within an institution, place, built structure or art form (Sassen 2006; Brenner *et al* 2011). Urban assemblage theory started from a historical-materialistic notion of the city and expanded to include post-structuralists tools (e.g. Latour’s Actor Network Theory or Foucault’s notion of governmentality). It adopted a historicised and politicised understanding of urban ecologies drawn from Marx’s interest in nature and how technology and human labour dialectically constitute or produce nature (Lawhon, Ernston & Silver 2014). However, these developments have left the ‘the underlying epistemology of capital accumulation as the generative process intact’ (Lawhon *et al* 2014:501). Brenner *et al* (2011) argue that urban assemblage theory is used to place urbanism within the context of conceptualising the transition to sustainability. This use of assemblage thinking is however hampered by a failure to transcend the schism between the ways in which urban assemblages are articulated (Brenner *et al* 2011). This has implications for the way in which urban assemblages are analysed in relation to political economy on an empirical, methodical or ontological level. As a result, a fundamental shift in the political economy of the production of space has still not been realised, despite 50 years of

critical urban theory scholarship (Schafran 2014). Swilling and Annecke (2012) maintain that this has occurred because critical urban theory is still unable to accept that the ‘logic of locality specialisation’ cannot continue to be the basis for the new political economy of the production of space. The challenge now is to ‘link the analytical and methodological orientations of assemblage urbanism to the tools of geopolitical economy in ways that contribute to a genuinely critical approach to ongoing planetary urban transformations; one that is attuned not only to local specificities and contingencies, but also to broader, intercontextual dynamics, trajectories and struggles’ (Roy 2009 cited in Brenner *et al* 2011:238). This requires an understanding of development ideology and its relation to policy.

1.4 Motivation

1.4.1 The evolution of development ideology

The evolution of the ideology underpinning United Nations development policy post World War II is encapsulated and illustrated by the contents of the Poverty Reduction Strategy Plans, the Bruntland Report, the Millennium Development Goals (MDGs), the body of theory underpinning the adoption of the Human Development Index, the United Nations Habitat Agenda (I and II) and the research output of the plethora of United Nations institutions since 1945. The ideological pendulum swung from the ‘crass green-washing’ of the Bruntland Report to a ‘recasting of the plethora of humanist, alternative development perspectives’ (Pieterse 2012:4) as in the Koyoto Clean Development Mechanism (McMichael 2009 cited in Pieterse 2012:4). There was consensus in the aftermath of World War II that the starting point for development ideology should be the need to ensure full employment to escape the consequences of the Great Depression. It was also agreed that the state must play an active economic role (Sachs 2007). There was however fundamental divergences in how this was to be achieved (Sachs 2007). The effort to bridge this ideological gap by following a diluted reformist agenda has underpinned the rise of endogenous growth theory, institutional economics and the capability theory of development towards the end of the 20th century (Swilling & Annecke 2012).

1.4.2 Imagining the development policy required post 2015

The adoption of the post-2015 Sustainable Development Goals represents the start of the next global development policy cycle, and over the next few years there will be a host of extremely important engagements (Pieterse 2015a). It is, therefore, critical to identify the ideological position that should inform this development policy formulation cycle. Pieterse (2015a) suggests that this policy cycle is critical if a transition to sustainability is to be realised and it must be informed by a

unique Africa perspective of urbanism. One of the framing propositions of such a perspective being that the trend of urbanism cannot be separated from the mechanics of global political and economic activity. Important then is the analyses of Africa's recent macroeconomic performance and the potential impact this could have on the outcomes of Cop 21 and UN-Habitat III, as well as the mould used to cast the capital and trade architecture on which African governments will rely in their attempts to realise the macroeconomic goals of Agenda 2063 (and Agenda 2030) (Achieng 2014).

This development policy cycle has to take cognisance of the fact that while Africa's combined gross domestic product (GDP) has increased tenfold since the 1990s (World Economic Forum 2015), levels of poverty, GDP per capita and income levels have not changed significantly from those of the lost decades (Saad-Filho 2013). Burgis's (2015) exposure of Rentier capitalism across the African continent reinforces the validity of Pieterse's (2015) assertion that there has to be research into the potential consequences of attempting to realise the African Union's Agenda 2063 and Agenda 2030 macroeconomic objectives without due consideration of the inadequacies of neo-liberal efforts. In addition, the effects of blocking the implementation of developmental policies have to be considered, as has the fact that the polycrisis will enforce the need to pursue a growth path characterised by resource and impact decoupling (Swilling & Annecke 2012). The work of Saad-Filho (2013), Burgis (2015) and others confirm that the consideration of how Africa is disadvantaged by the ideology which frames its current geopolitical economic role must inform this development policy cycle.

Analytical tools informed by evolutionary economic theory (Swilling & Annecke 2012) have dominated sustainable transition literature, along with endogenous growth theory, and these have offered the growth of the knowledge economy as the alternative for the much-derided, neo-classical growth models. This prioritises capital accumulation in the technology sector and investment in capabilities. For the purposes of this thesis, one has to caution against the use of analytical tools that are rooted in evolutionary and endogenous growth theory without the required provincialising. Provincialising knowledge is not about rejecting European thought; instead it means accepting that thought is related to place (Chakrabarty 2007 cited in Lawhon *et al* 2013).

1.4.3 Situating urban assemblages into sustainable development ideology

It is necessary to repose the key consensual concepts for the post World War II period so that they are relevant to the Anthropocene (Sachs 1999). These concepts include: the need to democratise access to capital markets to exorcise the tragic consequences of the Great Recession and to mitigate any effects it may still have; recognising that the state needs to play a proactive role in the manipulation of factor markets to create the economic constitutionalism which supports sustainable urbanism; and planning, which is necessary to prevent the urban proletariat from monopolising access to scarce ecological, economic and social resources. These consensual concepts demonstrate that urban assemblages are inherently multi-structural and that there is a real link between the political economy and the production of urban spaces established through macroeconomic policy's influence of aggregate demand deficiencies in factor markets. The state in its proactive role must take into consideration that the end point does not have to be rooted in Marxist Scientific Socialism or any other economic tradition that offers the promise of a fail-proof linear causality from policy implementation to economic growth. In addition, the state must ensure that resources and impact decoupling does not serve to further entrench the 'logic of locality specialisation' (Swilling & Annecke 2012). Avoiding this will require re-imagining the analytical tools used in the conception of a transition to sustainability in the global context and the need to resolve the challenges facing urban assemblage theory. The creation of the required analytical framework, as described earlier, is the subject of Chapter 3.

Two courses completed during the Postgraduate Diploma in Sustainable Development, namely the Sustainable Cities and Development Theory modules, are especially relevant to this work. Exposure to and the subsequent exploration of political economy and critical urban theory literature is what roused my interest in this research space. A quick scan of public media reveals to even the most casual observer that contemporary political debates centre on inequality, the persistence of the intergenerational transfer of disadvantage, the loss of confidence in the integrity of governments, the state of the economy and the plight of the poor. Using some of the analytical tools developed in Chapter 3, I attempt in Chapter 4 to make a contribution to resolving Brenner *et al's* (2011) assemblage urbanism challenge in the African context. This study draws on aspects of my lived experience in an African country with one of the highest rates of inequality in the world as well as my experience working in local government.

1.5. Section Two

1.5.1 Research problem and objectives

Leedy and Ormrod (2001) suggest that all researchers should clarify the objectives of their research and pinpoint the actual problem to determine whether the amount of energy and time that will be spent on their research project is worth the effort. This is important as research does not exist in a vacuum, but is shaped by events of the real world: by intellectual traditions and philosophical ideas that shape social sciences and how the researcher engages with the subject matter (Dos Santos & Wagner 2014). Mouton (2001) suggests a three-step approach to translate research ideas – often drawn from abstract, grand or middle-range theories (Dos Santos & Wagner 2014) – into research problems. This was useful for ensuring that my research problems were not a ruse for achieving self-enlightenment, or constructed so that the outcome of my research resulted in a ‘yes’ or ‘no’ answer (Leedy & Ormrod 2001) or a statement of objective truth.

Conducting a preliminary literature review is widely cited as being the crucial first step in ensuring the research problems direct the research into explaining why things are the way they are and for delineating the front lines of the existing arguments of advocacy (Mouton 2001; Leedy & Ormrod 2001; Dos Santos & Wagner 2014). This is critical because up to this point, the researcher’s mental model of the topic may be the result of analogical thinking (Jones *et al* 2011), which is acceptable if its limitations are acknowledged. This thesis is the outcome of a qualitative research project in which a literature review serves as the primary research method. Qualitative research is typically multifaceted, with emphasis placed on the complexity of the multiplicity of perspectives that emerge from the application of this approach to a research project. This multiplicity of perspectives emerge from the review of the relevant literature, as applicable to the research idea, thus serving as the unit of analysis, as per step two of Mouton’s (2001) process. The final step is to pose the research objectives as a set of research questions (Leedy & Ormrod 2001:51).

The research questions are as follows:

Table 1.1: The research questions and sub-questions

	Research questions
1	Is the critical enquiry into sociology leading to the acceptance that a return to the analytical framework of classical political economy is best suited to postmodern nature-society relations?
2	What suite of analytical tools is required to ensure that classic political economy informs the transition to sustainability?
3	How do these tools need to be provincialised?
4	<p>How could one link the analytical and methodological orientations of assemblage urbanism to the tools used in the analyses of the geopolitical economy, in ways that contribute to a genuinely critical approach to ongoing African urban transformations that are attuned to local specificities and the broader inter-contextual dynamics of the transition to global sustainability? (Brenner <i>et al</i> 2011)</p> <p>Sub-questions emanating from question 4</p> <ol style="list-style-type: none"> 1. Does assemblage urbanism represent an alternative ontology to that of critical urban theory? 2. Does assemblage urbanism allow for a more unified approach to critical urban scholarship? 3. How does assemblage urbanism contribute to finding new urban governance configurations? 4. How does assemblage urbanism contribute to the trend of re-inserting politics into critical urban theory?

These questions can be dissected into a number of different parts. Mouton (2001), Leedy and Ormrod (2001) and Bryman *et al* (2014) agree that research questions should be continually re-evaluated, re-assessed, tested and refined. This is particularly important in the social sciences, which tend to be affected by the complex methodology, simple ontology curse (Geels 2011).

1.5.2 Thesis outline

The introduction in Chapter 1 provides the context for the main overarching research objective of this thesis, which is to contribute to ongoing efforts to reset the provincialised programmatic research agenda of sustainable transition theory and urban assemblage theory. Detailed descriptions of the background, rationale, motivation and research objectives are provided and the research questions are outlined.

Chapter 2 provides a detailed description of the meta-theoretical framework which guided this study. It is suggested that the meta-theoretical framework of social science research in the Anthropocene must be premised on (1) the synchronisation of scientific and philosophical ontologies; (2) the supplementation of the critical realist perception of knowledge with critical complexity; and (3) the acceptance that linear causalities are a myth. It is concluded that this is necessary for transdisciplinary research, which requires the synthesis of information drawn from various sources. This is used as a lens in the review of the different approaches to qualitative research. It is concluded that a systemic literature review is a suitable research methodology for this study.

Chapter 3 reviews the literature that is critical of the efficacy and ethics of knowledge production within the social sciences and explores the new cosmopolitan perspective of classic and contemporary sociology. It is concluded that a return to a classic political economy would provide the analytical framework to make transdisciplinary social theory research possible. The significant aspects of urbanism, identified in Chapter 1, are then used as a lens in the review of the literature on the revival of classic political economy. It is concluded that the Cambridge classic political economic tradition should form the bases of the political economy of the transition to sustainability. This tradition embodies the end of value-free economics, the ethical distribution of economic surpluses and environmental externalities, embeddedness and well-being. Chapter 1 reviews the suite of social theory analytical tools, which are needed to operationalise this political economic framework. These tools are: Geels's (2014) triple-level embeddedness framework; Dosi, Napoletano, Roventini and Treibich's (2014) Keynesian plus Schumpeter economic growth theory model; and a synthesis of Seghazzo's (2013) and Allen's (2009) sustainable development paradigms.

Chapter 4 reviews the assemblage urbanism literature. It is concluded that the assemblage urban perspective does not represent an alternative to critical urban theory. Instead, it is suggested that assemblage urban theory revives the transdisciplinarity of the political economic framework underpinning critical urban theory. The literature on efforts to adopt a more unified approach to

critical urban theory is reviewed. It is suggested that the adoption of the Cambridge tradition of political economy described in Chapter 3 as the bases of assemblage and critical urban theory would enable urban scholarship to move beyond the discursive nature of the Agency/Structure and Analytical/Philosophic debates. The conclusions of Chapter 3 are then used when reviewing literature relating to how assemblage urbanism can assist in the development of an African perspective of urbanism. This research suggests that an African perspective of urbanism would be premised, firstly, on the exploration of expanded notions of demographic transitions, demographic dividends and migrations (Bocquier & Costa 2015). The second premise of this African perspective of urbanism is that Jaglin's (2013) alterative service-delivery configurations should be situated within the larger recursive projects of the transition to the green economy (Khan & Mohamed 2014) and it should achieve authentic North–South convergence (Saad-Filho 2013). Lastly, it is suggested that it is possible to reintroduce politics into urban thinking, if one uses Fanon's (1961) descriptions of how to unravel the Manichean world of colonialism as the basis for applying the actor-network theory in assemblage urbanism.

Chapter 2

2.1 Introduction: Ontology, epistemology and theory

Sousa (2010:456) provides a fitting introduction to this chapter by asserting that ‘any research inevitably builds on a particular ontology (i.e. how the world is), epistemology (i.e. how the world can be known), methodology (i.e. what methods to use in the world’s inquiry), and etiology (i.e. what are the world’s underlying causes)’. The delineation of the meta-theory for this thesis is described in the following section.

2.2 Ontology

It is necessary here to sidestep the ontology versus ontography debate and reinforce the argument against Putnam’s assertion that ‘ontology is dead’ (Lawson 2004). The value of attempting to describe the philosophical and scientific ontology of this thesis is to provide ‘clarity and directionality’ (Lawson 2004:4) to the analytical reasoning which drives this thesis towards its objectives. All researchers inevitably rely on some assumptions concerning the ‘way in which the world is thought to be’ and the ‘nature or substance of the world, that is, or the (kind of) “things” that exist in the world’ (Sousa 2010:460).

In the Anthropocene, social science is no longer concerned with the enquiry of the social world, nor is it concerned with the enquiry of the natural world. It is concerned with ‘societal emancipation’ (Collier 1998 cited in Sousa 2010:460), ‘the process through which individuals and groups become freed from repressive social and ideological conditions; in particular those that place socially unnecessary restrictions on the development and articulation of human consciousness’ (Alvesson & Willmott in Sousa 2010:460). It represents the rejection of ‘a deeply entrenched form of ‘Primitive Classification’ (the ‘Comtean schema’) that governs the way in which sociologists conceive of their place in, and engage with other denizens of, the social science landscape’ (Lizardo 2014: 983). Like a juror attempting to be objective in a case that enjoys massive public exposure, social scientists in the Anthropocene would be hard-pressed to argue that they have not been exposed to and enraptured by this. This form of investigation into generalised features of our experience, including human activities (as described in the Anthropocene narrative), describes my philosophical ontology (Lawson 2004).

Lawson (2004) emphasises the importance of lay theorising in his defence of scientific ontology. That is to say, that the disaggregation of those ‘theories belonging to a top rate conceptual system (natural science properly formalised) that provide serious or reliable accounts of what the world contains’ (Lawson 2004: 7), often reveals that it is posited on the observations of people operating

outside of the theory-generating conceptual system (Milburn 1996). This becomes very important within the context of the division of meta-theories that are diametrically opposed to positivism, namely postmodernism and critical realism. This study draws on Latour's (2007) indictment of postmodernity and Lawson's (2004) defence of lay theorising. The scientific ontology used in this study can be summed up as follows: that reality has been shaped by social, political, cultural, economic, ethnic and gender values; and these are socially constructed entities that are under constant internal influence (Scotland 2012).

The explanation of how the required synchronisation of these two types of ontologies are conceptualised is drawn from work done within the field of ontology-based 'app' development in the multimedia domain. The demand for real-life scenario semantic web applications, semantic information retrieval and biomedical information systems, and the geo-spatial applications that allow sharing, integration and interoperability of different knowledge resources, have driven research towards the development of procedures for ontology matching, alignment and merging (Todorov *et al* 2013). The explanations for the impaired collaborative functionality of these apps relates to the decentralised nature of their creation, which results in mismatches in terms of scopes and application purposes (Todorov *et al* 2013). Todorov *et al* (2013) suggest that syntax and terminology errors are responsible for the impaired collaborative functionality of these apps. The proposed solution is the adoption of a general purpose, reference ontology complemented by ground truthed background knowledge (Todorov *et al* 2013). For this research project it is suggested that this development represents the exact ontology needed in the Anthropocene.

2.3 Epistemology

Any qualitative research that aims to contribute meaningfully to the social sciences, as practised in the Anthropocene, must be inter-, intra- and transdisciplinary if it is to avoid the complex methodology, simple ontology curse. The need to have to explain this is unfortunately a symptom of the way in which the Comtean schema has succeeded in creating 'a sense of pseudo-interdisciplinarity, trapping sociologists within a closed disciplinary circle of their own making' (Lizardo 2014:983). This needs to be untangled.

In Kuhn's (2012) reflection on the 'definition of paradigm' debate (see Gokturk n.d. and Morgan 2007 for good descriptions) described in *Second Thoughts on Paradigms*, he concludes that the 'disciplinary matrix' can be used to replace the use of paradigm in his seminal text *The Scientific Revolution*. Morgan (2007) argues that Kuhn explicitly equates 'paradigm' with 'disciplinary matrix' in this text. Morgan (2007) asserts that this has implications for understanding the concept in the context of conducting both qualitative and quantitative social science research. A mixed

method approach is not used for this research project. Kuhn's description of what he meant by paradigm in *The Scientific Revolution* is here embraced.

The paradigm or disciplinary matrix consists of 'the practitioners of a scientific specialty bound together by common elements in their education and apprenticeship' so 'that they see themselves and are seen by others as the men [sic] responsible for the pursuit of a set of shared goals, including the training of their successors' and 'serving as producer and validator of sound knowledge' (Kuhn 2012:2, 4). The correspondence rules, which allow for interdisciplinary communication across these disciplinary matrixes, are based on the acceptance of symbolic generalisations (Kuhn 2012). Symbolic generalisation, models and exemplars are identified as the three components that drive the mechanics of each disciplinary matrix (Kuhn 2012). The degree to which human activity is impacting on the environment (UN IPCC 2014; Swilling & Annecke 2012), the rate of urbanisation (Angel 2012; Beall & Fix 2009) and the reach of the 2008 financial crises (Stiglitz 2012) is incomparable in scale (but not typology) to events of the Holocene, particularly when viewed from a complexity perspective (as developed by Cilliers (1998)). The argument is that the collective impact of human activity on the environment has reduced the efficacy of the symbolic generalisations (including conceptions of nature) and the exemplars of the science disciplinary matrix used to develop the response to these issues.

Kuhn (2012:2) asserts that the philosopher must 'construct a set of correspondence rules adequate, in conjunction with known symbolic generalizations, to account for them all' if s/he wants to improve the group's theory and must confront head-on the 'arduous nature' of interdisciplinary communication. This, together with the acceptance of the need for symmetrical anthropology (Latour 2007), has formed the basis for the sustained attack on the positivist and modernist vision of science from proponents who sought to draw attention to the real social processes (and limitations) involved in the production of scientific knowledge (Archer *et al* 1998; Kant 2009).

After a critical evaluation of the real social processes and the limitations of the symbolic generalisations and exemplars of the discourses, as well as the need to generate theory that simultaneously transcends the positivist, modern and hermeneutical positions, it was decided that critical realism, supplemented by critical complexity, is the epistemology deemed best suited for this thesis. The distinguishing features of critical theory, namely, the dialectal enquiry of dominant ideology and practice and the tendency to 'creatively borrow from different schools of thought' (Khan 2010), enhanced by the 'preservation of the rational insights of both the anti-monistic and anti-deductivist tendencies in the philosophy of science' creates the epistemology delineated by critical realism (Archer *et al* 1998). This proves useful for facilitating the process of conscious

evolution of human natures called for by Ehrlich (cited in Swilling & Annecke 2012) and social theory synthesis discussed by Moravcsik (2003). This is possible only via inter- and intra-paradigmatic research, which the deployment of the epistemology described allows. It has, however, not yet been shown how it will facilitate transdisciplinarity.

This can be demonstrated by reposing the creation and validation of knowledge by the practitioners of a scientific speciality (Kuhn 2012) as the outcome of a division of labour. This division of labour is a necessary and universally applicable consequence of certain aspects of human nature (Smith 2009; Latour 2007). Knowledge, construed as a commodity produced by the division of labour, is a necessary condition for the existence of human life, without which there can be no material exchanges between humans and nature (Marx 2011). Aside from, and independent of, the contested description of the real social processes which guide the way in which these material exchanges occur, the application of human power is ‘an eternal nature imposed necessity’ (Bonner 1993; Marx 2011:4). The evolutionary transfer of the potential to engage, physically and metaphysically, with and make sense of this natural imposed necessity is encapsulated in our physiology (Bonner 1993) and consciousness (Ehrlich 2002). This ensures that the knowledge produced by its application, regardless of the nature of its application (by the practitioners of a scientific speciality or not), produces credible knowledge relevant to the material exchanges between humans and nature.

Transdisciplinarity is concerned with expanding the cognitive apparatus of scientific communities to accept that it is no longer possible to believe that there is only one reality which is fully describable and understandable (in terms of pure reason) (Kant 2011 [1781]; Neef 2005). This fact was proved irrefutably when quantum physics demonstrated that quantum entities are subject to laws that are substantially different from those governing the macro-physical world.

Transdisciplinarity is possible only if scientists explicitly acknowledge the plurality, the messiness and the inevitability of the exchanges between all humans and nature (Marx 2011). Kuhn’s (2012) assertion that the creation of valid knowledge only occurs when the unique cognitive representations of those marginalised by the academic/practitioner relational matrix are considered in research and practice, is indicative of what transdisciplinarity is.

Researchers who embark on a research project with an epistemology rooted in critical realism, must take heed of the epistemic fallacy, i.e. the lack of acceptance of the fact that knowledge does not have to predicate the existence of all things and causal laws (Archer *et al* 1998). Concomitantly, it is important that the awareness of the epistemic fallacy does not steer the researcher towards ‘a relativist kind of holism’ (Audouin *et al* 2013:2) or the objective truth (Swilling & Annecke 2012).

This is the inevitable end point of the attempt to move beyond the ‘relativism foundationalism’ schism, which is what critical realism and critical complexity seek to accomplish.

2.4 Etiology

Critical realism dispenses with the ‘determinism and randomness advocated by positivists and postmodernists, respectively’ in their attempts to make sense of the several and interrelated structures, powers and tendencies that somehow (causally) govern the world (Fleetwood 2001 cited in Sousa 2010). One of the reasons why the interrogation of multi-causality is difficult is that the world, in part, is subject to the exercise of human agency (although this agency is not entirely capricious and is liable to change) (Fleetwood 2001 cited in Sousa 2010). Another is that this agency encompasses the fact that the complexity of the multi-causality of the world is generated, in part, by the way in which we describe it (Woermann 2010). More damaging, perhaps, is the way in which these descriptions are defended.

Sousa’s (2010) statement that critical realism rejects any notion of associational thinking, however, is flawed. Sousa (2010) notes that positivists tend to confuse temporal contiguity with causality. In the Anthropocene, the ethics of critical complexity mitigates the negative effect of this practice. In Section One of this thesis, it was confirmed that there is a relationship between development theory and the production of urban space. In this research project, the temporal profile of the second wave of urbanism is used as a frame for describing the evolution of development theory, without affirming the consequence or the falsification of the relation between the two. This is demonstrated by the rejection of the linear etiology of Marx’s scientific sociology, but not his inductive reasoning that the economy and society are intimately connected. The ontology and epistemology relied on for this thesis permits this sort of abstraction (Sousa 2010).

2.5 Methodology, research design and approach

The research design, approach and methodology is of importance as it describes the researcher’s values underpinning the research project. The research objectives, the research questions, the ontological and the epistemological framework detailed in the proceeding section and the proposed structure of the thesis provide the cues for determining the research design, approach and methodology. The research method that is best suited for a thesis of this nature is a literature review, which is generally an authentic, informative, critical and useful synthesis of research and writing on a particular topic (Bolderston 2008). Literature reviews can identify what is known (and unknown) in the subject area and the areas of controversy or debate, and help formulate the questions that requires further research (Bolderston 2008; Cronin, Ryan *et al* 2008; Hagen-Zanker

& Mallett 2013). From the widely available list of the type of literature reviews possible (Petticrew & Roberts 2006), it is evident that literature reviews conducted for inter-, intra- and transdisciplinary research projects must, of necessity, borrow creatively and opportunistically from all the different types of literature reviews.

The integrity of this study would be at risk if the reader were unable to identify the knowledge types and forms employed. Audoin et al (2013) argue that it is important to declare the normative context governing the research scope of a research project. It is therefore important to identify which type of literature review this study will employ. To this end, Hagen-Zanker and Mallett (2013) propose a reflexive and innovative version of a systemic literature review, which is deployed in this thesis. It is designed to counter claims that orthodox literature reviews suffer from a tendency to be framed as ‘a neutral, objective and comprehensive approach to evidence retrieval, grading and synthesis’ (Hagen-Zanker & Mallett 2013:1). Further critique is that there is often a strong bias for selecting particular literature and there is usually not a predetermined transparent way to assess retrieved data, evidence or information (Hagen-Zanker & Mallett 2013:1).

Systematic literature reviews have traditionally been associated with answering a specific question, testing a hypothesis (Petticrew & Roberts 2006 cited in Kelly 2009) and using integrative reviews and meta-analyses, which rely heavily on statistical tools (Kelly 2009) to aggregate the information from many papers into one statistical rule (Bolderston 2008). This method is employed mostly within the medical and natural sciences (Bolderston 2008; Hagen-Zanker & Mallett 2013). The variation of systemic literature reviews contemplated for this thesis was developed specifically for use in the field of international development studies, where there is no uniformity in the way in which information is presented (Hagen-Zanker & Mallett 2013). Instead of adhering to the rigid traditional systemic review methodology, the approach here ‘involve[s] a mixture of compliance and flexibility: compliance with the broad systematic review principles (rigour, transparency, replicability) (Bolderston 2008) and flexibility to tailor the process towards improving the quality of the overall findings and the circumstances of the researcher’ (Hagen-Zanker & Mallett 2013:6).

2.5.1 Synthesising theory

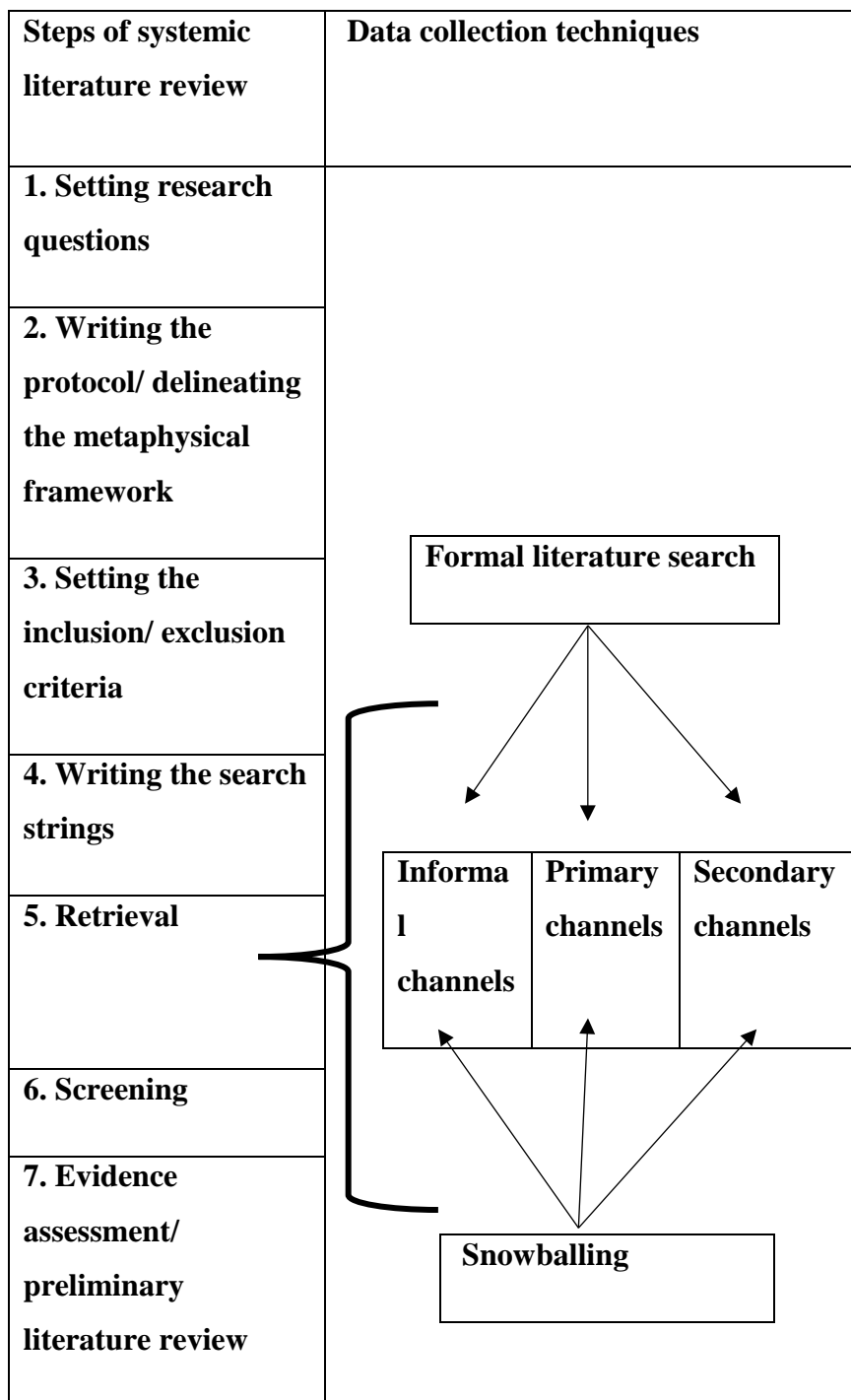
The success of any literature review is largely dependant on choosing a method which is best suited for the lines of enquiry of the research project (Leedy & Ormrod 2001; Starks & Trinidad 2007; Bryman *et al* 2014). This is especially true for research projects that concentrate on the analyses and advantages of secondary data (Bryman et al.2014). Systemic literature reviews require the synthesis of information and theory generated by different conceptual systems. Schumpeter’s (2011) analyses of Marx in *Capitalism, Socialism and Democracy* is a good example of how this is done.

Schumpeter (2011) warns that the synthesis of information is difficult and that it must be approached with caution. Schumpeter (2011: 45-47,49) suggests that the following guidelines be adhered to:

1. In an age where there is an inexorable necessity of specialisation, the need for synthesis is a must in the field of social sciences;
2. Synthesis in general is difficult as the coordination of methods and results of different lines of enquiry may convey a richer meaning of social life, at the cost of efficiency;
3. The dangers of treating all historical events and social institutions purely as variables or purely as data is ever present and it is important that the analytical setup is as broad as the subject matter; and
4. Synthesis must never be interpreted as being a problem-solving engine.

Finalising the research design, which consists of the methodology, the data collection and data analyses techniques requires a re-examination of the 'heart' of this thesis, together with the intended audience of the research output. The research design for this thesis is presented schematically in Figure 2.1.

Table 2.1: Schematic representation of the research design



(Source: Author. Steps of systematic literature reviews taken from Hagen-Zanker & Mallet (2013); data collection techniques extracted from (Kelly 2009); and analyses techniques from Starks *et al* (2007).

Chapter 3: Delineating a political economy perspective to be used for re-orientating sustainable transition analytical tools

3.1 Introduction

With critical realism and complexity serving as the meta-theoretical framework of choice within the study of transitions, it is critically important to constantly evaluate the state of social theory and the analytical tools used within this field. The constant review of knowledge production and its use is a critical component of this project. This is accomplished using a transdisciplinary approach in which the second wave of urbanism is seen as an example of a phenomena which is disruptive of the symbolic generalisations underpinning social science. Chapter 3 begins with a description of the foundational propositions which frame the discipline of sociology. This study proposes that using conjectural historical narratives rather than focusing on antecedent individuals or schools (Palmeri 2008) is useful to correct the way in which sociology has ‘led us systematically away from the study of humans acting in society’ (Stinchcombe 1984). The use of conjectural historical narratives viewed from a new cosmopolitan perspective, allows for an enquiry that is not fixated on tracing the occurrence and reiteration of ideas, but rather on the transformation and recombination of features of form (Palmeri 2008). It represents a form of enquiry that is consistent with the need to ensure that the ‘mature’ classic and ‘immature’ contemporary canons of sociology do not result in social and ‘ideological conditions that place unnecessary social restrictions on the development and articulation of human consciousness’ (Alvesson & Willmott 1992 cited in Sousa 2010:460).

Section Two explores the trend towards the re-imagination of the epistemology of classic sociology and political economy. With the symbolic generalisations and exemplars of the disciplines of sociology having been rendered incapable of dealing with the problems of the Anthropocene, it follows that the division of labour of knowledge production, and the analyses thereof, must change. This project stems from the realisation that there are points of contact between classical sociology and neo-liberalism (Nicholas 2014). This intellectual apprehension contributes to making the growing concern about the subject matter of the discipline, the core tenet of sociology (Elliot & Turner 2013). This study explores why the collapse of the Comtean schema (Lizardo 2014) requires the collapsing of the pseudo-disciplines of sociology into political economy. It is argued that while the epistemology of classic political economy (as led by the Cambridge revival) focuses on embedding the economy into society, the fair distribution of economic surpluses and the pursuit of human well-being, it has not moved beyond being merely a metaphysical position. If it is argued that new economic theory must embrace the realist turn of classic political economy, the significant aspects of the second wave of urbanism should serve as the signposts of this intellectual project.

Section Three explores embeddedness, which is the heuristic concept first conceptualised by Polanyi in 1946 and developed further by Granovetter in 1985 (Kaup 2015). It has regained prominence and its popularity, Kaup (2015) argues, is due to the ease with which it (correctly) allows one to avoid the Parsonian trap, which sees the separation of the economy and society. As intended, it offers the opportunity for the progress made during the first and second waves of the revival of classic political economy to be translated into a shift away from orthodox economic theory. It is generally accepted that while Granovetter's embeddedness is linked intrinsically to Polanyi's, it is markedly different (Krippner 2001). It is suggested here that Geels's (2014) triple-level embeddedness framework allows for the reconciliation of the two definitions of embeddedness. The usefulness of Geels's (2014) framework may be augmented by exploring the importance of the plurality of the centres and ontology of innovation, and situating the directionality of the state's interaction with industry within the politics of historical global capital flows.

Section Four explores the different camps of economic growth theory. Kurz and Salvadori (2006) suggest that the drive to instil the sociological turn in economic growth theory is derived from economists misunderstanding embeddedness: this has resulted in history being understood as a product of human action, but not of human design. Before one can develop an alternative economic growth theory, it is important to understand the body of work on capitalist developmental state praxis. Swilling and Annecke (2012) draw on endogenous economic growth theory and suggest that innovation should be the focus of the capitalist developmental state in the Anthropocene. Drawing on endogenous growth theory is worrisome, however, as it potentially prematurely severs the ties between growth theory and the historic capital accumulation thesis without providing an alternative guide to economic growth other than neoclassical models (Pack 1994). The suite of Keynes plus Schumpeter's evolutionary, agent-based, economic growth models are useful; these study the effects of a rich ensemble of innovation, industrial dynamics and macroeconomic policies on the long-term growth and short-run fluctuations of the economy (Dosi *et al* 2014). The shortcomings in the way in which evolutionary and endogenous economic growth theory considers demand-side dynamics must, however, be considered when applying these types of economic growth models. Section Five delineates an expanded sustainable development framework and Section Six concludes this chapter.

3.2 Section One

3.2.1 What is worth defending in classic sociology?

In Ings's (2014) indictment of the continued defence of classic sociology, he says that sociologists do not direct their critiques of sociology at the serious foundational problems. He identifies the central problem as being the very nature of sociology itself as a historically situated form of knowledge production, plagued by methodical reductionism (Swilling & Annecke 2012; Pendenza 2015), methodological nationalism (Pendenza 2015) and methodical excludability (Sitas 2006). This means that the focus of the critical enquiry is set to remain a debate about whether the indictment of classical sociology is based on misconceived myths about it. Giddens (1976) describes these myths as having conservative origins: the myth of the problem of order and the myth that there is a noticeable schism in classic scholarship.

3.2.2 Sociology as a discipline: Moving away from social theory

Stinchcombe (1984) argues that the origin of sociology as a discipline led us systematically away from the study of humans acting in society. He (1984) suggests that a discipline consists of a method, theory and substance. Stinchcombe (1984) believes that a discipline has a social structure with the following features: (1) it distributes prestige to cultural objects, such as scientific papers, by a set of standards that are maintained by debate and consensus; (2) it penetrates the administrative systems in which scholars or other producers work, so that money and power are dependent on the prestige derived from cultural production; and (3) it lays claim to a jurisdiction of cultural production within which its standards are formed. The authoritative status of this social structure is maintained by consensual-debate (Stinchcombe 1984). This is the starting point for the contemporary trends in social theory that relate to the review of the efficacy and ethics of knowledge production within social sciences (Nowotny, Scot & Gibbons 2003; Swilling & Annecke 2012; Inglis 2014; Pendenza 2014).

This means that sociology will remain a discipline as long as the process of knowledge production is reliant on the oversimplification of the analyses of cultural objects because this enables and maintains the consensus on which the discipline works (Stinchcombe 1984). When confronted by the messiness of social interaction, sub-disciplines tend to be formed, based on the determination of a suitable methodology and theory. This serves to insulate sub-disciplines from sources of information that could potentially question the credibility of the knowledge produced (Stinchcombe 1984). Lizardo (2013) identifies these sub-disciplines as being: economic sociology, political sociology, cultural sociology, historic sociology, cognitive sociology, socio-linguistic sociology and

social psychology. Based on Sassen's (2006) assertion, one could also add critical urban sociology. Collectively, these constitute the Comtean schema. The polarising effect of the debate on the relevance of classical sociology is currently evident in the realms of African renaissance literature. Achieng (2014) argues that a sociological understanding of African agency cannot be removed from the understanding of the concept in the classical sociological sense. Sitas (2006), on the other hand, is adamant that it is essential to break free of the founding rules, as described in the canons of classical sociology, to realise an African renaissance. At issue here is the degree to which the classics and the reproduction of a particular interpretation of these, prevents the consideration of social engineering interventions that have an empirical basis in both the classic and contemporary sense. Finding a resolution is key to conceptualising a transition to a more sustainable future (Swilling & Annecke 2012).

3.2.3 The cosmopolitan ontology of the classics

The dialectal debate of this issue is one of the central tenants of the new cosmopolitan movement, which is generally distinguished by its marked interdisciplinarity (Pendenza 2015). The debate concerns the relevance of the classical standards of the discipline, the traditional sociological object of analysis and the tenor of findings and implications in terms of modern society (Pendenza 2015). Inglis (2015) argues that a strong consciousness of the historic complexity of the contemporary world will ensure that contemporary sociology meets its obligation to interrogate social form. Swilling and Annecke (2012) describe why it is important for sociologists to reflect critically on their role in the wake of the horrors of the failed social projects of the 20th century. It is thus clear that writing off the classics would be as damaging as contemporary sociologists discussing the 'dawn of modernity' as though it happened only 500 years ago (Inglis 2015). The challenge is to find a way of extracting value from both the mature canons of classic sociology and those relatively successful, though immature, contemporary sociological projects which (in time) may achieve canonical status that overcomes 'conventional sociology's derogation of intellectual work that does not take as its founding rules part of any canon' (Sitas 2006:357). It is here that Pendenza's (2015) work on using the new cosmopolitan turn in social sciences as a means of reinterpreting the historic narratives of classic sociology is useful. Pendenza (2015) argues that this is possible by reconstructing and interpreting distinctive fragments of classical sociological writings, so that certain analytical categories of the sociological tradition can be adapted for analysing contemporary society. Pendenza (2015) identifies methodical nationalism (concentration on nation states) as a problem that potentially exacerbates methodical excludability.

3.2.4 Conjectural historical narratives and sociology

Palmeri (2008) claims that the use of conjectural historical narrative offers a method to analyse the classics, which transcends methodical reductionism and methodical nationalism as requested by Pendenza (2015). It also answers Sita's (2006) request for space in which the peripheral sociologist's critical edge can be translated into a language that moves beyond the 'demeaning binaries' which conventional sociology assigns to critical literature. This method traces the transformation and recombination of features of form rather than the occurrence and reiteration of ideas. It asserts that there are parallels between processes in various organs, organisms and social processes that are exemplified by different cultures in different times and places, but that our understanding of these processes is not confined to a single chronology (Palmeri 2008).

For Palmieri (2008), the classics are not only those works emanating from the Scottish Enlightenment, but also include similar accounts from other national cultures in contiguous periods. This means that these works should be interpreted as being a collective contribution to the ongoing effort to develop naturalistic narratives of the course of human societies, including the earliest stages of human social life (Palmeri 2008). The Scottish Enlightenment was not the start of the efforts of humans to provide plausible narratives of the universal secular political and antiquarian history of civilisation. These accounts are from the first generation of humans to have experienced, within their own lifetime, anthropological-induced social change, which could not be identified, explained or accommodated as being a limited variation within the encompassing order of the past (Abrams 1972). As a result, these contributions to the development of naturalistic narratives of the course of human societies remain important for contemporary society, which is experiencing a similar change of a potentially truly transformative nature.

The features of the conjectural narratives of classic sociology are: '(1) a naturalistic approach that avoids recourse to a deity or providence for the explanation of social organization and development; (2) an organic conception of society in which laws, religion, customs, and manners are interrelated and interdependent; (3) an emphasis on the unplanned, unforeseen, and noncontractual development of institutions; and (4) a conception of the stages through which most or all societies develop, though at different rates and with local variations, in the natural course of things' (Palmeri 2008:3). Pendenza's (2015) use of the new cosmopolitan paradigm to interrogate the canons of classical sociology and Palmeri's (2008) extraction of conjectural historical narratives offers the opportunity to end the bifurcation between post-colonial sociology and conventional sociology. Go (2013) suggests that both aim to assess, rethink and analytically reconstruct the historical formation and dilemmas of modernity. This study contends that this is true only if what is considered to be the

classics is recast to include work from chronologically continuous periods. In this case, compliance with the requirements of the conjectural narratives does not mean that this work has to share an explicit intellectual link to what has come before it. This would mean that the second generation would, unlike the first, have access to knowledge generated during past efforts to make sense of the changing world, dating back to not only the 18th or 19th centuries, but also the 20th.

According to Lizardo (2014), when faced with an impetus to change, sociology as a discipline does so by either creating a sub-discipline or refining an existing one. This fosters the conditions for pseudo-interdisciplinary collaboration and these (sub) disciplines remain different disciplines with different social structures, as described by Stinchcombe (1984) and Brown and Spencer (2014). This creates what Lizardo (2014:985) calls the ‘bizarre situation of sociologists basking proudly in their presumed interdisciplinary openness, while de facto having created a monodisciplinary field with relatively little real interaction with representatives of other social science disciplines’. The antidote is to first break down the social structure of the discipline by attacking the way in which it promotes the maintenance of the high boundaries of disciplinary traditions and then to collapse the Comtean schema (Lizardo 2014).

3.3 Section Two

Section One outlined an analytical framework that prevents the canons of classic sociology from ‘placing unnecessary restrictions on the development and articulation of contemporary sociological thought’ (Alvesson & Willmott 1992 in Sousa 2010:460). This section is concerned with the trajectory of the most significant lines of enquiry into its epistemology. Epistemologies do not exist in a vacuum; they are supported by and, in turn, support ontologies and etiologies (Chatterjee 2011). The question facing social scientists is whether the epistemology of the discipline, and its sub-disciplines, has contributed to the various ideologies that aided in justifying the mobilisation of great hopes, and the perpetration of great horrors like apartheid, genocide and colonialism to name a few (Swilling & Annecke 2012).

3.3.1 Interdisciplinarity: Reinforcing the Comtean schema.

As mentioned earlier, the inward search or the critical enquiry of sociology is usually triggered by a reflection on whether the discipline is complicit in the perpetration of a great horror (Swilling & Annecke 2012). This horror could be perpetrated within the realm of the physical or metaphysical. In the physical realm, this could refer to the slow burn of the structural violence associated with a social project like apartheid; the outcome of a cataclysmic event that unfolds over a relatively short

time, like ethnic cleansing or genocide; or the exponential acceleration of a 10 000-year-old process, such as urbanisation.

From a metaphysical perspective it could be associated with the realisation that the evolution of an intellectual project cannot continue from its as-built, unmodified foundations because methodical excludability and methodical reductionism are imbued within its social structure. In the Anthropocene, the wake of the great recession brought on by the 2008 financial crises, stimulated a widespread sociological interest in neo-liberalism – a form of governance that seeks to inject marketised principles of competition into all aspects of society and culture (Nicholas 2014). Nicholas (2014) argues that a strong case can be made that the epistemological history of neo-liberal thought can be traced back to the critical enquiry of two lines of classic sociological thought, namely, the critique of Weber's methodology writings and the overt positivism of Comte's work. While Nicholas (2014) highlights how this would mean that sociology is better placed to end the hegemony of neo-liberalism, critical literature suggests that the tenor of the contemporary critical enquiry into the epistemology of sociology should also contain a register that deals with why the knowledge generated by the exploration of both the industrialisation of the Asian Tigers (and others) and southern urbanism has been consigned to the periphery of both mainstream and critical literature.

The argument that neo-liberal thought and classic sociology have points of contact is an extension of an intellectual project originating in economic sociology. Starting in earnest in the 1980s under the banner of New Economic Sociology, the aim of this sub-discipline was to close the gap between sociology and economics (Richter 2001). The intellectual movement concerned with the end of value-free economics is denoted as the cognitive turn in economics (Nicholas 2014). It serves as the more recent intellectual impetus for the origin of the argument made by Nicholas (2014). The cognitive turn in economics is premised on a philosophic enquiry into the epistemology of classic economic and classic sociological thought. The first wave of this enquiry started in the 20th century with the revival of Ricardian classic political economy led by Piero Sraffa. He criticised the marginalist framework and recovered the analytical structure of classical political economy in a 'minimalist' framework concerned with only prices and quantities (Martins 2012). The second wave occurring now in the 21st century focuses on the work of Adam Smith (Putnam & Walsh 2012). While the first wave was connected to the need to use Ricardian minimalism to move beyond the old logical positivist/logical empiricist position that supported neoclassical economics, the current wave is concerned with moving beyond the ethics/fact/value dichotomy (Putnam & Walsh 2012). Putnam and Walsh (2012) argue that the overtly mathematicisation of neoclassical economics was the stimulus for the first wave of the revival of classical political economy and that

the focus on Ricardo was necessary, as his minimalist approach lent itself to proving why the structure of neoclassic economic theory was flawed and in a language that neoclassic economics understood.

While Putnam and Walsh (2012) contend that the first wave is complete, Swilling and Anneke's (2012) disappointment at the slow rate at which social scientists have embraced the ethics of critical complexity as an alternative to methodical reductionism shows that the logical positivist/logical empiricist position still lives in the social sciences. This is confirmed by Putnam and Walsh (2012), who argue that the new positivist/logical empiricist position is one which demands the delineation of the classification system to assess the truth of ethical claims before the ethics/fact/value dichotomy is operationalised in economic thought. The search for the way of doing this is the subject of the second wave of the rival of classical political economy. It is driven by the acceptance of the conceptual importance of recognising that one of the most regrettable features of today's society is the unbridled pursuit of present 'aims' and not the prudent following of lifelong self-interest; neither is it the return to the integrated analysis of human behaviour and well-being (Martins 2012; Putnam & Walsh 2012). Sen's (1999) *Development as Freedom* and the way it is complemented by Sen's (2009) *The Theory of Justice* represents the seminal attempts at the forefront of correcting this. Embedded in this view is an understanding of progress and modernity connected to a moral aspect of classic political economy that relates to the generation and distribution of economic surpluses and self-interest, which is accessible only via the reinterpretation of the epistemology of classical political economy (Putnam & Walsh 2012). Economic surpluses are defined most simply as the sum of the resources a society has at its disposal to achieve growth minus the needs of subsistence; in other words, the amount that could potentially be reinvested into increasing future social output (Weiss 2014). Weiss (2014) adds that in classic political economy, the existence of a surplus does not, however, guarantee growth. Inglis (2015), Mota and Delanty (2015) and Swilling and Annecke (2012) confirm that the acceptance of multiple-modernities and pluralistic notions of progress, as a proxy for the way in which economic surpluses are used, is critical if social theory is to assist in realising the transition to sustainability. Fox (2012) shows that economic surpluses played an important role in the initiation of the urbanism trend.

The reimagining of the epistemology of classic political economy is also demonstrated in Amartya Sen's (2009) defence of the plurality of Adam Smith's conceptualisation of capitalism and free-market policy and Fiori's (2001) account of the duality of Smith's political economy. There are many examples of credible attempts to show that the contributors to classical political economy displayed the type of holistic and pluralistic approach – which by today's standards would be considered transdisciplinary (Brown & Spencer 2014). One example is Hinnant's (2008) defence of

John Stuart Mill’s economic ‘man’ as not being simply an analysis rooted in reductionism. Another example is Morgan and Rutherford’s (1998) assertion that classical political theorists in the late 19th century accepted diversity and pluralism. Collectively this seems to confirm that the transition to sustainability would require that the end point of the critical enquiry of sociology would need to delineate the political economy of the transition to sustainability.

Following the Cambridge revival of classic political economy, it would suggest that the political economy of the transition to sustainability should be concerned with the ethical distribution of economic surpluses, the embedding of the economy into society, the pursuit of human well-being and an expanded notion of self-interest. On the strength of this reflection, it is suggested that Lizardo’s (2014) collapsing of the Comtean schema can be adapted schematically, as indicated in table 3.1. The not so harmonious division of labour in the social sciences is dealt with by returning to a form of enquiry and intellectual pursuit which is not premised on the abstraction of economy from society, history and polity.

Table 3.1: Representation of the collapse of the Comtean schema		
	ANTHROPOCENE: Planetary boundaries, climate change, second wave of urbanism, commodity crisis	
	Environmental sociology	
	Political sociology	
Sociology	Economic sociology	Political economy
	Cultural sociology	
	Socio-linguistic sociology	
	ANTHROPOCENE: End of fact/value dichotomy, post-modernism, post-structuralism	

(Source: Adapted from Lizardo 2014)

3.3.2 The political economy of the transition to sustainability: When three waves collide

A closer look at the Cambridge revival of classic political economy reveals that, while the overall tenor of the revival was united in the effort for economics to re-embrace the multidimensionality of the way in which the reproduction of society was considered, there are, nonetheless, significant differences in the way in which the classics are interpreted (Martins 2012). Unfortunately, neither recognises the value of the Chang (2002)/Johnson's (1982)/Mkandawire (2002) capitalist developmental-state praxis, as contemplated in Khan (2010). This is critically important to both transition and assemblage urbanism theory. Piero Sraffa led the first stage of the revival, as mentioned in the previous section. He criticised the marginalist framework and recovered the analytical structure of classical political economy in a 'minimalist' framework concerned with only prices and quantities. The second stage is Amartya Sen's return to the integrated analysis of human behaviour and well-being, which characterised classical political economy (Martins 2012; Putnam & Walsh 2012). The aforementioned capitalist development-state praxis would represent another leg of the second wave of enquiry into classical political economy.

For Sraffa, it was incredibly important that a return was made to the multidimensional perspective of production, which is central to classic political economy. This method of analyses has as its central tenet the idea that the reproduction of the economic process must be considered in its entirety, together with the conditions that cause the permanent repetition of the process in its totality (Martins 2012). Sen, on the other hand, proposes a multidimensional framework in which behaviour is understood in terms of the multiple motivations that influence the human agent, while human well-being also depends on multiple dimensions, as explained in his 'capability approach' (Sen 1999; Martins 2012). While the first and second waves of the revival disproved the central tenets of neoclassical thought – such as its marginalist theory of aggregate production, its highlighting of the inconsistencies of neoclassical aggregate utility function, and the dispelling of the reliance on interpreting economic systems as closed systems – it did not result in the conceptualising of a growth theory that challenges the hegemony of neoclassicism (Martins 2012). As described in the sections that follow, it merely stimulated the proliferation of endogenous growth theories and then evolutionary growth theories. This study asserts that both are too flawed to achieve the intended aims of both the first and second waves of the revival of classic political economy.

Martins (2012) argues that while Sraffa and Sen produced complementary frameworks, neither presented complete frameworks that could establish the dominance of one of the various economic traditions within the Cambridge school. The Cambridge school consists, amongst others, of the Keynesian tradition (a vigorous critique of mainstream economics beginning with Keynes) and the

Cambridge welfare tradition (which emphasised consensus with neoclassicism that began with Sidgwick, Marshall and Pigou, as in Marshall's attempt to reconcile marginalism with classical political economy) (Martins 2012). A central issue is that while Sen draws upon Smith, Mill and Marx, Sraffa does not see these authors as engaged in the same project; according to him, classic political economy refers only to Smith, Ricardo and Marx (Martins 2012). The importance of this schism becomes apparent when one considers what this means for how labour processes are understood in terms of the Cambridge school revival of classic political economy. When Sraffa and Sen declare that economic systems are not closed – as conceptualised by neoclassic economic thought – they imply that there is acknowledgement that prices and the distribution of income are not automatically determined (Martins 2012). The reason for this is that the setting of wages, profits or the price of a given commodity is determined outside the system (Martins 2012). However, the aforementioned schism regarding the constituents of classic political economy, threatens to undermine the true value of the revival of classic political economy. Mercato (1981) sums it up best when he says that, in classic political economy, employment and wages are autonomously determined; employment is determined by output, technology and power relationships between and within classes; and wages are basically determined by the historical processes of the social reproduction of labour, embodying power relationships in which the state is central. Chapter Four demonstrates that this analytical framework is critically important. This study asserts that it must be supplemented by what the capitalist developmental-state praxis tells us about the desired role of the state. This analytical framework together with the components added by the Cambridge movement, enable the required synthesis between transition and assemblage urbanism. New economic growth theory premised on the fair distribution of economic surpluses will have to consider the actual behaviour and realisations of agents in the reproduction of society (Martins 2012). The development of this new economic growth theory will necessitate moving beyond the way in which both Sen and Sraffa delineate the boundaries of classic political economy (Martins 2012). This can be achieved only if there is an expansion of the sources of knowledge informing the critical enquiry of the epistemology of classic political economy. This is the only way to convert Sen's and Sraffa's ontological approaches into complete social theories that could inform new economic growth theory. The literature suggests that the use of the approach discussed in Section One would be the 'ideal' vehicle for the way forward. Martins (2012) identifies this as being the need to extract value from – and seek to complement – Sraffa's pure theory, the contributions of heterodox economics (including the Cambridge Keynesian tradition) and Sen's own institutional analysis of the political economy of the transition to sustainability.

The problematic dogmas of neoclassical economics (Pressman 2005) are highlighted by Sraffa and Sen. The impacts of neoclassical economics on the increasingly city-bound precariat is severe. These impacts are embodied by the most significant aspects of the second wave of urbanism identified earlier. This study suggests that this can be overcome only by an economic growth strategy which recognises that it is essential to redistribute resources and economic surpluses in urban factor markets. This requires the exploration of the various traditions of the Cambridge revival of classic political economy and the literature which explores the characteristics of capitalist developmental states. The observed 'market guidance, governed market, market-rational, market-conforming, and plan rational interventions' that characterise capitalist developmental states (Khan 2010:62) are particularly important. One has to take cognisance of the body of literature that suggests that urban unemployment resulting from economic weakness and the deficient demand for labour was historically an important cause of poverty, hardship, homelessness, disease, crime and other social problems (Gordon & Turok 2005). Important, is Turok's (1999) assertion that the labour market plays a key role in mediating the relationship between economic competitiveness and social cohesion within nations, cities and regions. This means that the new economic growth strategy, which emanates from re-embedding the economy and state in society, will inevitably be multidimensional.

3.4 Section Three

3.4.1 Embeddedness in the classic political economy sense

This section explores embeddedness, which is the heuristic concept first conceptualised by Polanyi in 1946 and then by Granovetter in 1985 (Kaup 2015). This has regained prominence, and its popularity, Kaup (2015) argues, is due to the ease with which it allows the avoidance of the Parsonian trap. The Parsonian trap refers to the separation of the economy and society (Kaup 2015). The discussion of embeddedness undertaken here follows Krippner and Alvarez's (2007) understanding that when viewed as a concept from within the confines of economic sociology, as opposed to sociology, it allows for the proliferation of the idea that Polanyi's and Granovetter's intellectual project is the same, and that this detracts from its usefulness in making a sociological argument against neoclassicism. While Polanyi's description of the concept is widely accepted as being an important contribution to political economy (Watson 2014), Granovetter's is firmly entrenched in the social structure of the economic sociology discipline (Krippner & Alvarez 2007).

The metaphysical framework delineated for this thesis suggests that embeddedness should be interpreted in the classic political economic sense. This entails reconciling the way in which the concept of embeddedness is interpreted in the economic and sociological sense with the need for

imagining the economy in distinctly ethical terms, as suggested by the second wave of the Cambridge revival of classic political economy. Watson (2014:604) argues convincingly that the ethical turn in Polanyi's understanding of embeddedness is apparent if one accepts that it represents an analysis in his 'anthropologist's, historian's and activist's voice'. Granovetter's conception of embeddedness is posed at micro- and meso-levels (Krippner & Alvarez 2007). It deals fundamentally with the problem of atomism in the economic sense and the identification of relational bases of social action in economic contexts in the sociological sense (Krippner & Alvarez 2007). Polanyi's conception of embeddedness, however, is posed at a macro-level (Krippner & Alvarez 2007). This conception of embeddedness deals primarily with the problem of the analytically autonomous economy in the economic sense and with the integration of the economy into broader social systems in the sociological sense (Krippner & Alvarez 2007).

The use of conjectural historical narratives in Section One served to do away with the boundary between revisiting classic sociology using idiographic or nomothetic approaches, induction or deduction, and generating either particular descriptions or general theories (Calhoun 1998). Importantly it did not dismiss the fact that all social, economic and political theory is founded on presuppositional historical claims (Calhoun 1998). Although these claims cannot be subject to empirical testing, their plausibility must, nevertheless, be questioned (Calhoun 1998). Krippner and Alvarez's (2007) insistence that embeddedness be discussed in sociological or in political economic terms means that embeddedness is useful in the following ways. First it makes a contribution to ending the hegemony of neo-liberalism. Second it contributes in furthering the cause of contemporary sociological projects, which test the plausibility of social theory, namely, post-colonialism and the 'death of society' thesis. Post-colonialism could be explained in terms of it exploring the following sets of causal mechanisms: capitalism; geopolitics; war and violence; cultural representations and subjectivity; resistance and collaboration by the colonised; institutional dimensions of empires and colonies; and conflict and compromise among colonisers at the heart of colonial states (Steinmetz 2014). The death of society thesis is concerned with finding contemporary definitions of society through discourse in the following registers: society as structure; society as solidarity; and society as creation (Elliott & Turner 2013). The key is to ensure that embeddedness is not insulated from the need for it to be provincialised. As explained in the previous section of this study the Cambridge revival has advanced significantly the meta-theoretical approaches that are needed to eventually conceptualise the new required economic theory. These meta-theoretical approaches have however not yet been translated into a tangible methodology. This could be due to the complexity of the mechanics of re-embedding the economy and state within society.

The use of Polanyi's work on embeddedness to elicit theoretic assistance in the development of progressive economics is hamstrung by a reliance on the use of an abstract Ricardian conception of the economy (Watson 2014). In his early work, Polanyi used such an abstraction of the economy as a reference point for his analysis of economic theory (Watson 2014). Watson (2014) argues, it is his substantive conception of the economy evident in his later work that should enjoy prominence. This substantive definition of economy – i.e. all forms of economic life are to be understood within the context of complex interlocking social, cultural and legal structures – is one that is rooted in a pre-Ricardian lineage of economics and is the starting point for the second wave of the Cambridge revival of economics.

The Polanyian conception of embeddedness is set firmly in the understanding of processes at a meso level. In Section One it was argued that methodical nationalism, the exclusive priority of national states as a unit of analyses, is as damaging as methodical reductionism or methodical excludability. Geels's (2014) triple-level embeddedness enables the reconciliation of Polanyi's and Granovetter's concepts of embeddedness, as discussed in the following section.

3.4.2 Triple-level embeddedness

Geels (2014) developed a triple-level embeddedness framework to explain the co-evolution of industries and their economic, cultural, political and social environments for use in the field of innovation studies. It illuminates the difficulty in operationalising a political economy premised on the fair distribution of economic surpluses, and engages with both Granovetter's and Polanyi's concepts of embeddedness. Delineating a new economic growth theory necessitates an exploration of what re-embedding the economy and state within society really means. Geels (2014) locates the industrial regime in relation to socio-political and socio-environmental systems, while attempting to show that it ultimately operates within a different context to these two external environments. He draws on the strengths and weaknesses of evolutionary economics, neo-institutional economics and economic sociology to construct his triple-level embeddedness framework. The first point of engagement with this framework concerns Geels's (2014) use of the notion of political embeddedness from economic sociology, which concerns the bidirectional relationship between the state and the economy. Governments constitute markets by establishing property rights, rules of exchange (obligations of contracts) and corporate governance structures. They also shape specific industries via tariff protection, loans, cash grants, government purchases, patents, tax concessions, and information and research services (Fligstein 1996 cited in Geels 2014). However, Geels (2014) highlights the importance of acknowledging the bidirectionality of this relationship: industries and firms use these political relationships to shape formal institutions to their own advantage (Khan

2010). In Section One it was shown that sociological analyses that rely solely on methodological nationalism are no longer appropriate in the Anthropocene. Methodical nationalism can be avoided in two ways: one way, described here as ‘looking inward to look out’, is to focus on the nuances of firm-level behaviour and their interaction with their external environments. Geels’s (2014) framework, as described above, makes this possible as it aims to show how firms-in-industries are embedded (horizontally) in two external environments and are shaped (vertically) by industry regimes which contain the following elements: (1) technical knowledge and capabilities, which enable and constrain what firms-in-industries can do; (2) mindsets and cognitive frames, which constitute how actors perceive the nature of social reality; (3) values, identity and mission, which specify what actors see as appropriate; and finally (4) formal regulations, laws and standards.

The first three elements constitute endogenous organising principles that require ongoing reproduction, while the fourth element is part of a ‘governance system’. This governance system consists of externally imposed (by policy-makers) rules and regulations, and internally enacted regulation via compliance mechanisms enacted by industry associations or industry codes of conduct (Geels 2014). This is why the fourth element is represented as being both inside and outside industry regimes in Figure 3.2. These elements of the regime cluster together into semi-coherent configurations that orient firms-in-industries and provide directionality, which in turn is stabilised by various lock-in mechanisms (Geels 2014). These lock-in mechanisms result in firms reacting strategically to both external and internal pressures to re-orientate the directionality of industrial regimes so that they not only adapt to external pressures, but also attempt to strategically shape their environments. Geels (2014) reviewed the externally and internally oriented strategy approaches and delineated the different ways in which firms adapt and achieve fit between themselves and their environments. Externally orientated mechanisms shape economic environments via firms-in-an-industry’s economic positioning strategies, such as marketing and sales, supply-chain management, operations and production management (Stiglitz 2012; Geels 2014), and the political environment via different kinds of cooperate political strategies. These include information strategy, financial incentives strategy, organised pressure strategy, direct lobbying strategy, and confrontational strategies (Stiglitz 2012; Geels 2014). In addition, Geels (2014) noted that in the face of a common threat, political strategy often takes the form of collective action. This is particularly effective in shaping the diagnostic framing (which identifies and defines a problem) and the prognostic framing (which advances solutions to a problem) of public debates (Geels 2014).

An exploration of neo-Granovetter arguments seeks to show how the embedded analytical framework is useful in identifying the radical innovation necessary to transcend the logic of global, industrial-chain specialisation in order to shift to new socio-industrial regimes (Swilling & Annecke 2012; Wei *et al* 2013). This exploration can also identify how embeddedness can be a source of both strategic constraint and opportunity during the formation of the alliance networks and multilateral alliances needed to shift to new socio-industrial regimes (Gudmundson *et al* 2013); in addition, it is helpful in understanding how extra-market and other nonmarket variables set the prices of the factors of production and influence income distribution (Zafirovski 2000). All of this information can be drawn on to improve the usefulness of Geels's (2014) framework.

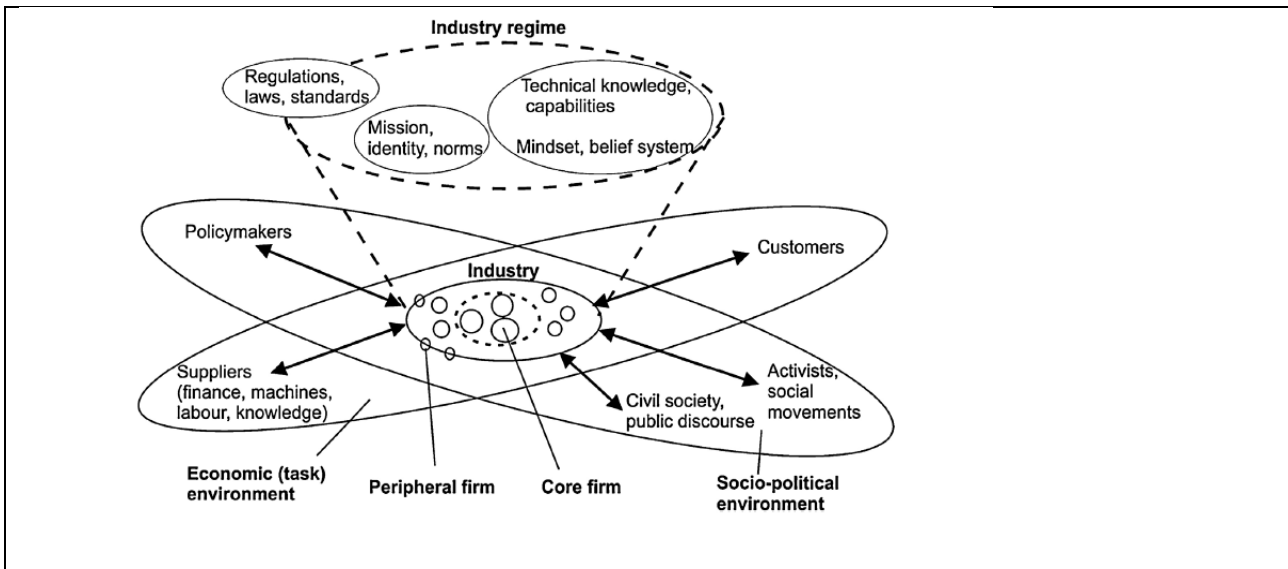


Figure 3.1: Geel's (2014) triple-level embeddedness framework. (Source: Geels 2014)

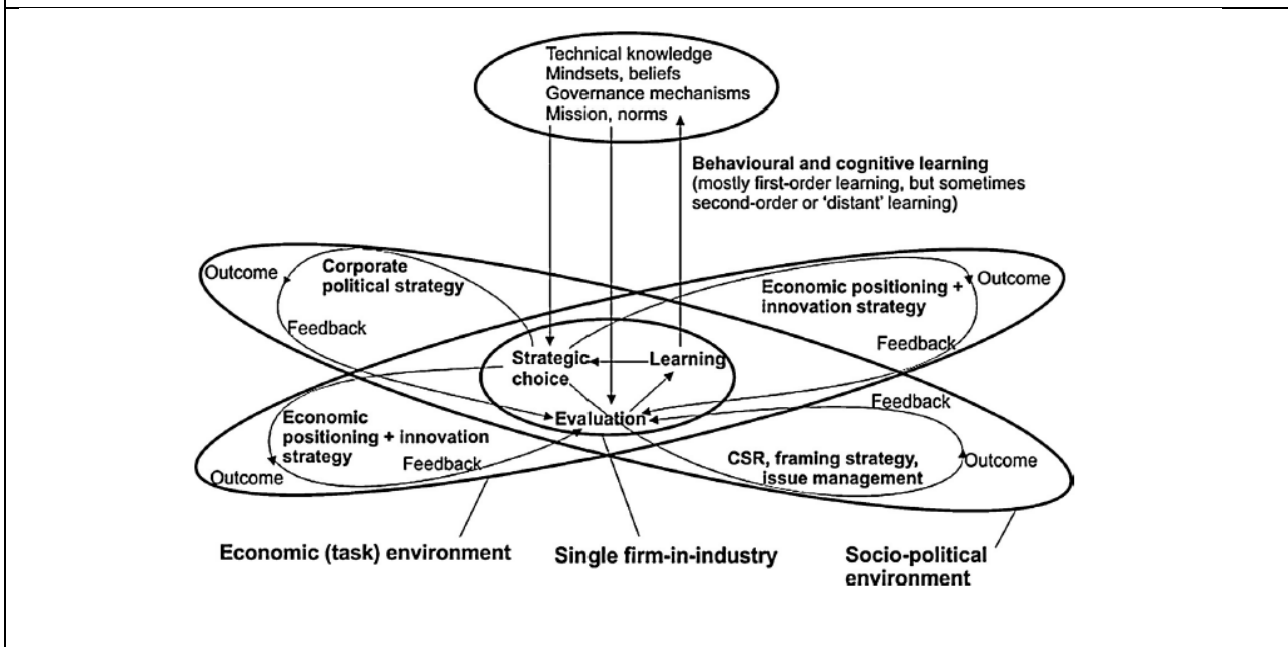


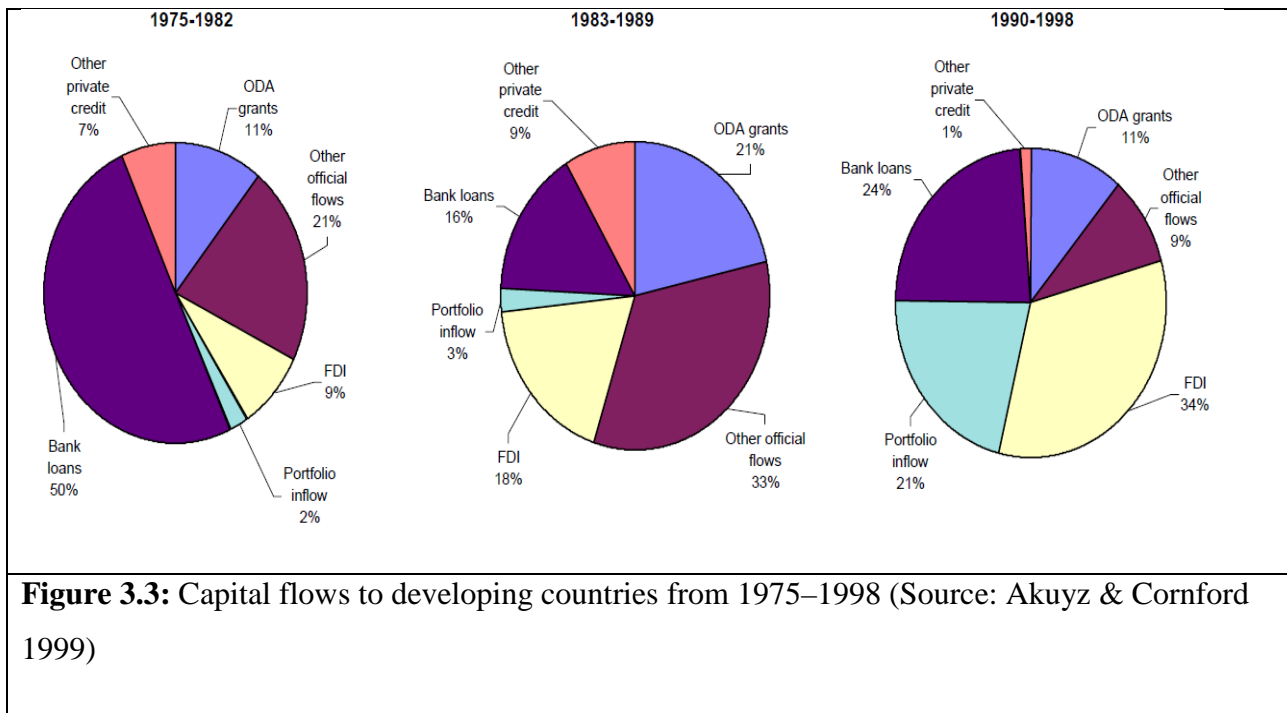
Figure 3.2: Geel's (2014) triple-level embeddedness framework now including all the strategies that are identified as being required to re-orientate industrial regimes (Source: Geels 2014)

The second way to avoid the pitfalls of methodical nationalism relates to the earlier assertion that one cannot define too narrowly any sociological analyses of the unevenness of global economic development, based on Marxist historical notions of the accumulation of capital. Avoiding the pitfalls of methodical nationalism is possible only by recasting capital flows as the outcome of the geopolitics of globalisation (Agnew 2001). In this view, the accumulation of capital and the production of all nature, including humans, are dialectically constituted. The logic of the evaluation of capital accumulation as the outcome of historical processes weaves together the ethereal valences

of finance capital and the prosaic routines of everyday life in new crystallisations of power and profit, pivoting on the commodity (Moore 2011). In this perspective, ‘the apparently external relations of capitalism to nature, captured in the popular concepts of metabolic rift, ecologically unequal exchange, and the ecological footprint, are revealed as inner relations, constitutive of new and profoundly restless, socio-ecological configurations’ (Moore 2011a cited in Moore 2011:110). The bidirectionality of the political embeddedness that Geels (2014) uses to construct his triple-level embeddedness framework should thus be situated in Agnew’s (2001) description of the geopolitical project that underpinned economic development via the process of interactional capitalism. The operationalisation of the neo-liberal agenda in Africa, following the end of colonisation, was identified as a significant precursor to the unevenness of development that unfolded. This research is also peppered by numerous references to the Anthropocene, a period that is generally accepted to extend to the middle of the 20th century. The geopolitical narrative is represented typically by identifying significant movements within the following categories: (1) technological revolutions; (2) the receptiveness to multinational firms in developing countries; (3) governance; (4) the main premises of the political economy; (5) trade and developmental aid architecture; and (6) the governance of the international financial system from the end of World War II to the present. The significant movements of categories 1–5 are shown in Table 3.2, while the trends in international capital flows are shown in Figure 3.3. This figure shows the trend towards the increased importance of private actors and external financing in the last three decades of the 20th century, with a rapid increase in the importance of private flows, particularly during the 1970s and the 1990s (Akuyz & Cornford 1999).

Table 3.2: The important elements of the geopolitical narrative (Source: Substantially adapted from Pieterse (2015b) and capital flows into developing countries from 1975–1990 (Source: Akyuz & Cornford 1999)

Technological revolution	Deployment phase of post-war boom	Installation & deployment phase of the ICT revolution 2007 crisis				
Receptiveness to multinational firms in developing countries	Excluded from communist countries & some newly liberated former colonies	Low receptiveness rates continued	Increase in receptiveness rates			Greatly reduced receptiveness rates
Governance	State-led developmentalism & import substitution policies	State-led developmentalism & import substitution policies	Neo-liberal counterpoint	Neo-liberal counter point	Washington Consensus-Post Washington Consensus	State-led developmentalism (?)
Main premise of political economy	Modernisation via industrialisation	Basic-needs focus	Diminished state influence-led growth	Pro-poor growth	Shared growth	Redistributive & sustainable growth (?)
Trade/development aid architecture	Marshal Plan/general trade agreements	Abrogation of Bretton Woods Agreement	Structural adjustment programmes	Regional trade agreements	Regional trade agreements + bilateral trade agreements + free trade agreement	Regional trade agreements + end of preferential trade agreements (?)
Period	1940-1960s	1970s	1980s	1990s	2000s	2015+
ANTHROPOCENE						



The aspect of the geopolitical thesis that is important for this research project is the degree to which participation (the embeddedness of industrial regimes and their two external environments seen in figure 3.1) is first and foremost the outcome of how geopolitical privilege is distributed. This privilege is maintained by a nation state's ability to create spaces (cities) governed in a way that supports whichever niche specialisation is assigned to it. The logic of locality specialisation – which Swilling and Annecke (2012) argue is responsible for much of the character of the second wave of urbanism – is the outcome of both the embedding of local factor, production configurations within the supply demands generated by global capital flows, and its decoupling from localised aggregate demand. Geels's (2012) framework sheds light on the strategies that firms employ to take advantage of the logic of specialisation. This means that Geels's (2014) triple-level framework is relevant to this thesis. Following the progress that has been made in neo-Polanyian interpretations of embeddedness will aid in refining exactly how the triple-level embeddedness framework is applicable. Carrol & Sapinski (2013) and Worth (2013) suggest that adopting a neo-Polanyian understanding of embeddedness is useful as a means to dislodge neo-liberalism from its embeddedness within the common sense of the dominant class. This is required, so that their intellectual production extends beyond the critique of alternative visions, strategies and policies (Carroll & Sapinski 2013; Worth 2013). Feiock (2012) suggest that neo-Polanyian application of the embeddedness framework can assist in the development of the taxonomy of regional collaborative governance mechanisms which would result in the efficient production of public goods and services (Feiock 2012).

Geels (2014) intuitively drew on evolutionary economics to construct his triple-level framework. This included the way in which the change in directionality of innovation is conceptualised within the industrial technological regime, the difficulty of re-orientating this regime due to path dependency, and the notion that the agency of this regime is able to shape wider environments (Geels 2014). Geels's drawing on evolutionary economics potentially overlooks the legacy of the relationship between evolutionary economics and endogenous economic theory. This assertion emanates from a review of Romer's (1994) critical reflection on the shortcomings of endogenous growth theory. In this work Romer (1994) asserts that there is a link between endogenous and evolutionary growth theory. He identifies a binary distinction between the type of goods that the state and firms can produce is inherent to endogenous growth theory (Romer 1994). This binary distinction is between the production of rival goods by the state and the production of non-rival goods by firms (Romer 1994). Economists distinguish between rival and non-rival goods. A non-rival good is one that can be consumed without detriment to others (Tuomi 2012). A distinction is also made between excludable and non-excludable goods (Tuomi 2012). This refers to whether access to a good can be restricted or not. If goods are non-rival and access to them is not restricted they are public goods (Tuomi 2012). Rival goods are excludable, in that access to these goods can be restricted.

In the resource-stressed Anthropocene, it follows that this binary distinction is no longer relevant. Swilling and Annecke's (2012) assessment of the environmental challenges confirms that public goods are not non-rival goods. State institutions are active, competitive players in material-resource markets by virtue of their role in the provision of public goods and infrastructure, without which the technological and industrial regimes cannot be sustained. Geels (2014) draws on institutional theory and identifies that institutions exert pressure on firm-in-industries by means of coercive isomorphism (government regulations and mandates, etc.) and normative pressures (professional standards or behaviour that must be adhered to). Geels's (2014) analyses however shows that the agency of firms-in-industries remains the most significant factor in the realisation of the structural reorientation of the industry regime. What emerges from the acceptance of the end of the binary regarding the provision of public goods and infrastructure is that innovation within socio-political regimes should enjoy greater prominence than envisioned by evolutionary and neo-institutional theory. This is important because the ontology of this innovation is different from that which occurs on the supply side within the industrial regime. Innovation in evolutionary economics is based on a particular understanding of the process of innovation, yet Perez-Luno *et al* (2007) argue that there are two classic conceptualisations of innovation that are representative of the contemporary definition of the innovation debate. These are Schumpeter and Thompson conceptualisation of

innovation. Schumpeter's definition contains implicit conditions that innovation must have positive effects on economic growth and result in market success, whereas Thompson's definition is free of the market-success proviso (Perez-Luno *et al* 2007). Swilling and Annecke (2012) correctly argue that there is an urgent need to rethink innovation. Rethinking innovation must be driven by the ending of the Cartesian distinction between nature and society and the acceptance that state intervention is an absolute must. The focus of innovation must be on that which deals most closely with our material exchanges with nature and that which serves as the interface between the centre of innovation on the demand and supply sides. These include the provision of public goods and infrastructure, and the labour market.

Martins (2012) suggests that there is a need to extract value from, and seek to complement, Sraffa's pure theory, the contributions of heterodox economics (including the Cambridge Keynesian tradition) and Sen's own institutional analysis when describing the political economy of the transition to sustainability. This together with Geels's (2014) analyses of the industrial regime provides important clues as to what needs to be encompassed in the required economic growth analytical framework.

3.5 Section Four: Economic growth theory

3.5.1 Introduction

Palma (2014) offers that if a degree of simplification is applied, one can classify growth theories into three camps. The first camp is Solow-type models (both traditional and 'augmented' ones), and the branch of 'endogenous' theories that associate growth with increasing returns that are activity-indifferent. Examples include early total-factor productivity (TFP) and capital (AK) models, and more recent ones in which changes in the rate of growth are the result of the cumulative effect of market imperfections arising in the process of technical change. The second camp consists of Romer's work and neo-Schumpeterian models. In these models, increasing returns – though generated by research-intensive activities – are not associated explicitly with manufacturing activities as such, or with investment in manufacturing, nor do they allow for specific effects of manufacturing on research and development (R&D) activities (Palma 2014). The last camp comprises mainly post-Keynesian, Schumpeterian and structuralist theories, which argue that growth is both 'sector-specific' and 'activity-specific' (Palma 2014). A common factor in these 'sector-specific' growth theories is that the pattern and the dynamic of growth are crucially dependent on the specific capital accumulation effects on growth stemming from manufacturing (Palma 2014).

Kurz and Salvadori (2006) argue that the need to instil the sociological turn in economic growth theory is derived from the misconception of embeddness prevalent in the economic discipline, where it is accepted that history is a consequence of human action but not of human design. Within this context, economic growth theory is the outcome of the need 'to come to grips, as best as one could, with the consequence of purposeful human actions, both intended and unintended' (Kurz & Salvadori 2006:247). The discursive nature of such deduction is that it supports the idea of value-free economics (Putnam & Walsh 2012) and enables the proliferation of both the underestimation and under-reporting of the importance of statecraft in the history/human action/human design paradigm. The sociological argument against neo-liberalism is the rejection of value-free economics. The embedding of capital flows in a geopolitical framework is the rejection of the underestimation and under-reporting of the importance of statecraft. .

Developing economies' share in world GDP rose from 15% to 22% from the start of the Information Age until 2005. However, as a proportion of advanced economies income per capita, developing economies remained below 5% (Saad-Filho 2013). Agnew (2001) adds that divergence between rich and poor countries has increased significantly during the globalisation era (1970 to the present) compared to previous periods. In the Global South during the Anthropocene, the scenario among poorer countries was that a fortunate few, largely in East and Southeast Asia, have successfully created export platforms for goods that are sold largely in the advanced capitalist world (Agnew 2001). These countries have also built domestic markets for themselves and some larger countries (e.g. Brazil) and oil-rich countries (e.g. Iran and Saudi Arabia) have developed large domestic markets (and have reasonably strong import-substitution sectors) or crucial commodities that underwrite at least a modicum of growth (Agnew 2001). Then, there are the other countries that have few commodities in world trade and little in the way of labour-market, consumer-market or resource advantages to offer the rich countries and their investors (Agnew 2001).

3.5.2 Capitalist developmental state praxis

The stark reality of the unevenness of global economic development (Saad-Filho 2013; Agnew 2015) and the bucking of this trend by a select group of the fortunate few underpins most of the intellectual contestation around developmental statecraft (Swilling & Annecke 2012). Khan's (2010) synthesis of the Chalmers/Chang/Mkandawire capitalist developmental-state praxis frames this contestation and the dialectal debate about which set of state interventions best counteracts the hegemony of neo-liberal development ideology. Khan's (2010) work also shows why it is so difficult to implement the required economic constitutionalism in developing countries, when this is exactly what many developed countries did at the beginning of their industrial project. The prize

that awaits those developing countries which manage to operationalise their capitalist developmental-state programme is an accelerated transition from an agricultural to a manufacturing-based economy via managed industrialisation (Evans 1995; Chang 2002; Leftwich 2000 in Swilling & Annecke 2012), the transition from one type of capital-intensive industrial production to another (Khan 2010), or some other variation of these two scenarios. The difference in the typology of capital-intensive industrial production relates to the costing of capital being done using a purely neo-classic economic analytical framework or a classic political economic analytical framework (as defined in earlier sections of this thesis). The components of the Chalmers/Chang/Mkandawire praxis is encapsulated in the phrases, ‘getting the politics right’ to ‘deliberately getting the prices wrong’ and the ‘impossibility thesis’.

The first two components of the aforementioned capitalist, interventionist state praxis cannot be arrived at without adopting a historical capital-accumulation perspective. Swilling and Annecke (2012) argue that resource constraints and the effects of the imbroglios of modernity will inevitably trigger the transition to a new industrial production regime. This will necessitate state intervention in the economy. Swilling and Annecke (2012) suggest that the focus of the capitalist developmental state in the Anthropocene must be informed by endogenous growth theory which places innovation, not capital, at the centre of the growth and development narrative. This argument is premised on a multilevel notion of sustainability-orientated innovation, which is decidedly different from the (rightly) much maligned, one-dimensional, techno-fix approach (Swilling & Annecke 2012). However, because literature suggests that sustainable-orientated innovations are so multifaceted, it is important to maintain ties with the capital-accumulation thesis. This is important as long as endogenous growth theory is drawn on in transition theory.

3.5.3 Endogenous economic growth theory: A critical review

Endogenous theory does not completely externalise technological advancement as neo-classic models do (Romer 1994). It does however externalise the conditions required for the realisation of circumstance that could completely offset the propensity for the diminishing returns of capital (Pack 1994). Pack (1994) describes two ways in which endogenous growth theory proposes how this could be achieved: (1) by using the investment in physical and human capital as the basis for the establishment of strong external economies, and (2) by increasing the variety, quality and efficiency of machinery by devoting skilled labour to research and development. Most telling, however, is Romer’s (1994) description of an important corollary to this theoretic deduction. Romer (1994) asserts that knowledge spillovers from capital investment not only increase the stock of physical capital but also increase the level of technology for all firms in the economy through knowledge

spillovers. An increase in the total supply of labour causes negative spillover effects because it reduces the incentives for firms to discover and implement labour-saving innovations (Romer 1994). This is bad as labour saving innovations have positive spillover effects on production throughout the economy. This results in a particular orientation of engagements between state and private enterprise. These engagements underpin the interaction between external economies in different geographical spaces. Examples of such interaction include how capital investment in production inputs are assigned and how outputs are captured, and the process whereby inventions are operationalised (Geels 2012). The problem is that these engagements are primed at achieving the conditions required to offset the propensity for there to be diminishing returns on capital by targeting cost-saving in the labour market (Romer 1994). This is a concern because Geels's (2014) embeddedness framework shows that the bidirectional relationship between the industrial regime and the socio-political regime can shape society.

Kurz and Salvadori (2006) argue that the endogenisation of the growth rate is central to classic political economy. Neo-classic Solow growth models try to replicate this by treating labour as a non-producible and non-accumulable factor of production, whose fixed rate of growth constrains the long-term expansion of the economic system (Kurz & Salvadori 2006). In newer growth models, this factor is replaced by 'human capital' or 'knowledge', which is taken to be producible, accumulable or costlessly transferable among subsequent generations of the population (Kurz & Salvadori 2006).

The assertion that sustainable-orientated innovations should focus on the labour market, using the capital accumulation turn, is the culmination of the following. In adopting a transdisciplinary approach to sustainability, we need to venture right down to the most basic unit of our material exchanges with nature, namely labour. In capitalist economies labour is measured by a provider's degree of proletarianisation. In the classic political economy sense, capital accumulation regulates the pace at which the labouring population grows and economic growth generates labour (Mercato 1981). Crucially, labour and its growth rate, does not exogenously limit economic growth (Mercato 1981). As confirmed earlier this research project relies on a classic political economic perspective. This means accepting that labour power has a position of primacy in economic analyses. The capitalism in nature perspective factors the resource-constrained environment of the Anthropocene into the classic political economic perspective adopted for this study. Ultimately this ensures that distinguishing between the status of labour power as a rival and a non-rival good becomes critically important to the next aim of this project which is to outline an economic growth model that should be employed in the transition to sustainability.

3.5.4 Keynes plus Schumpeter economic growth model

This chapter suggest that, the suite of Keynesian plus Schumpeter evolutionary, agent-based models are useful for the analyses of economic growth in transition theory. These models study the effects of a rich ensemble of innovation, industrial dynamics and macroeconomic policies on the long-term growth and short-run fluctuations of the economy (Dosi *et al* 2014). Dosi *et al* (2014) contend that these types of models are able to endogenously generate long-run growth while taking into account business cycles and major financial crisis. This is accomplished by embedding the Schumpeterian growth paradigm into the complex system comprising of the relationships between heterogeneous interacting firms and banks (Dosi *et al* 2014). This complex system is marked by imperfect coordination between firms and banks and the heterogeneity of firms and banks within it (Dosi *et al* 2014). This conception ensures that Keynesian (demand-related) and Minskian (credit-cycle) elements feed back into the meso and macro dynamics that together are important for economic growth (Dosi *et al* 2014). This is possible by opportunistically using the presence of strong complementarities between Schumpeterian (technological) and Keynesian (demand-related) policies to ensure that the economic system follows a path of sustained stable growth and employment (Dosi *et al* 2014). Dosi *et al* (2014) develop their model by drawing on Keynesian models to address shortcomings of Schumpeterian models. It aims to supplement Schumpeter's incomplete explanation of how technological innovation drives economic growth and how the potential negative impacts of the process of creative destruction can be mitigated. Drawing on Keynesian models Dosi *et al* (2014) attempts to overcome the tendency for innovation driven economic growth models to ignore the role of aggregate demand and macroeconomic conditions (unemployment, access to credit, income inequality) on the evolution of technology. Dosi *et al* (2014) assert that this contributes to addressing the weakness in the way economic growth theory is translated into policy. This study suggests that Keynesian plus Schumpeter economic growth models provides a suitable starting point for the development of the economic growth models required to transition to sustainability.

3.6 Section Five: Defining sustainable development

3.6.1 The emergence of ecological modernisation

Ecological modernisation is the dominant sociological theory that tries to understand and interpret how modern industrial societies are dealing with the environmental crisis (Sachs 1999, Milanez & Buhrs 2007). There is an extensive body of work that is critical of ecological modernisation (Sachs 1999; Mol & Spaargaren 2000; Banerjee 2003; Milanez & Buhrs 2007; Memon *et al* 2010; Swilling & Annecke 2012). Mol and Spaargaren (2000) illustrate that the initial critiques of ecological

modernisation were rooted in debates between neo-Marxist and deindustrialisation/counter-productivity perspectives. Contemporary critiques are rooted in debates between constructivists and postmodernists concerned with delineating the material foundation of social theory. These debates encompass the evaluation of radical versus reformist environmental reforms and social inequality (Mol & Spaargaren 2000).

Latour's (2007) suggests that the three major schools of thought in environmental sociology have been reduced to an analyses of the character of modernity. This means that neither the collapse of the old, logical, positivist fact-value dichotomy (Putnam & Walsh 2012) nor the study of the urbanism trend are able to drive environmental sociology forward. This is corrected by acknowledging the way in which Latour (2007) defines progress, and following Mol and Spaargaren's (2000) assertion that the critique of ecological modernisation has galvanised environmental social theory. This ensures that a discussion of sustainability involves critical engagements across diverse paradigms, disciplines and interests (Swilling & Annecke 2012). With the urban age (however it is defined) representing the end point of the symbolic generalisations of a number of discourses, there is an urgent need for a broader launching pad for critical urban theory (Lawhon *et al* 2014). This means accepting that contemporary environmental problems manifest on all spatial and institutional scales, and that they are tightly intertwined with numerous anthropocentric processes. This challenges the traditional separation of socio-economic and ecological sciences (Bodin *et al* 2014).

Pretty (2013) provides the best outline of the challenge of defining sustainability by stating that what is needed is to solve the compounded relationship between population (P), affluence (A) (a measure of consumption), technology (T) and their impacts (I) with interventions which will result in convergence of consumption at lower levels without increasing or further entrenching the systemic levels of social inequality or exceeding the planetary boundary limits (Steffen *et al* 2015). This means rejecting the belief in the existence of a number of 'Kuznets curve' type relationships that are central tenets of current efforts to achieve sustainability. The first is rejecting the assumed relationship between increased global aggregate consumption and decreasing environmental externalities (Pretty 2013). The second is the assumed relationship between increased global wealth and a decrease in the unevenness of urban development (Pieterse 2015a). Third is that increased rates of capital accumulation will result in decreasing rates of income inequality (Stiglitz 2012). This provides the context for considering the configurations and modalities of the way in which ecosystem services are obtained from socio-ecological systems in sustainable development paradigms.

Ehrlich and Ehrlich (2015) succinctly describe the three major natural ecosystem services, (1) climate and water, (2) soils, nutrients and wastes, and (3) pest control and pollination, as combining to render Earth able to support human life. The adoption of the capital in nature perspective would suggest that labour power is included in the basket of natural ecosystem services. The literature on planetary boundaries suggests that these goods have thus become rival goods. The urban narrative suggests that urban service-delivery configurations (both formal and informal) have become the primary conduits for the processing of ecosystem services into goods and services (Lovell & Taylor 2013). Harvey's (2012) description of how these configurations are related to macroeconomic forces means that the consideration of fair access to, and the fair use of, ecosystem services must be central to the political economy of the transition to sustainability.

3.6.2 Expanding the sustainability framework

The acknowledgement that there is a need to develop expanded sustainability frameworks is an intellectual project that is almost two decades old. As stated earlier, there is a large body of work that is critical of ecological modernisation. Seghazzo (2013) and Allen (2001) both present five-dimensional sustainable-development frameworks. These are just two examples of frameworks aiming to move the understanding of the sustainable-development concept beyond the limitations highlighted by the critique of ecological modernisation. The intention here is to first show how Seghazzo and Allen's frameworks complement each other and then demonstrate why they provide a foundation for the synthesis of an expanded sustainable development framework suitable for achieving the objectives of this research project. The Cambridge school of classic political economy was reviewed in Section 3.3.2 of this research project. The adoption of this classic economic perspective was identified as being important to achieving sustainability. The fair distribution of economic surpluses is prioritised in this perspective. This conclusion was based on a realist interpretation of the social process involved in the way in which economic surpluses are generated and distributed. Section 3.4.1 entitled 'Embeddedness in the classic political economy sense', demonstrated how difficult it would be for sustainable-orientated inventions to reconfigure the interactional dynamics of technological, socio-political and environmental regimes. This provided the context for understanding how sustainable orientated inventions become innovations. The importance of the bidirectionality of the feedback loops that exist between the socio-political and technological regime were explored. It was determined that a multi-level perspective of time and space was required to make sense of the feedback loops between socio-political and technological regimes. Understanding this dynamic is essential if it is accepted that the economy is embedded in society. Lastly, in Section 3.5.1 'Economic growth theory' it was shown that the disaggregation of demand side dynamics was critically important when attempting to develop the economic growth

models needed to operationalise an economy that achieves the fair distribution of economic surpluses, improves human well-being, and rewards the pursuit of expanded notions of self-interest. It was argued that the Cambridge revival of classic political economy did not manage to translate its ontological approach into an economic growth model. It is suggested here that Seghazzo's (2013) model provides the ontological framework that is congruent with what was determined should be the basic premise of the political economy of the transition to sustainability. Allen's (2001) model is more pragmatic and provides an indication of the methodology that needs to be employed. This is why these were chosen as the foundation on which to build a sustainable-development analytical framework in this research project.

It is, however, necessary to supplement this foundational synthesis with insights drawn from models that deal with understanding the interface between society (framed as both the industrial and socio-political regime) and ecosystem services, and the process of innovation. This research project suggested that an examination of the excludability of government-produced public goods in relation to innovation is necessary in the Anthropocene. Important then is Bodin and Tengo's (2012) modelling of asymmetrical access to ecosystem services. Inherent to the explanation of urbanism being the product of the logic of locality specialisation is a deficiency in the delivery of public goods and services. While many aspects of endogenous and evolutionary economic growth theory were critiqued earlier, the overall importance of innovation was not disputed. Instead, it was suggested that the focus of innovation should be redirected from an implied exclusive focus on supply-side dynamics to demand-side dynamics. Kiesling *et al*'s (2012) agent-based model of innovation diffusion is thus useful for completing the synthesis of the sustainable development analytical framework.

3.6.3 Description of expanded models

The sustainable development paradigms of Seghazzo and Allen were borne from the recognition of the fallacy promoted by ecological modernisation. This fallacy suggested that sustainable development is about 'the intersection of encompassing social, environmental and economic goals' (Allen 2001:154). Alternatively, this fallacy suggested that sustainable development occurs when 'the environmental and social implications of economic growth is included in the decision-making process' (Seghazzo 2013: 540). Both Seghazzo (2013) and Allen (2001) acknowledge the weakness of ecological modernisation as an analytical framework in which to have a conversation about sustainability. Allen (2001) suggests that the application of the ecological modernisation framework results in a process of industrial restructuring that only accelerates competition over environmental resources and promotes the short-term maximisation of profits through socially and

environmentally unsustainable mechanisms. Sustainable development in this guise, does not account for the fact that the social and environmental impacts of this process manifest in urban areas (Allen 2001). Seghazzo (2013) highlights that the ecological modernisation framework overestimates the power of neo-liberal economic reasoning and that it does not pay enough attention to other, fundamental aspects of development. The assessment of the way in which macroeconomic policy influences the production of space is critically important to both Seghazzo (2013) and Allen (2001).

Allen's (2001) and Seghazzo's (2013) sustainable development models are represented schematically in figure 3.4. In Seghazzo's (2013) model, the triangle is formed by Place, Permanence and Persons. Five dimensions are observable as Place consists of three dimensions of space (x, y and z). Permanence is the fourth dimension of time (t), and the Persons corner adds a fifth individual and interior human dimension (i). The complimentary concepts of Place and Persons form the base of the triangle, representing 'real', objective and concrete things that exist in the present time (Seghazzo 2013). Permanence, which is located in the upper (or the farthest) corner, is a more 'ideal', abstract and subjective projection of events from the other corners into the future (Seghazzo 2013). The definition of Place, Persons and Permanence is provided in table 3.3. In Allen's (2001) model, economic, social, natural and physical sustainability are represented as the four corners of the development process. Political sustainability is represented as the governance framework regulating the performance of the other dimensions (Allen 2001). The circle represents the ecological capacity of the urban region, while the arrows emanating from the four, corner dimensions represent the pressures these place on natural resources. The definitions of economic, social, natural and physical sustainability is provided in table 3.3.

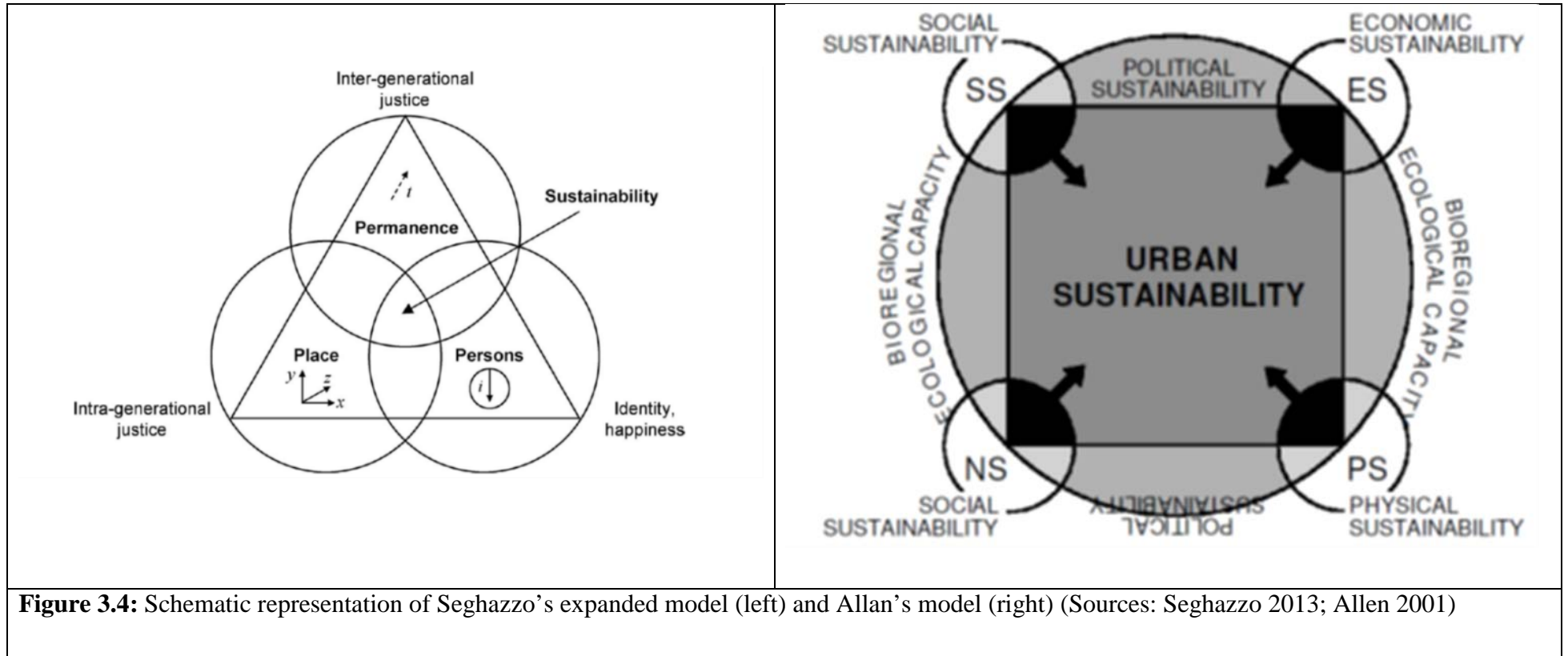


Figure 3.4: Schematic representation of Seghazzo's expanded model (left) and Allan's model (right) (Sources: Seghazzo 2013; Allen 2001)

Table 3.3: The five dimensions of Seghazzo's and Allan's sustainability paradigm (Sources: Adapted from Seghazzo 2013 & Allen 2001)

Allen (2001)		Seghazzo (2013)	
Dimensions	Definition	Dimension	Explanation
Economic sustainability (ES)	The ability of the local economy to sustain itself. Implies maximising productivity of local economy in relation to the sustainability of the other four dimensions.	First dimension of place	People tend to see the environment as the place in which they live and interact. Place provides an important share of their sense of belonging and identity that are partly responsible for the generation of culture. They contain the spatialised, timed, sensed and embodied dimensions of nature. Places are, therefore, a source of facts, identities and behaviours. They incorporate notions of culture, local ways of life, and human physical and psychological health. Place can also be constituted by a number of locations distant from one another. Place is, to a certain extent, a social construct that helps people build a sense of belonging to a given culture. Place as an inseparable unity constituted by the natural and cultural environments can help transcend the nature/culture dichotomy and integrate or reconcile opposite worldviews such as anthropocentrism and non-anthropocentrism. Place, as the acknowledgment of local conditions, constraints and opportunities, is necessary to devise more sustainable policies. Place is also viewed as the restricted realm of intergenerational equity.
Social sustainability (SS)	A set of actions and policies aimed at the improvement of the quality of life through fair access and distribution of rights over the use of natural and built environment.	Second dimension of place	
Natural sustainability (NS)	Understood as the rational management of natural resources. Linked to the potential of urban regions to extract natural resources and the management of the productivity of these resources.	Third dimension of place	
Physical sustainability (PS)	The capacity and aptitude of the urban built environment and techno-structures to support life and productive activity.	Permanence	Not only maintenance of present conditions, it includes changes and improvements. Permanence could be seen as the main realm of intergenerational equity as it is concerned with inter-temporal morals. It is consequently the dimension where planning and consideration of the future effects of today's actions and inactions are paramount.
Political sustainability (PS)	Understood as the democratisation of political capital, so that local society can use it to regulate its relation with the four other dimensions.	Persons	Represents recognition that an individual 'person' exists within each human being, each being similar yet entirely different from those around them. This has been the subject of intense philosophical, psychological and religious speculation. It is the rejection of all attempts to merge individuals and society into one single dimension as this would fail to capture the complexity of human behaviour and the relevance of personal relationships for sustainability.

3.6.4 The synthesis

The starting point for Seghazzo's (2013) and Allen's (2001) paradigms is not new. Sachs (2000), Hattingh (2001) and Korhonen (2008) highlight the shortcomings of the anthropogenic focus of ecological modernisation, the failure of it to generate policy to protect nature, and its overestimation of the importance of the economy. However, Seghazzo's (2013) conception of sustainable development paradigm demonstrates an engagement with the evolving continuum of critiques of ecological modernisation. It also addresses the notion that redefining progress involves dealing with the unintended consequences of Latour's (2007) 'imbroglios' of modernity and the mechanism by which they are transmitted intergenerationally. Seghazzo's (2013) model suggests that social and cultural practices influence the production of space and that it is important to acknowledge the plurality of the exchanges between humans and nature. It encapsulates the essence of the main premises of the second wave revival of classic political economy. Allen's (2001) model, on the other hand, introduces the idea that the prevention and mitigating of the consequences of the imbroglios of modernity, requires the redistribution of economic surpluses. This in turn will require the reorientation of urban economies (Allen 2001). Allen (2001) suggests that this will ensure a reconfiguration of local societies, their power relations, behaviour and rhetoric, and the institutional arrangements within urban regions.

Having argued in support of a capitalism in nature approach, it follows that Bodin and Tengo's (2012) assertion is promising: that is, that socio-ecological systems consist of social actors and the ecological resources, along with the network of interdependencies between the two. A social actor is defined as being an individual, a group of individuals (e.g. a community), an organisation or a state (Bodin & Tengo 2012). This type of conceptualisation serves as a stop loss against the tendency towards methodical nationalism and methodical reductionism, which was so explicitly apparent within ecological modernisation. Seghazzo's (2013) three-dimensional conception of space signals that one has to avoid the homogenisation of populations within a particular unit of space. Bodin and Tengo (2012) assert that it is critically important to assess socio-ecological systems in terms of the asymmetrical access to ecosystem services. Allen (2009) confirms that the challenge of urban sustainability cannot be overcome without unpacking the inequality in consumption levels. Allen (2009) notes that conditions of hyper and sub-consumption coexist in the contemporary urbanisation process. Acknowledging this inequality would counter any suggestions that populations within a given space are homogeneous and that all individuals have equal access to ecosystem services.

Seghazzo's (2013) delineation of the complementary concepts of Place and Persons provides a fuller description of what should constitute sustainable development. It contributes towards the reassessment of the changing nature of human settlements which challenge the conventional definitions of places in terms of their location, physical structure, institutional context and cultural outlook (Allen 2009). Allen (2009) suggests that globalisation has also changed the way in which places relate to each other. Of particular importance, is the way in which globalisation has changed the functional relationship between the global and the local, the urban and the rural and the rich and the poor (Allen 2009). Allen (2001) suggest that there has been a re-primisation of urban economies so that they more attuned to global macro-economic aims instead of being responsive to local socio-economic conditions and the need to conserve of ecosystem services. Allen (2001) asserts that the re-primisation of urban economies can only be reversed via state intervention in capital and labour markets. Governments must ensure that investment in public infrastructure serves the interest of local market actors and be cognisant of the uniqueness of the spaces in which these local market actors are active (Allen 2001). Seghazzo's (2013) attempts to conceptual the three dimensions of Place so that they are more than just empty geographical spaces. Seghazzo (2013) asserts that Place is instead spatialised, timed, sensed and embodied dimensions of nature. Places are thus a source of unique facts, identities and behaviours (Seghazzo 2013). This perspective is extremely important if transdisciplinarity is to drive our transition to sustainability. Seghazzo (2013) asserts that Permanence- not just the maintenance of present conditions but ensuring the future is better – must be one of the objectives of sustainability.

Permanence provides an ideological frame for the objectives of the reorientation of urban economies. Swilling and Annecke's (2012) assert that the reorientation of economies occur only when sustainable-orientated inventions become sustainable-orientated innovations. There are two key differences between an invention and an innovation. Inventions refer to the creation of new products or processes, while an innovation is the improvement of an existing product or process. Innovation also refers to the process of ensuring that an invention becomes engrained within socio-technical systems i.e. used or applied at a significant scale. (Swilling & Annecke 2012). Swilling and Annecke (2012) assert that the process of facilitating the diffusion of sustainable-orientated inventions so that they become sustainable-orientated innovations is difficult and that its study must be a part of sustainability science. Kiesling *et al's* (2012) asserts that it is important to recognise the danger of trying to assess the diffusion of innovation, using computer generated aggregate models of innovation. Such models are typically based on a formulation of differential equations which specify the flow(s) between mutually exclusive and collectively exhaustive subgroups, such as adopters and non-adopters (Kiesling *et al* 2012).

The study of the diffusion of innovation is an interdisciplinary field, with roots in anthropology, sociology, geography, political science, economics and marketing (Kiesling *et al* 2012). The use of aggregate models is however an interpretation of a complex process using the discredited Ricardian minimalist analytical framework. Mol and Spaargaren (2000) confirm that ecological modernisation was initially heavily reliant on the role of technological innovation, especially in the sphere of industrial production. This perspective was coupled with a relatively underdeveloped notion of human agency (Mol & Spaargaren 2000). There are two aspects of aggregate innovation models that are particularly discursive and which have been an integral part of ecological modernisation. Firstly, they are unable to reproduce the complexity of real-world diffusion patterns, such as innovation failures, oscillations and the collapses of initially successful diffusions (Kiesling *et al* 2012). Secondly, they are all premised on the homogenisation of populations where everyone has the same potential to adapt to innovations, which the empirical evidence on inequality shows is simply not true. This rejection of the tendency for sustainable development paradigms to smooth over real-world processes is the final pillar of the sustainable development paradigm developed in this project. It aims to be ‘the conceptual framework within which the territorial, temporal, and personal aspects of development can be openly discussed’ (Seghazzo 2013:547). It provides the space for the effective deployment of the suite of post-structuralist and post-modern analytical tools needed for the development of an uniquely African perspective on sustainability, as directed by Pieterse (2015a) and Lawhon *et al* (2014).

3.7 Section Six: Conclusion

The primary purpose of this chapter was to amend existing analytical frameworks using a transdisciplinary lens to make a contribution to the study of the transition to sustainability. The aim of Section One was to contribute to the challenge of finding a way of extracting value from classic sociology that overcomes conventional sociology’s derogation of any intellectual work that does not take a particular canon as its founding rules (Sitas 2006). This is important if sociology is to meet its obligation to interrogate social form while not repressing the development of alternative consciousness. It will also prevent further entrenching the demeaning binaries between the peripheral sociologist’s critical edge and the classic canons (Sitas 2006). Also important is the avoidance of methodical nationalism, methodical reductionism and methodical excludability, which plague knowledge production in sociology. This research project proposes the use of the new cosmopolitan turn (Pendenza 2014) to reinterpret the conjectural historical narratives of classic sociology (Palmieri 2008). This will allow the analyses of contemporary society using certain analytical categories of the classic sociological tradition.

Section Two explores the trajectory of the most significant lines of enquiry into the epistemology of sociology. It was argued that a strong case can be made regarding the points of contact between the epistemological history of neo-liberalism and the critical enquiry of classic sociology (Nicholas 2014). This provides the impetus for the revival of classic political economy. The argument being that the classic political economy framework is inherently transdisciplinary in character (Brown & Spencer 2014). The assertion by the Cambridge school, the most significant agent active in the revival of classic political economy (Martin 2012; Putnam & Walsh 2012), is that the fair distribution of economic surpluses, the embedding of the economy in society, human well-being and the pursuit of expanded notions of self-interest should be at the core of the political economy of the transition to sustainability. The urbanisation trend suggests that the focus should be on the fair distribution of surpluses within urban factor markets, specifically the labour market. Geels's (2014) triple-level embeddedness framework provides the analytical framework required to assess what is involved in realising the aims of the Cambridge revival of classic political economy. The immersion of the bidirectional relationship between firms-in-industries and socio-political regimes, in the context of global, historical capital flows, is important to ensure that innovation does not merely further entrench the logic of specialisation. It is essential that the rethinking of innovation be driven by the ending of the Cartesian distinction between nature and humans and the acceptance of state intervention in markets. The focus of innovation must be on that which deals most closely with human material exchanges with nature. The previous section confirmed the importance of statecraft and innovation. Khan's (2010) synthesis of the Chalmers/Chang/Mkandawire capitalist developmental-state praxis within the context of Palma's (2014) description of the three major economic growth theory camps, challenges Swilling and Anneck's (2012) assertion that the capitalist developmental state should aim to make innovation and not capital the centre of the growth and development narrative. This is substantiated by critical literature, which shows that cost saving in the labour market is inherent to modern endogenous growth theory. Keynes-Schumpeter's agent-based growth models do not rely on this corollary and, therefore, are better suited to being the economic growth theory of choice during the transition to sustainability. What is important is the fact that these models aim to supplement Schumpeter's incomplete explanation of how technological innovation drives economic growth, and how the potential negative impacts of the process of creative destruction can be mitigated. These models aim to overcome the tendency for innovation-driven economic growth models to ignore the role of aggregate demand and macroeconomic conditions (unemployment, access to credit, income inequality) on the evolution of technology; and finally, it seeks to address the weakness in the way economic growth theory is translated into policy (Dosi *et al* 2014).

In the final section, an attempt is made to craft a sustainable development paradigm that aims to encapsulate the essence of the points of advocacy raised in the preceding sections. Seghazzo's (2013) and Allen's (2001) expanded sustainable-development paradigms provide a solid foundation. This is supplemented by drawing on insights from Bodin's and Tengo's (2012) model of the asymmetrical access to ecosystem services. This establishes the importance of the state's provision of public and infrastructure as a critical driver towards sustainability. Lastly it was suggested that innovation cannot be assessed using aggregate diffusion models. The use of these models will result in sustainable development paradigms not having an understanding of the real social processes involved in transforming inventions into innovation.

Chapter 4

Urban assemblages and the Africa perspective

4.1 Introduction

In Chapter 2 it was shown that social science would remain relevant in the Anthropocene if a transdisciplinary approach was adopted. Here the credibility of knowledge production is based on the uniqueness of an individual's (actual and potential) material exchanges with nature, instead of the degree to which it prescribes to the social structure of a specific discipline. It was postulated that the ontological enquiry into 'how the world is' must be concerned with the generalised features of our experiences and accept that there are many sources of reliable accounts of what the world contains. This includes those drawn from a wide variety of theory generating conceptual systems. In Chapter 3 it was shown that the use of the classic political economy analytical framework provides the space to move beyond methodical nationalism, methodical reductionism and methodical excludability, which have plagued social theory (Sitas 2006; Swilling & Annecke 2012; Pendenza 2015) and prevented the consideration of a suitably expanded notion of urbanism in development planning (Pieterse 2015b). This was drawn on in the remoulding of the suite of analytical tools which are being used in the process of conceptualising the transition to sustainability. It was suggested that this would create the pathway for synergy between assemblage urbanism and the aforementioned intellectual project.

This study asserts that assemblage urbanism is able to contribute towards the transition to sustainability as it represents the next step in the evolution of the efficacy and unity of critical urban theory, not its replacement. This study contends that this perspective allows critical urban theory to remain relevant to the effort to achieve sustainability. In Chapter 3, the aspects of the second wave of urbanism that are of most significance were identified. Two of these aspects are the natural increase of urban populations (Swilling & Annecke 2012) and the polymorphic, variable and dynamic nature of the socio-spatial dimension of urbanism in the Global South (Brenner & Schmid 2014). Two others are Alsayyad's (2004) assertion that urban informality has become the new norm and Gordon and Turok's (2005) contention that this has been exacerbated by urban unemployment resulting from economic weakness and a deficient demand for labour. Lastly, the importance of Jaglin's (2013) description of the real governance of the delivery of public goods in urban spaces and the extent to which this represents the incomplete unravelling of Fanon's (1961) Manichean mechanism.

Collectively, these aspects of the second wave of urbanism encourage efforts to link the analytical and methodological orientations of assemblage urbanism to the tools of geopolitical economy (Brenner *et al* 2011). Importantly it does this in a manner that adds to a critical approach to continuing planetary urban transformations (Brenner *et al* 2011). Brenner *et al* (2011) suggest that this critical approach is one that is attuned not only to local specificities and contingencies, but also to broader, intercontextual dynamics, trajectories and struggles. This approach complies with Lawhon *et al*'s (2014) assertion that critical urban theory must learn from the way Southern urbanism is unfolding. This approach also takes heed of Storper and Scott's (2016) caution against the appropriation of certain reproductions of assemblage thinking into critical urban theory. While promising, assemblage urbanism has not resulted in critical urban theory moving beyond shedding 'the baggage of 20th-century social science that is needed if critical urban theorists are to establish themselves as being central to the production of space in the 21st century' (Schafran 2014: 326). Literature suggests that this is because critical urban theory has not completely rejected the divisions of knowledge production so evident in critical social theory, even though it is rooted in a transdisciplinary political economic framework (Brenner 2009).

In Section One the divisions within critical urban thought are explored. It is suggested that the significant movements in the thinking about the city and urbanism have not escaped the divisive nature of the agency/structure debate that permeates social theory. Also explored is Brenner and Schmid's (2015) distilling of critical urban theory to mutually constitutive propositions. This study contends that this is useful and allows a more unified approach to critical urban theory. In Section Two, the way in which assemblage thinking has been appropriated in critical urban theory is analysed. It is suggested that the value of assemblage thinking is not that it represents an alternative ontology to critical urban theory; instead, assemblage thinking will move this scholarship beyond it being negatively influenced by the discursive nature of the conflict between the analytical and synthetic traditions of philosophy. In Section Three, it is argued that assemblage theory allows critical urban theory to transcend the urban age narrative debate, to focus instead on how expanded notions of demographic migrations and dividends can be useful. Section Four attempts to situate the work being done to delineate alternative governance frameworks of service delivery configurations within efforts to transition to a Green economy. Section Five aims to show how the study of the unravelling of colonialism can be useful in unlocking the potential of actor-network theory (ANT) so as to reintroduce politics and agency into critical urban theory.

4.2 Section One: The Comtean division within critical urban theory

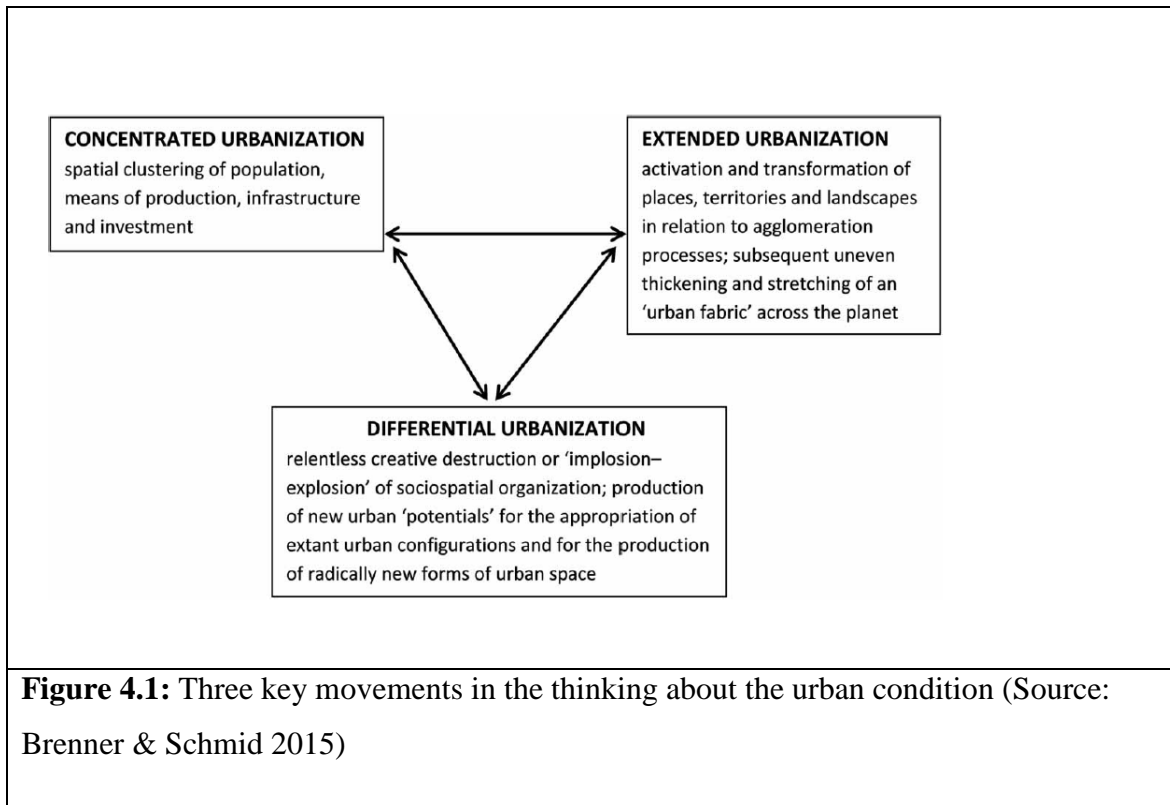
The self-critical review of a discipline by one who is actively embedded in its social structure is often the most biting and relevant. Schafran (2014) identifies 23 key debates that need to be resolved for critical urban theory to remain relevant. These debates fall within the ambit of the following substantive issues: liberalism, modernism and sustainability, or institutional issues like the legacy of social science or the untapped power of pedagogy. These were confirmed in Chapter 3 to be critically important in the efforts to conceptualise the transition to sustainability. Schafran (2014) identifies these debates in response to the acknowledgement that 50 years of critical urban thought has not realised any marked or fundamental change to the political economy of the production of space. The failure to translate into action the fact that critical urban thought is attuned to the potentially problematic nature of urban knowledge and how it can be abused, is one these debates (Schafran 2014). Other debates include the following: (1) critical urban theory is too disjointed and proponents must start thinking collectively; (2) sustainability must be understood as a failed coalition across equity, environmental and political lines; (3) the urban must be made central to thought and politics; (4) some form of investment/profit nexus is essential; and (5) that there has been no recognition that social science is part of the problem. Collectively this points towards the discipline being faced with significant theoretical, conceptual, epistemological and methodological challenges (Brenner, Madden & Wachsmuth 2011).

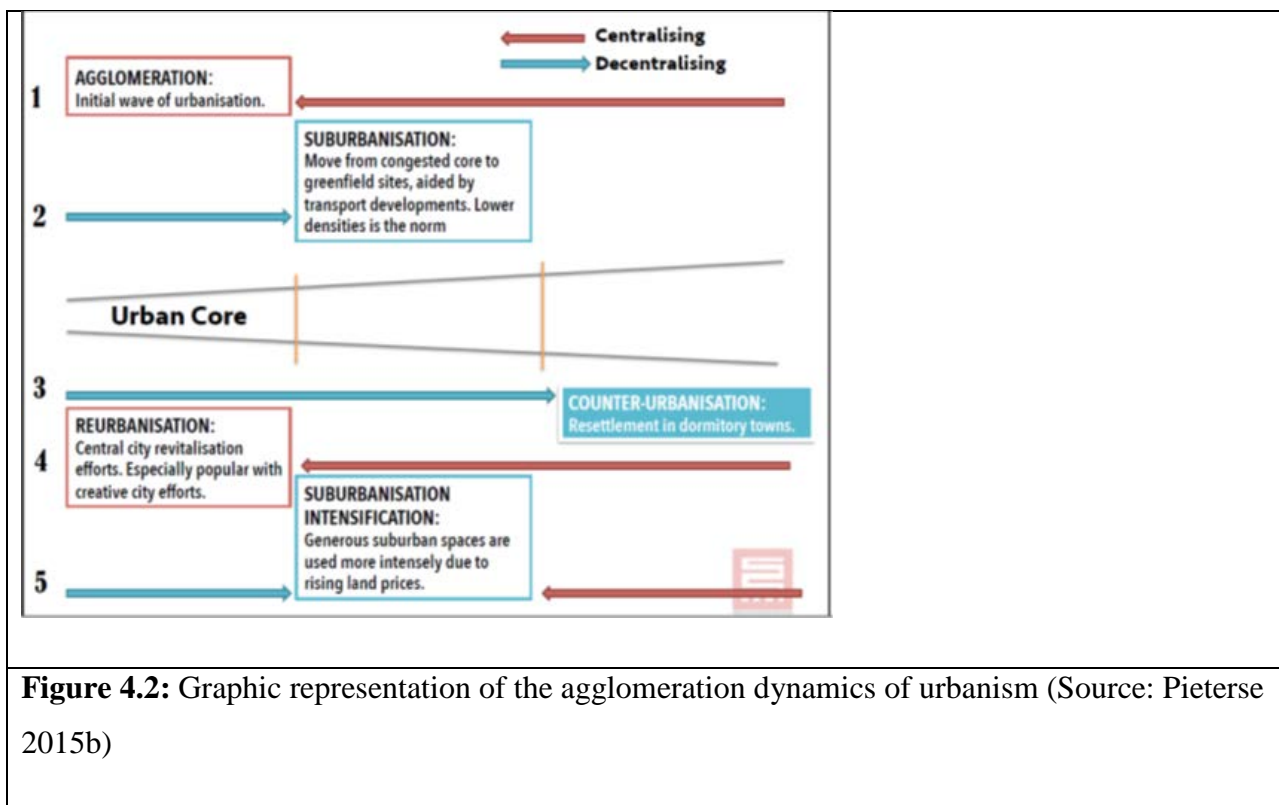
4.2.1 Defining the city: Dealing with a moving target

Sassen (2006) examines the trends in the way in which cities are conceived as an object of analyses within social theory. Sassen (2006) concludes that urban sociology and its various sub-disciplines need to respond to these trends if the discipline is to fulfil its intended purpose of developing analytical and empirical elements that are useful to social theory in the 21st century. These trends are both a manifestation of, and an emergent reaction to, early urban sociological scholarship concerned with debating the construct of cities within social science (Sassen 2006). Sassen (2006) asserts that social science was initially slow to accept that cities are complex, imprecise, and charged with specific historical and thereby variable meanings (Sassen 2006).

Sassen (2006) asserts that this changed. It is demonstrated by the significant shift in state policy away from the promotion of convergence in national territorial development towards targeting particular sub-national spaces for development and resource allocation (Sassen 2006). Furthermore globalisation has resulted in the emergence of new cultural forms that cannot be contained exclusively within national framings, such as global imaginaries and cultural transnationalisms (Sassen 2006). Debating the construct of cities, therefore, now requires engaging with the various

schools of urban thought. Brenner and Schmid (2015) go further and identify three key movements in the thinking about the urban condition, which are shown in Figure 4.1. In an effort to circumnavigate the long running debate around defining cities, Brenner (2009) suggests the adoption of a planetary perspective of urbanism within critical urban theory. This can be seen as progress, but, as Pieterse (2015b) shows, this in itself raises the even more daunting task of defining urbanism as a sociological unit of analysis. The possible categorisation in this regard is shown in Figure 4.2.





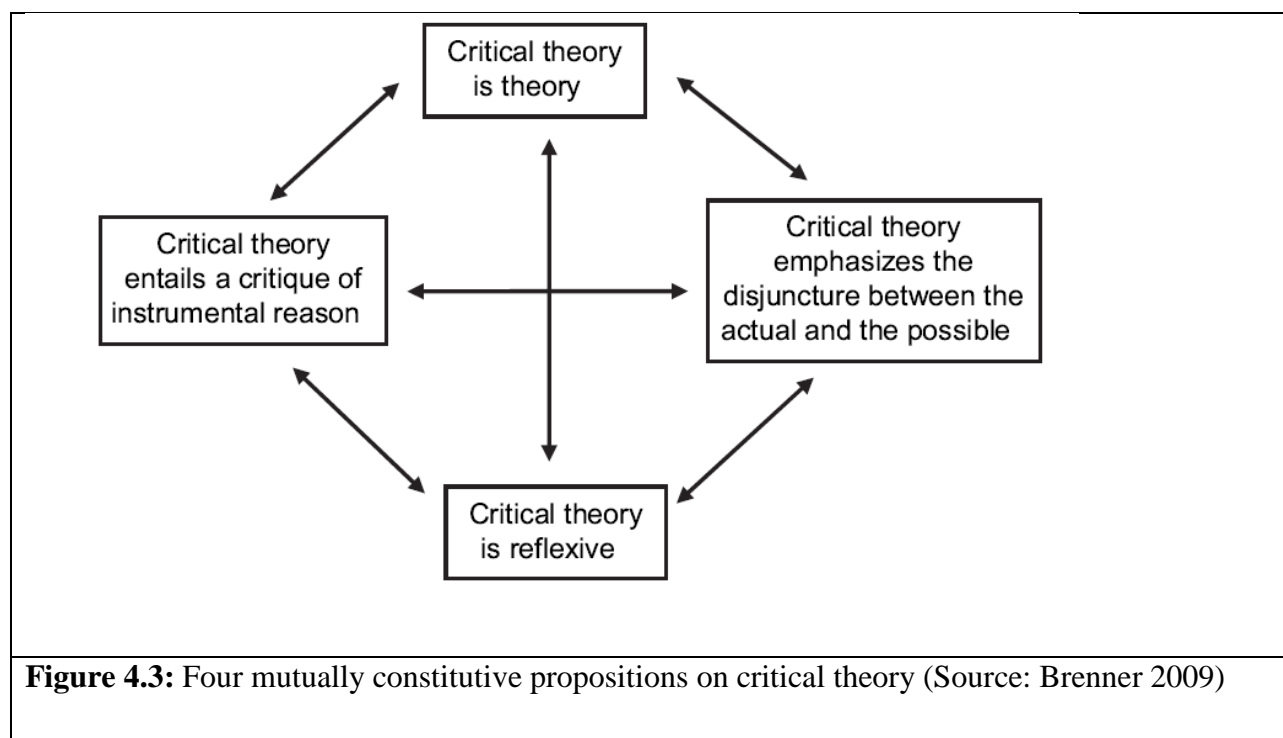
The point here is that critical urban theory – which involves the critique of ideology (including social–scientific ideologies) *and* the critique of power, inequality, injustice and exploitation, at once within and among cities (Brenner 2009) – is still reliant on a definition of a city or of urbanism derived from social science. As illustrated in chapter 3 social science is a discipline that has a specific social structure. The trends to which Sassen (2006), Brenner and Schmid (2015) and Pieterse (2015b) refer suggest that the object of analyses at the core of critical urban theory is a moving target, and that trying to deal with this has resulted in divisions within critical urban scholarship (Schafran 2014). Brenner (2009:199) notes that ‘the historical specificity of any approach to critical social theory, urban or otherwise’, needs to be addressed. The problems associated with the definition of the urban and its impact on critical urban theory is a legacy of the agency/structure debate which permeates social theory. This is discussed later.

4.2.2 Moving towards the unification of critical urban theory

In the introduction to this study it was indicated that the reliance on the scientific socialism of Marxism appropriated within many diverse traditions of critical urban thought, is no longer sufficient. It does not prime critical thought for the required synthesis between approaches that are drawn from analytical and continental traditions of philosophy and sociology. In the search for a supplement or an alternative basis for critical thought Brenner (2009) makes the case for the consideration of the Frankfurt school of critical scholarship. The Frankfurt school was originally

premised on a specific interpretation of Marx, where critique was explored most systematically as a methodological, theoretical and political problem (Brenner 2009). This critique has however developed a research foci premised on the innovative, intellectually and politically subversive programme of political economy, social-psychological dynamics and evolutionary trends, and (an) inner contradiction(s) of capitalism (Brenner 2009). Brenner (2009) acknowledges that there are deep epistemological, methodological, political and substantive differences among the writers who have made significant contributions to critical theory scholarship within the Frankfurt school. The deep connection between the Frankfurt school and Marxism is also acknowledged (Brenner 2009). This is important as critical theory is premised on the acknowledgment of the limitations of the origin of knowledge and not the alienation of knowledge sources. Brenner (2009) distils four, key, mutually constitutive propositions on critical theory, which he then uses to make an argument for how critical social theory and critical urban theory should be related. These are shown in Figure 4.3.

The application of these mutually constitutive propositions would promote the unification of critical urban theory which is so noticeably required. A concerted effort should, therefore, be made to keep the mutually constitutive aspects of critical social theory at the core of critical urban theory. This ensures that the deep divisions of the social structure of critical social theory do not result in the same division in the social structure of critical urban theory. Failure to do this would prevent the adoption of a transdisciplinary approach and the unification of critical urban theory which is so critically required. It is contended here that assemblage urbanism allows for this.



4.3 Section Two: Assemblage theory and critical urban theory

The oft repeated narrative of the origin of assemblage thinking and how it has diffused into critical urban theory scholarship starts by noting how its philosophy was first mobilised across several traditions of social theory following the translation into English of Deleuze and Guattari's (1980 [1987]) seminal post-structuralist work, *A Thousand Plateaus: Capitalism and Schizophrenia*. Assemblage theory is of 'considerable complexity in its philosophical representations' and the understanding of it is complicated by the various ways in which it has been interpreted by secondary commentators (Storper & Scott 2016:20). Brenner *et al* (2011:228) contend that assemblage thinking has 'subsequently been mobilised in multifarious ways' so that 'significant elements of what has today come to be known as "assemblage theory" are only partially linked to the philosophical apparatus of Deleuze and Guattari'. Storper and Scott (2016:20) contend that it has been fuelled by widespread adoption of an abridged interpretation of assemblage urbanism, where it is an 'ontological view of the world where it is conceived as a mass of rhizomatic networks or finely-grained relationships constituting the fundamental character of reality'. These networks 'bind together unique human and non-human objects within fluid, hybrid mosaics, forming more or less temporarily stabilised systems of interconnections representing the current state of the observable world' (Storper & Scott: 20). Assemblages become stabilised by 'territorialisation' (as opposed to destabilising deterritorialisation) when they are anchored to particular tracts of geographical space (Storper & Scott 2016). Importantly, any state of reality in this theory is taken to be 'flat' in the sense that any perceived hierarchical or scalar ordering (from a top to a bottom) decomposes back again into the kaleidoscopic, rhizomatic and horizontal relations that are said to constitute it (DeLanda 2002; see also Marston *et al* 2005 cited in Storper & Scott 2016).

Most well-known of the approaches that have emerged from this understanding of assemblage thinking is ANT, developed by scholars such as Bruno Latour, Michael Callon and John Law (Brenner *et al* 2011). This represents a way of exploring the multiple relationships that tie human and non-human objects together. ANT found its way into critical urban discourse via the work of Farías and Bender (Brenner *et al* 2011; McFarlane 2011; Storper & Scott 2016). Their work was concerned with the possible applications of ANT in urban research, but with the additional claim that all of these objects are constituted as actants, or capable of agency in the sense that they exert effects on other actants (Storper & Scott 2016). Of issue here is not necessarily the specifics of ANT (returned to later), but rather the contestation regarding how the notion of assemblage thinking contributes to critical urban thinking. Storper and Scott (2016:22) describe one view as being premised on the notion that assemblage thinking 'radically privileges the activity of assemblage itself, seeing no wider forces that might determine what assemblages are possible or not possible'.

Additionally, 'it advocates a methodology of building the elements of social organisation a posteriori from the ground up' and 'the result is a largely indeterminate concept of the city as a complex, variegated, multifarious, open-ended, fluid, unique, hybrid, unruly, nonlinear, aggregate of disparate phenomena tied together in a haphazard mix of causal and contingent relationships' (Storper & Scott 2016:22). As a result, it is easily dismissed because it suffers from naive objectivism, which renders it being of no use in critical urban thought. McFarlane (2011), on the other hand, suggests that this view suffers from the narrow focus on the application of assemblage thinking to urban theory via ANT theory. This has resulted in there not being an appreciation of the other ways in which assemblage thinking has diffused into urban theory. This has occurred namely, within urban geography as a means to describe socio-material transformation and in relation to urban mobilities (McFarlane 2011). This is demonstrated by cyborg urbanism and urban metabolism literature. Cyborg urbanism is a conceptual tool which extends analysis of flows, structures and relations beyond conventional boundaries that define global cities (Gandy 2005).

McFarlane (2011) then argues that a return to a more DeleuzeGuattarian notion of assemblage thinking would be beneficial to critical urban theory in particular. It provides 'first a descriptive orientation to the city as produced through relations of history and potential (or the actual and the possible)' (McFarlane 2011:208). It also provides a concept that disrupts how we conceive agency and therefore critique it (McFarlane 2011). Lastly it matches the critical imaginary of the city with specific political implications (McFarlane 2011). Brenner *et al* (2011) do not dispute that assemblage theory has contributed to critical urban theory, as confirmed in the first two rows of Table 4.1.

Table 4.1: The various articulations of assemblage thinking and its relation to critical urban thinking (Source: Brenner *et al* 2011)

	Relation to urban political economy	Exemplary research foci	Representative authors
Level 1: empirical <i>Political economy of urban assemblages</i>	Assemblage is understood as a specific type of research object that can be analyzed through a political-economic framework and/or contextualized in relation to historically and geographically specific political-economic trends.	Technological networks within and among cities (e.g. electrical grids); intercity networks; assemblages of territory, authority and rights.	Graham and Marvin (2001); Sassen (2006); Ali and Keil (2010); Graham (2010)
Level 2: methodological <i>Assemblage as a methodological extension of urban political economy</i>	Assemblage (often in conjunction with the closely related concept of 'metabolism') is presented as a methodological orientation through which to investigate previously neglected dimensions of capitalist urbanization. The core concerns of critical urban political economy remain central, but are now extended into new realms of inquiry.	The production of socationatures; infrastructural disruption or collapse; flows of energy, value, substances, microbes, people, ideas.	Kaika (2005); Heynen <i>et al.</i> (2006); Bender (2010); Graham (2010); McFarlane (2011a)
Level 3: ontological <i>Assemblage as an 'alternative ontology for the city' (Farías, 2010, p. 13)</i>	Assemblage analysis displaces the investigation of capitalist urban development and the core concerns of urban political economy (e.g. the commodification of urban space, inequality and power relations, state intervention, polarization, uneven spatial development).	Urban materialities and infrastructures, including buildings, highways, artifacts, informal settlements, communications systems, traffic flows, inter-urban networks	Latour and Hermant (2006); Farías (2010); various contributions to Farías and Bender (2010); Smith (2010); McFarlane (2011a, 2011b)

On the contrary, it is accepted that certain articulations of assemblage thinking has stimulated a 'substantial re-thinking of urban theory, but it is one that retains the central concerns, concepts and analytical orientation of political economy within a methodologically expanded framework' (Brenner *et al* 2011:232). However, in row three of the table, Brenner *et al* (2011) note that assemblage thinking can also be articulated as being an alternative ontology for critical urban theory. This alternative ontology is one that moves away from the analyses of urbanism, using a radical urban political economy perspective, where the concepts of capital accumulation, class, land rent, commodification, state power and uneven spatial development and so forth are key (Brenner *et al* 2011).

4.3.1 Recognising the analytic/synthetic philosophical duality of assemblage thinking and political economy

Schafran's (2014) frustration about the disjointed nature of critical urban thought and the assertion that it suffers from the same shortcomings as social science is important. McFarlane (2011) asserts that a return to the original DeleuzeGuattarian notion of assemblage thinking is required. This will prevent the 'assemblage as an alternative ontology' debate from continuing to promote the view that the social structures underpinning assemblage urbanism and critical urban theory are mutually exclusive (McFarlane 2011). Brenner *et al* (2011), however, assert that doing so means arguing that assemblage thinking represents an alternative ontology for critical urban theory. Exploring McFarlane's (2011) argument requires a return to the original DeleuzeGuattarian notion of assemblage thinking and the classic political economic roots of critical urban thinking.

The latter comes with the corollary that it means a return to the classic political economic framework delineated in Chapter 3. This framework is conceptualised by the second wave Cambridge tradition, which has, as its central premises, transformative economic growth, embeddedness and the collapse of the fact/value dichotomy. More specifically, it is herein posited that transformative economic growth can best be realised only through the redistribution of economic surpluses within urban factor markets, and that these markets are embedded in legal, cultural, political and ecological frameworks that are connected spatially and temporally across various dimensions. This means that sustainable urbanism requires a correction of the asymmetrical access to ecosystem services and the disjuncture between economic growth and the role of aggregate demand and macroeconomic conditions (unemployment, access to credit, income inequality, etc.). The point being that the delineation of the classic political economy employed did not steer away from the central concerns of the radical, urban political economy that is the foundation of critical urban thought. A classic political economic analytical framework naturally invokes transdisciplinary knowledge production, thus making it ideal for breaching the walls of the social structure of the various sub-disciplines of social theory.

The literature suggests that the impasse, which is the subject of the debate between Brenner *et al* (2011) and McFarlane (2011), represents the translocation of the analytic/synthetic (continental) philosophy debate from within social science. This debate has raged since it was first introduced social theory in the work of Locke, Hume, and then Kant (Egginton & Sandbothe 2004). Analytical philosophers tend to dismiss continental philosophers by finding fault with 'their lack of rigour, clarity and precision', while 'analytical philosophers are ridiculed for [their] pretensions to scientificity' (Egginton & Sandbothe 2004: 2). This, in turn, has prevented the critical urban

theorists on either side of the assemblage debate from realising that that they are actually unnecessarily engaged in the analytical philosophy versus continental philosophy debate. The transdisciplinarity (specifically the pragmatic turn) of the classic political economy, which is already central to critical urban theory, would mitigate if allowed.

4.3.2 Allowing transdisciplinarity to synchronise the meta-theoretic frameworks of assemblage thinking and the Cambridge school of political economy

This study contends that assemblage urbanism and critical urban theory are underpinned by the same post-structural transdisciplinary intellectual project. Brenner (2009) and Lawhon *et al* (2013) suggest that the application of post-structuralist tools is evident in critical urban theory and assemblage urbanism. Tomkiss's (2011) shows that the contestation about whether assemblage thinking is a means of describing or explaining causality, is one of the reasons why critical urban theory is so disjointed. This suggests that this contestation concerns whether assemblage thinking represents an alternative meta-theoretical framework for thinking about a city. This study suggests that the meta-theoretical framework of critical urban theory and assemblage urbanism are mutually re-enforcing as opposed to being different.

It is suggested that the application of post-structuralist tools in assemblage urbanism and critical urban theory has occurred in response to certain trends within philosophy. Harrison (2014) suggest that there are three recent trends which has resulted in post-structuralism occupying a unique position within continental philosophy. First, is the revitalisation of questioning whether 'how the world is' is contingent on historical issues (Harrison 2014). Second, post-structuralism is anti-essentialist with meaning and identity being perceived as effects and not causes of how the world is. Lastly, Harrison (2014) notes that post-structuralism has a major ethical aspect. Harrison (2014:138) notes that post-structuralism is critiqued as being unable to 'offer any recognisable progressive programme, be it in terms of knowledge or politics'. Harrison (2014) asserts the unique position which post-structuralism now holds within philosophy is a result of the adoption of an affirmative nature which draws on the work of Foucault and Derrida. According to Harrison (2014:139) Foucault's work attempted to 'bring to the fore the extreme historical and geographic contingency of apparently transcendental forces, entities and concepts'. Derrida's work suggested that 'we do not need a new foundation of the political' but rather the 'opening of concept of the political [democratic institutions] beyond its current imaginations and conceptualisation' (Harrison 2014: 139). Importantly, Harrison (2014) confirms that both Foucault and Derrida employed methods of analyses that draw heavily on the analytical tradition of philosophy. Harrison (2014)

suggests that the conflation of methods of analyses from both the analytical and continental tradition is demonstrated by Foucault and Derrida.

Putnam and Walsh (2012) suggest that the trends described by Harrison (2014) relate to efforts to encompass what has occurred since the central pillar of the logical positivist system was discredited by Quines (1951) seminal work 'Two dogmas of Empiricism'. This pillar being the belief that 'true scientific statements could be neatly sorted into empirical truths and analytical statements' via the fact/value/convention dichotomy (Putnam & Walsh 2012:114). Putnam and Walsh (2012) suggest that while Quines' (1951) seminal work, 'Two dogmas of Empiricism' showed that the fact/value/convention dichotomy was untenable, it did not take into account the ethics of value judgements and its relation to facts. Putnam and Walsh (2012) assert that this intellectual project draws on methods from different traditions of philosophy and that it has profound implications for the role of science in moulding our understanding of the world. The entanglement of fact and value mean that there is no way to separate the descriptive and evaluative aspects of facts (Putnam & Walsh 2012). This has implications for the conventions of all disciplines involved in the creation of knowledge. Eco (1985) asserts that this requires a semiological model which is imbued by a duality which references Saussure's critique of the nature of language. Saussure suggested that 'the structure of language is autonomous in the sense that it is internal to itself and not a reflection or representation of something else e.g., the structure of thoughts or of independently given facts' (Holdcraft 1991: 10). The Cambridge school of classic political economy embraces the collapse of the fact/value/convention dichotomy (Putnam & Walsh 2012). This study proposes that this school of political economy should be the bases for critical urban thought. It has been shown that this school of classic political economy embraces the affirmative nature of post-structuralism.

This study must now show that assemblage urbanism is also influenced by the affirmative nature of post-structuralism. This requires revisiting the DeleuzeGuattarian notion of assemblage thinking. DeleuzeGuattarian tetravalent assemblages consist of (1) content and expression; and (2) territoriality and deterritorialisation, and are driven by the abstract machine (Deleuze & Guattari 1980). Dewsbury (2011) assert that these assemblages originate from and synthesise highly specialised knowledge derived from neural science, electrical engineering, theories of evolutionary biology and self-adaptive systems. Assemblages also draw on quantum physics, mathematical, marketing and digital capital (Dewsbury 2011). Assemblages are developed to comprehend meaning in a way that avoids the problems and debates which arise when one begins with the distinction between formal rules, on the one hand, and concrete linguistic behaviours and utterances, on the other (Bell 2006). This type of synthesis displays some of the core traits of continental philosophy (Bell 2006). Deleuze and Guattari (1980) argue that the very first division of

every assemblage is that it is simultaneously and inseparably a machinic assemblage and an assemblage of enunciation. They explain what this implies by referring to the example of the feudal system:

Taking the feudal assemblage as an example, we would have to consider the interminglings of bodies defining feudalism: the body of the earth and the social body; the body of the overlord, vassal, and serf; the body of the knight and the horse and their new relation to the stirrup; the weapons and tools assuring a symbiosis of bodies – a whole machinic assemblage. We would also have to consider statements, expressions, the juridical regime of heraldry, all of the incorporeal transformations, in particular, oaths and their variables (the oath of obedience, but also the oath of love, etc.): the collective assemblage of enunciation.

(Deleuze & Guattari 1980:89)

This example demonstrates that Deleuze and Guattari employ decompositional analyses, which is a method drawn from analytical philosophy. It aims to reveal the ‘real’ logical form of the fundamental structures underpinning assemblages. This analysis is done, in conjunction with the type of linguistic analytical method which is cognisant of Saussure’s critique of the nature of language. This ensures that the language used to describe the logic of assemblages do not result in a misunderstanding of the way in which one should think about assemblages. A society is defined by ‘its amalgamations, its machinic assemblages of bodies, of actions and passions, an intermingling of bodies reacting to one another, not by its tools’ (Deleuze & Guattari 1980: 90). This study suggests that the DeleuzeGuattarian notion of assemblages, which underpins assemblage urbanism, embodies the affirmative post-structuralist perspective described by Harrison (2014).

This review suggests that both the end of the fact/value dichotomy philosophical movement and the assemblage-thinking philosophical movement are post-structuralists projects. They represent attempts at mending the schism between the philosophical ontology of continental philosophy and the scientific ontology of analytical philosophy. It is contended here that both are concerned with the criticism of a dominant ideological view of the world. Eddington and Sandbothe (2004) contend that this schism is mended if one decides on a common idiom so that the different types of philosophy can address common problems. This schism is behind Schafran’s (2014) assertion that critical urban theory is too disjointed and that proponents must start thinking collectively. It means that although critical urban thought is now more than ever attuned to the potentially problematic nature of urban knowledge this has not been translated into action (Schafran 2014).

It is hereby proposed that moving beyond this impasse requires accepting that the appropriation of the assemblage perspective into critical urban theory is not an effort to introduce a new ontology. Rather, it reinforces the transdisciplinarity and effectiveness of the classic political economic

analytical framework used within critical urban theory. Why is it important that this schism is mended? The continued failure to mend this schism further entrenches urbanism as the site of the governance that results in the triage of certain people and places on the planet that maintains, a certain way of life. (Ruddick 2015).

4.4 Section Three: Towards an assemblage perspective for African urbanism

It was argued in Chapter 3 that the declaration that we are in the Anthropocene is based on the general acceptance that there are events or series of events or waves of events occurring or unfolding which urgently require a shift in knowledge generation and production, knowledge acquisition and the operationalisation of knowledge. The second wave of urbanism was denoted as one of these events. The change in the generation and management of knowledge is necessary, if socio-ecological, socio-political and socio-industrial systems are to be shifted onto a sustainable trajectory. The suite of heuristic tools used to conceptualise this transition include: embeddedness, sustainable development and economic theory. A political economic framework derived from the second wave of the Cambridge revival of classic political economy was used as a lens in the review of these heuristic tools. The decision to use this political economic framework was informed by acknowledgment that dealing with the imbroglios of modernity, requires a critical transdisciplinary approach. The Cambridge revival of classic political economy attempts to move beyond the science of Ricardian minimalism. This study proposes a conflation of a return to the multidimensional perspective in the deliberation of the repetition of economic processes in totality (Sraffa's work) and the multidimensional framework in which behaviour is understood in terms of the multiple motivations of the human agent in striving for well-being (Sen's work). It is an approach that does not abandon the critical inquiry of capitalism. It acknowledges the political economic framework needed to analyse capitalism must account for the capacity for capitalism to reorganise itself.

Brenner *et al* (2011:232) assert that certain articulations of assemblage thinking have stimulated a 'substantial rethinking of urban theory'. These articulations of assemblage urbanism allow the expansion of the political economic analytical framework on an empirical and methodological level. This study adopted an ontological and epistemologically qualified planetary perspective of urbanism. This ontological approach was explained in previous chapters. The application of this epistemological approach is now explained. This study responds to Pieterse's (2015a) call for the development of a uniquely African perspective of urbanism to insert into the development discourse in the African context. Pieterse (2015a) makes the point that global development policy production has a distinctly cyclical nature, and that one has to be cautious not miss an opportunity to influence this work. This is critical because of the strong political and institutional lock-in or path dependencies which are the result

of these types of global pacts (Pieterse 2015a). A number of important decisions having already been made on a number of key pacts. Examples include the setting of the Sustainable Development Goals and the ratification of Agenda 2030. While the ratification of such pacts is to be celebrated, it would be wise to take cognisance of the post-structural trend in policy transfer research. McCann and Ward (2012) suggest that the formulation of policy must take into account the shortcomings of orthodox policy transfer. Here the realities of varying political modalities and assemblages are smoothed out and under-accounted for in the policy transfer transaction (McCann & Ward 2012). Osborne *et al* (2015) provide a good example of how the application of a particular methodology used to prioritise the Sustainable Development Goals (SDG's) in developed countries can yield a result which is at odds with what is required in a developing countries. SDG 9 refers to building resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. SDG 1 refers to the ending of all forms of poverty everywhere. The realisation of these two SDG's are not ranked as being high priority aims for developed countries (Osborne *et al* 2015). These are however ranked amongst the high level aspirations in Agenda 2063. Given the proven unevenness of policy transfer along the Global North/South axis, it is well advised to apply the cautionary advisory outlined by McCann and Ward (2015). The adoption of an assemblage perspective of urbanism – in which the analysis of cities is sufficiently all-encompassing – is necessary to mitigate the spectre of the possible uneven transfer of policy in reaction to the ratification of the pacts mentioned earlier. It could also ensure that the benefits to Africa, which could be generated by this policy cycle, do not rely on an intervention stemming from one specific strategic objective of any of these pacts (e.g. only SDG 11 mentions cities; none of the high-level aspirations of Agenda 2063 mentions cities).

4.4.1 Provincialising knowledge: Moving beyond the barriers to synthesising theory

In Chapter 3 it was shown that post-colonial social theory has remained on the periphery of the social science discipline. The adoption of a new cosmopolitan perspective is one way to ensure that the dominance of the canons of classic social theory do not result in social science having a repressive social structure. A repressive social structure would block contemporary knowledge sources from making the contribution they should make. It was also intimated that these knowledge sources, which *should* inform social theory, originate in the Global South. However, it was not proposed that these classical canons be disregarded. Instead it was suggested that these canons and any new theory that is generated should be seen to be temporally and spatially specific, but not exclusively so. The canons and contemporary sources of information should be considered to be meaningful contributions to the collective human endeavour to collect knowledge. The review of literature in chapter 3 suggested that developmentalism would be an example of contemporary social theory that must be considered in conjunction with the classic canons of social theory. This

will require the synthesis of knowledge from different sources. Schumpeter's (2011) asserts that, in an age in which there is an unavoidable necessity of specialisation, the need for synthesis is a must in the field of social sciences. Synthesis in general refers to the coordination of methods and results of different lines of enquiry; it is difficult and it is important that the analytical setup is as broad as the subject matter (Schumpeter 2011).

Urban political ecology (UPE) is rooted in Marxists urban geography and it has also been influenced by assemblage thinking (Lawhon *et al* 2014). Lawhon *et al* (2014) asserts that UPE should learn from Southern Theory. This would ensure that UPE is provincialised. Importantly, Lawhon *et al* (2014:505) explain that the term 'provincialising' is not about rejecting European thought so much as recognising that 'thought is related to place'. Provincialisation counters the tendency for universalist notions of modernity, such as justice, democracy and citizenship to be appropriated to all spaces (Lawhon *et al* 2014). Lawhon *et al* (2014) assert that the Global South, in this case Africa, must become 'an epistemological location – rather than a geographical container – through which a provincialisation of dominating theory can be crafted' (Lawhon *et al* 2014:505).

The trend towards cosmopolitanism and the provincialisation of knowledge is one that is evident within post-colonial urban theory. Storper and Scott (2016) argue that this is primarily driven by the need to ensure that the cities of the Global South are no longer overlooked in urban theory research. Storper and Scott (2016:13) caution that post-colonial urban theory is prone to 'its own peculiar forms of critical overreach' that manifest as three failings of post-colonial theory. First it exaggerates complaints regarding Euro-American epistemological bias in contemporary urban analysis (Storper & Scott 2016). Second, it rests on a highly selective critique of modernism and developmentalism (Storper & Scott 2016). Lastly, it has a strong methodological commitment to theoretically unstructured comparativism (Storper & Scott 2016). Storper and Scott (2016) propose the following to address each of these failures. In the first instance, there is the need to acknowledge that there are theoretically generalisable features of urbanisation observable across the Global North/South axis (Storper & Scott 2016). Then there is the need to adopt a generalised theoretical framework of the urban land nexus, intertwined with five crucial processes shaping the specifics of urbanisation in different times and places. Storper and Scott (2016) assert that these processes are; the level of development; resource-allocation rules; forms and levels of social stratification; cultural norms and traditions; and authority and power. Lastly, there is the need to have a degree of conceptual clarity or intuition about the issues under examination to be able to make comparisons and have consequential insights when different empirical situations are brought into conjunction with one another (Storper & Scott 2016). It is important to avoid the pitfalls described by Storper and Scott (2016) when presenting a provincialised African, urban perspective. The provincialised

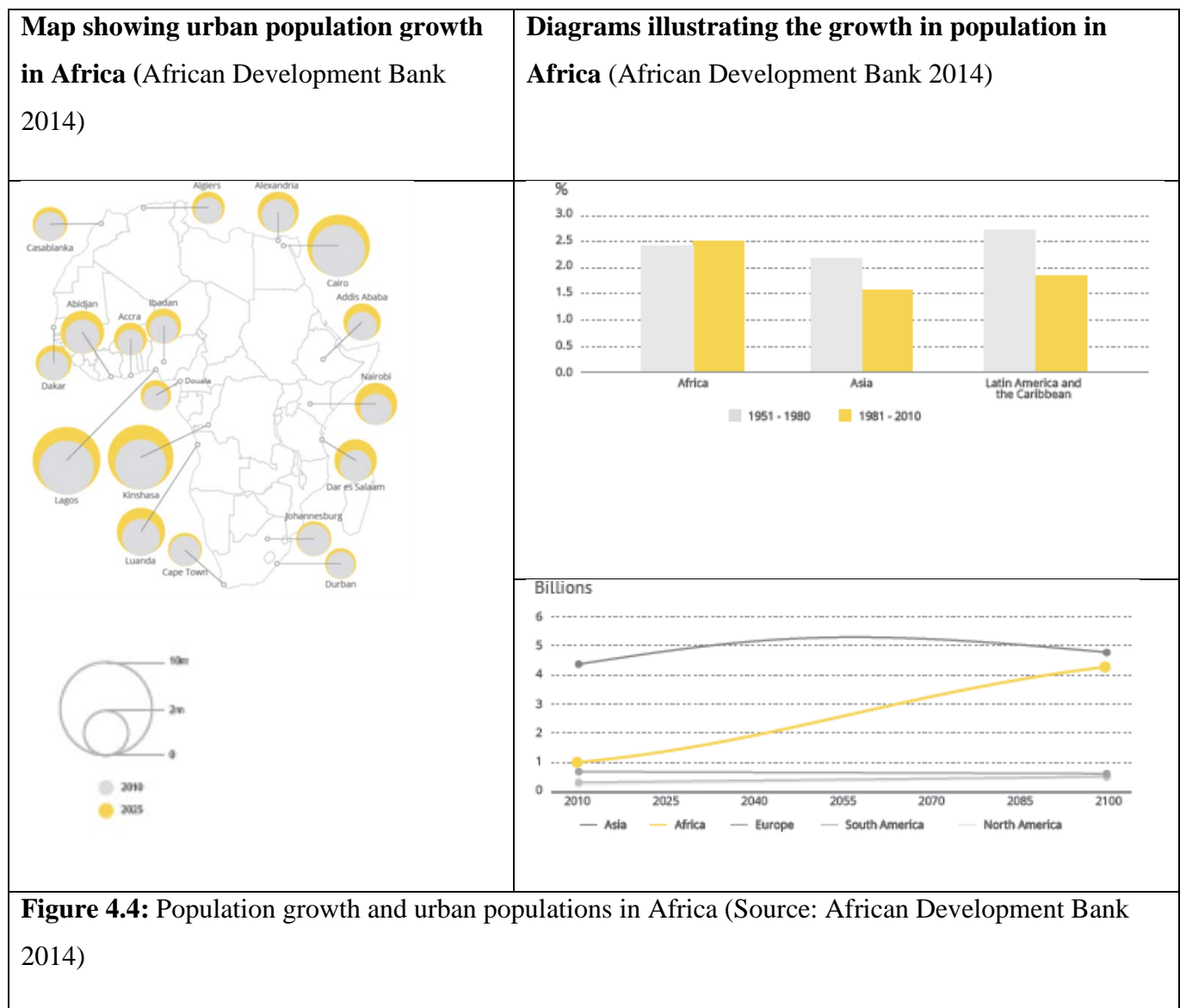
African, urban assemblage perspective presented here starts from the significant aspects of urbanism described earlier in this chapter. Each aspect represents a synthesis in itself. These are, deconstructed and explained in the sections that follow. .

4.5 Section Four: Demographic transitions and the polymorphic nature of urbanism in Africa

Angel (2012) demonstrated that the expansion of urban populations is inevitable and not controllable. Yet this is not amongst the main propositions influencing government responses to the urbanism trend (Angel 2012). Both Angel (2012) and Pieterse (2015) show that there are severe consequences of not acknowledging that urban populations grow naturally as this does not allow proper urban planning. It is, therefore, critical to consider the inevitability of urban growth in Africa. The African Development Bank (2015) suggests that the population of Africa will reach 2.4 billion by 2050, with more than half residing in urban areas. This is consistent with literature that suggests that the growth of urban populations is a worldwide trend. Brenner and Schmid (2014) argue that the foreboding declarations about contemporary urban trends became the norm in early 21st-century academia. Since then the ‘urban age’ thesis becoming the norm across various discursive, ideological and locational contexts (Brenner & Schmid 2014). The statistical and empirical investigation of the world’s urban transition is a demographic project which dates back to the late 19th century, but it was only in the 1940s that the size of the world’s entire urban population became a topic of sustained research and debate among demographers, sociologists and historians (Brenner & Schmid 2014). The early work of Davis (1955) and Weisman (1965) was influential but the field of demography was still dealing with the unresolved issues relating to data, methodology and analysis (Brenner & Schmid 2014). It was from this base, from the ‘mid-1980s onwards, that that UN analysts began, with significant scientific rigour, to anticipate a world-scale urban transition in their regular reports on human settlement trends (Brenner & Schmid 2014). This would eventually become the core of urban demography (Brenner & Schmid 2014).

Brenner and Schmid (2014:734) suggest that ‘the urban age thesis is a flawed basis on which to conceptualise contemporary world urbanisation patterns because it is empirically untenable (a statistical artefact) and theoretically incoherent (a chaotic conception)’. They reached this conclusion by citing Castells and Wirth’s post-war critiques of the conception of urban population thresholds and its arbitrary, empiricist, ahistorical use in urban demography. Brenner and Schmid (2014) draw on this work which demonstrates the futility of relying on methodical territorialist approaches. These approaches are based on assumptions regarding the territorial boundedness, coherence and discreteness of the spatial units in which social relations unfold (Brenner & Schmid 2014). Brenner and Schmid (2014) shows that the formation of cities and urban zones is premised

on, and in turn triggers, a range of large-scale, long-term socio-spatial transformations beyond the agglomeration itself. It is hard to ignore Brenner and Schmid's (2014) argument that the urban age thesis has seen the convergence of a diverse range of social science and urban studies to form a particularly obfuscatory vision of the global urban condition. This being said, even cursory glances at Google Earth maps would suggest that there has been a dramatic increase in the size of urban areas, however they are defined. This suggests that it is unwise to dismiss the type of urban population projections that were discussed earlier. Brenner and Schmid (2014) confirm that the United Nations (UN) provide regular updates on the methodology used to determine population projections. Critical complexity theory suggests that one can engage with work of this nature if the limitations of the model used are acknowledged and the methodical and normative boundaries have been delineated. The African Development Bank uses population data provided by the UN and is considered to be reliable enough for use in this research project. Population growth figures for Africa are presented in Figure 4.4.



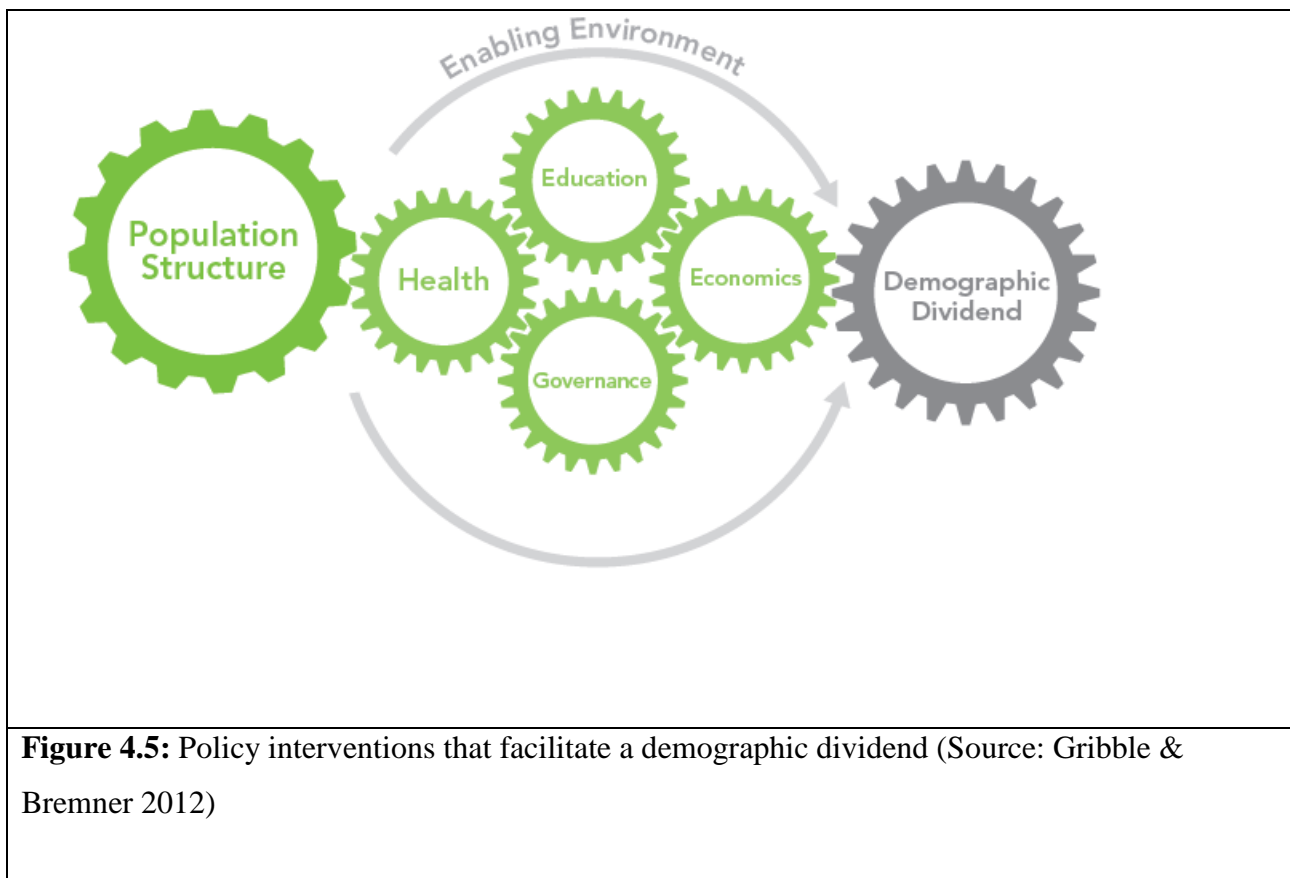
The scope of this study focuses on how assemblage thinking and the classic political economic framework changes or modifies the way in which demographic trends are analysed. Both Pieterse (2015) and the African Developmental Bank (2015) note that it is significant that half the population of Africa is under the age of 20 years, with the fastest growing segment of the population being between the ages of 24 and 36 years. It is important to acknowledge that the changing nature of the structure of the population, or the stage of the demographic transition in Africa, is perhaps more important than the fact that Africa's urban population is growing. The study of demographic transitions involves the analyses of the rates of fertility, mortality and migration, which together explain population growth, decline or stabilisation (Bocquier & Costa 2015). The spatial unit of analyses used primarily for the analyses of the determinants mentioned above, are countries. This is done as the boundaries of countries – bar a few notable exceptions – are relatively stable and entrenched politically, legally and socially at a global governance level (Brenner & Schmid 2014). The African Development Bank (2015) confirms that the decreasing trends in African fertility rates, mortality rates and higher life expectancy, support the assertion that Africa is experiencing the early phase of a demographic transition (Bongaarts 2009).

4.5.1 The importance of the demographic dividend

Both Pieterse (2015) and the African Development Bank (2015) contemplate the necessity for urgent consideration to be made for managing Africa's current and expected demographic dividend. The demographic dividend concept is based on the idea that, within countries leaving the first phase of demographic transition, there is an evident structural shift in the population (Ahmed *et al* 2014). This structural shift refers to the drastic increase in the working-age segment of the population for 20–30 years (Ahmed *et al* 2014). The first phase of a demographic transition is characterised by low mortality rates and high fertility rates, leading to rising dependency ratios (Ahmed *et al* 2014). Dependency ratios is the ratio of the youth and elderly population to the working-age population (Ahmed *et al* 2014 & Bongaarts 2009). Low mortality, low fertility and rapidly falling dependency ratios are typically observed during the second phase of the demographic transition. There is nearly universal consensus that there is a relationship between the demographic dividend and economic development (Gonand & Jouvét 2015). The growth of the 20- to 30-year-old working population represents an opportunity that should be harnessed. The deliberation of the role of the demographic dividend and the economic story of the Asian Tigers is a key component of developmental state literature (Gribble & Bremner 2012; Fang 2010).

Gribble and Bremner (2012) contend that stimulating and taking advantage of the demographic dividend requires specific policy interventions. This process is illustrated in Figure 4.5. Investing in

healthcare, education and governance is to be expected given the nature of what a demographic dividend is.



Deriving the benefits from generating a demographic dividend requires a good understanding of past economic performance, present economic performance and this performance in relation to global dynamics (Ahmed *et al* 2014). In relation to Africa, it forces those concerned with ensuring the implementation of Agenda 2030 and Agenda 2063 to consider countries that have most recently had to deal with a similar demographic transition. These countries include those, such as the Asian Tigers, that have followed a developmental path in the 20th century. Gribble and Bremner (2012) generated a highly stylised account of the economic growth policies required to deal with a demographic transition. This is based on their assessment of the economic growth story of the Asian Tigers. Gribble and Bremner (2012) assert that this was triggered by policies that relate to enabling diversified economic growth, savings and investment; the manufacture of local products; flexible wage regimes; an adaptable and up-skilled labour force; and appropriate tax regimes.

In Gonand and Jouvét (2015) it is shown that while the demographic dividend is important for economic growth, it is really the second dividend that is responsible for the modification of that growth to realise the intergenerational redistributive effects that can be attained by taking

demographics into account in economic planning. However, this occurs only when there is an alignment between the increase in life expectancy associated with the second demographic transition and the accumulation of assets in anticipation of this (Lee & Mason 2006). Again it is helpful to study the Asian Tigers, particularly China. Fang's (2010) review of China and the debate about what is required to ensure that the period following the initial demographic period does not coincide with a low economic growth scenario, thus becomes useful. Fang (2010) shows that the factors which influence the relationship between the demographic dividend and economic growth are multi-fold; even neo-classical economists identify more than 100 variables that are statistically significant (Fang 2010). The consideration of industrial dynamics, macroeconomic policies, innovation and interaction between firms, banks and the state is necessary. Dosi et al (2014) confirm that these are all elements that should be considered when contemplating economic growth. The review of economic growth theory in Chapter 3 revealed that the adoption of Schumpeter plus Keynesian economic growth models were able to account for all of these. It is shown here that these types of economic growth models are useful as they account for both the initial and second demographic dividend.

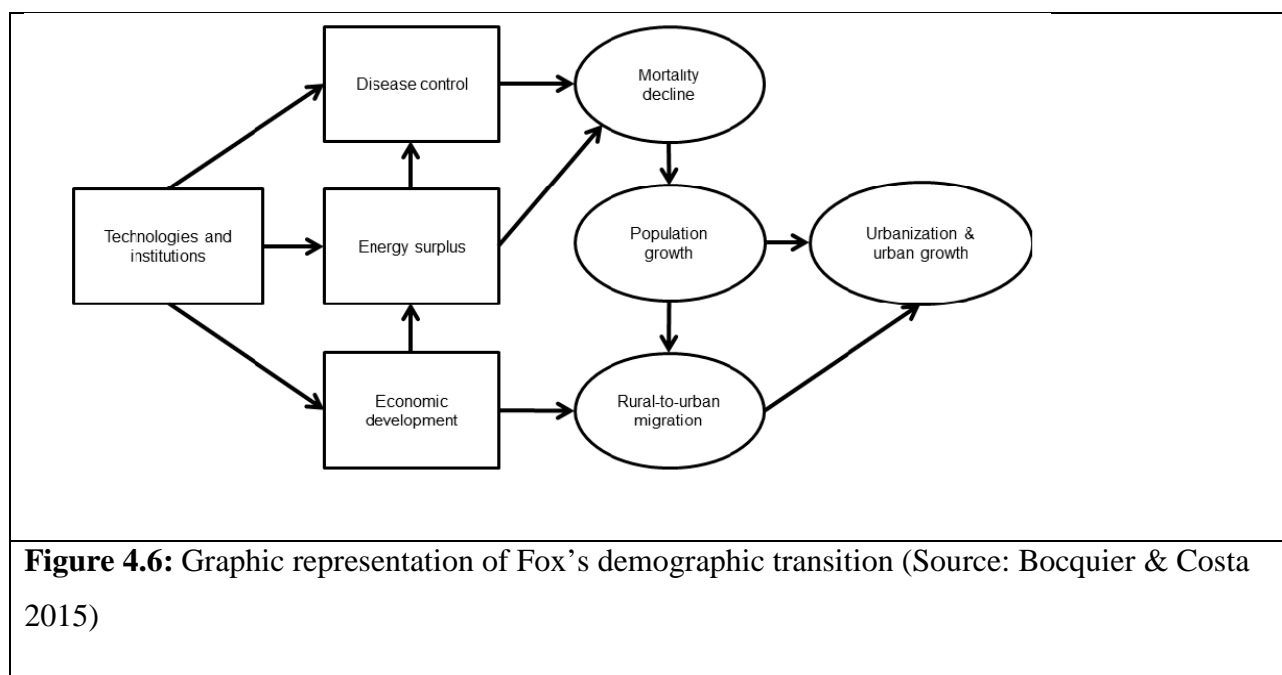
4.5.2 Demographic dividends and urban assemblages

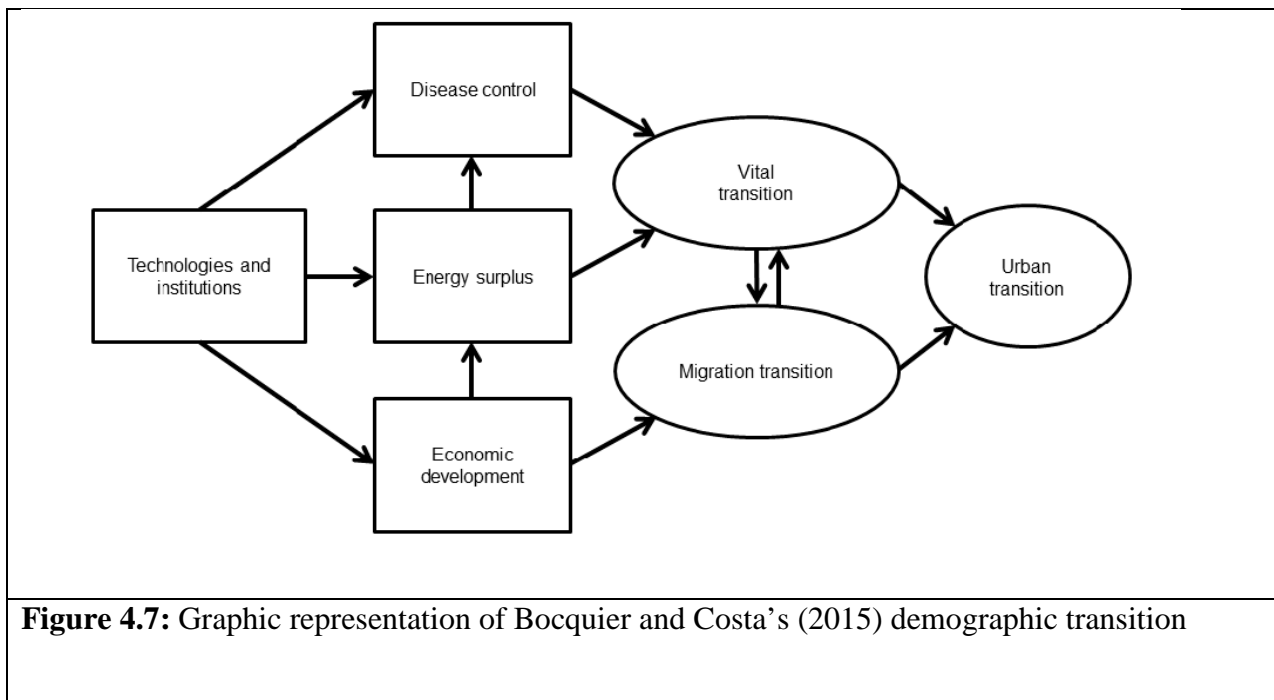
The challenge now is to find a means to tie this back to urbanism. Bocquier and Costa's (2015) model uses assemblage thinking to demonstrate a link between demographics and urbanism. Bocquier and Costa (2015) developed this model following a literature review of developments within the field of urban demographics. They started by highlighting the shortcomings of Zelinsky's (1971) work regarding conventional thinking within demographics. The conventional view is that the urbanising trend is a function of how the degrees of spatial mobility has changed across different epochs (Bocquier & Costa 2015). This view neglects the significance of the natural increase in populations (Bocquier & Costa 2015) and Brenner & Schmid (2014) assert that it must be challenged.

There are a few definitions that are important to this particular line of enquiry. They are as follows: vital transitions refer to the interplay between birth and death rates; mobile transitions refer to increases in population mobility with demographic transitions representing the sum of the vital and mobility transitions (Bocquier & Costa 2015). To move beyond Zelinsky's (1971) thesis, Bocquier & Costa (2015) used Fox's (2012) model as the foundation for their own one. In Fox's (2012) model, the start of the urban transition in a country or region is understood as part of a global historical process linked to technological change, institutional change and diffusion. According to Fox (2012) the urban transition is not simply a product of endogenous economic and demographic

forces. Urban transitions are explained in terms of a web of causal relationships between innovation, particularly in agricultural productivity, transportation and health; in technology and institutions; in disease control; in the generation of surplus (essentially food and energy); and in economic development (Fox 2012). Bocquier & Costa (2015) note Fox's (2012) assertion that the aforementioned changes in innovation, technology and institutions, which result in a decline in mortality and which facilitate the generation of surplus, also drive economic development. However, the point is made that these may not necessarily mean economic growth (if defined as GDP per capita) (Bocquier & Costa 2015). This is illustrated in sub-Saharan Africa where urbanism has occurred without economic growth (Bocquier & Costa 2015). Bocquier and Costa (2016) argue that Fox (2012) places too much emphasis on mobility transitions, which is demonstrated by the inclusion of rural–urban transitions in Fox's (2012) diagram (Figure 4.6).

This would imply that there is a well-defined separation between what is considered rural and urban. Bocquier and Costa (2015) adopt an approach that rejects such a binary distinction, which is supported here. Referring back to Pieterse's (2015b) description of the agglomeration dynamics of urbanism, it is argued that Fox's (2012) model does not take into account the dynamism of both the spatiality and the fluidity of the movement of people, ideas and capital (Bocquier & Costa 2015). Neither does it account for the role of politics in shaping the demographic transition (Bocquier & Costa 2015). Bocquier and Costa (2015) amend Fox's (2012) model by inserting migration and vital transitions. Their model is shown in Figure 4.7.



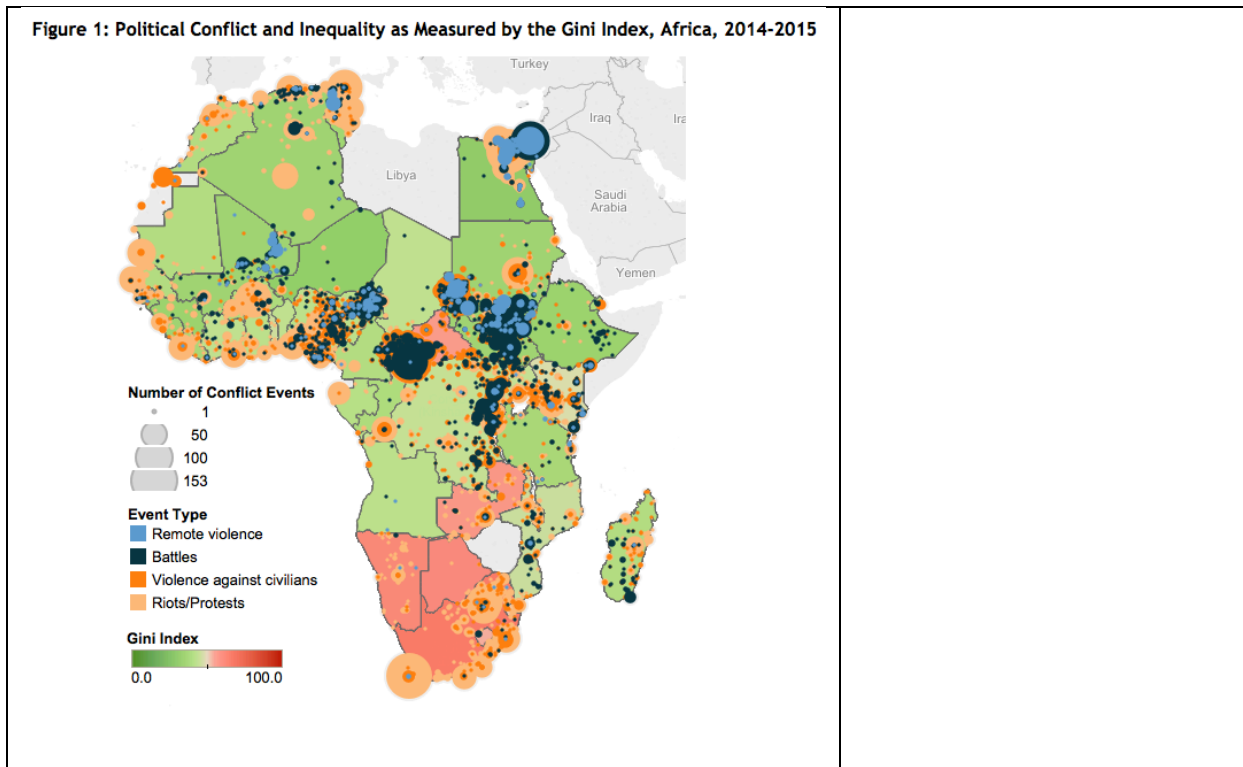


4.5.3 Demographic transitions and violence

As explained in the previous section, Bocquier and Costa (2015) assert that Fox (2012) underestimates the role of vital transitions, and does not account for the urban to rural counter flow. In formulating their model, they retain the economic components of Fox's (2012) model, but add vital transition and migration transition to accommodate the gaps they identified. Bocquier and Costa's (2015) model takes into consideration the significant movements in the understanding of the 'urban', but one: although they assert that migration transitions need to be more fully understood, their model does not take into consideration the role of violence. Parnell and Pieterse (2014) show that the impact of post-colonial warfare ranges from turning urban spaces into incubators of civic violence or making them incubators of unity and peace. Parnell and Pieterse (2014) describe the different ways in which urban spaces become incubators of civic violence and show that it has an undeniable influence on urban assemblages. Parnell and Pieterse (2014) conclude that violence undoubtedly influences migration transitions.

The importance of this is demonstrated by the fact that the United Nations Office of the Special Adviser on Africa (OSAA) and the African Centre for the Constructive Resolution of Disputes (ACCORD) co-organised a high-level Expert Group Meeting (EGM) in November 2015 on the theme, 'Conflict-induced Migration in Africa: Maximizing New Opportunities to Address its Peace, Security and Inclusive Development Dimensions'. Applications that monitor real-time incidents of violence could play an ever-increasing role in spatial planning. One such application is the Armed Conflict Location and Event Data (ACLED) project. This application produces various composite maps

using inequality data from the World Bank Development Indicators for 2014 and 2015, together with real-time updates on the eruption of different categories of violence. Figure 4.8 shows a map of violence over a composite layer depicting inequality, as measured using the Gini co-efficient. Figure 4.9 is a map generated by another conflict/violence-monitoring, real-time application, which aggregates news reports of violence.



Remote Violence: Remote violence is an event where a conflict actor engages another group while remaining spatially removed from the area of attack.

Battles: Battles are events where a conflict actor engages another group without there being a change in territory.

Violence against civilians: This refers to events where a conflict actor, which can be a state or terrorist group, purposefully attacks non-military targets.

Riots and Protests: These are events where public disorder is caused by a group who are protesting against another group, government policy, law or action.

Figure 4.8: Incidents of political conflict across Africa superimposed on inequality, as measured by the Gini co-efficient (Source: Acledata 2015)

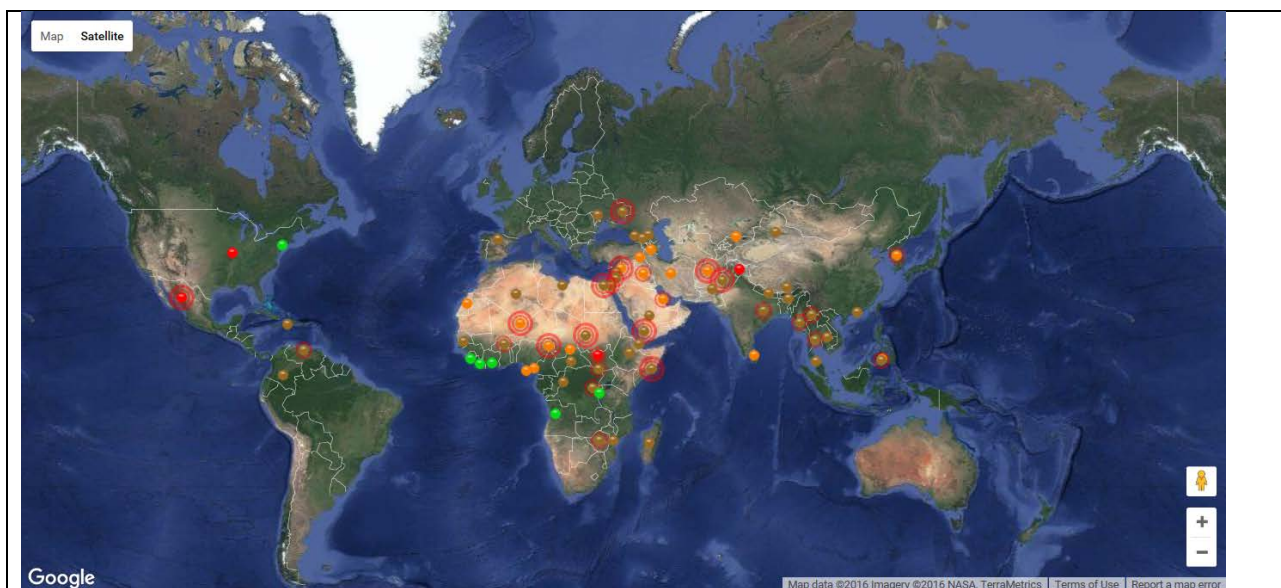


Figure 4.9: Global incidents of violence as of 11 July 2016 (Source: www.conflict.org)

Brenner and Schmid (2014) show that the study of demographics is central to urban geography, which, in turn, is one of the core pillars of critical urban theory. This section attempted to show that it is possible to move beyond contestation surrounding the urban age narrative. The social structure of urban geography does not have to serve as a stimulus for reducing its relevance to the study of urbanism in the Anthropocene.

4.6 Section Five: Heterogeneous service delivery configurations and informality as the new norm, exacerbated by economic weakness

Farias (2011), Tomkiss (2011) and Storper and Scott (2016) correctly assert that assemblage urbanism is not a single concept that can be applied in a flat template form. This would undoubtedly undermine the major advantage of introducing the concept of assemblage into the field of urban studies (Farias 2011). This advantage being that the field of urban studies becomes concerned with understanding that cities consist of multiple urban assemblages (Farias 2011). Farias (2011) argues that this change is significant as it is indicative of a new sociology, one that understands distribution and difference as concrete phenomena assembled in heterogeneous networks, not as abstract structures. Avoiding the template approach will ensure critical urban theory benefits from 'its capacity to generate critical descriptions that trace out the workings of a given empirical context' (Tomkiss 2011:588).

Farais (2011) argues that this is particularly important in the discussion of the contribution assemblage thinking can make to the debate concerning the governance of urban assemblages. Exploring Jaglin's (2013) exposition of the real governance of service delivery in cities and how it must take into account the reality of the heterogeneity of actual service delivery configurations will provide the opportunity to test Farias's (2011) argument. Lawton *et al* (2014) say that one of the ways in which African urbanism can contribute to critical urban theory is by promoting a conceptual inversion. This conceptual inversion is, where 'everyday practices' employed in gaining access to service-delivery configurations are acknowledged to be as important in shaping cities as the will of the state or private providers involved in 'the historical project of providing infrastructure, such as water, sewage, electricity, transport, housing, and broadband' (Lawton *et al* 2014:506). The argument is that this would provide a more heterogeneous alternative to Marxist urban political ecology that has used the notions of metabolism, flow and socio-natural artefacts to analyse power, expose ideology and critique the structure of society (Lawton *et al* 2014). Lawton *et al*'s (2014:507) argument is that the focus on the 'the ordinary practices of city-making, including how relations are formed and stabilised, how livelihoods and identities are secured and determined, and how people scale themselves through their networks to access resources and opportunities' will 'reorient theory-making and stabilise a different image of the city'. The concern, however, is that this view may prematurely shift the focus away from the enquiry of networked infrastructure, which is a project firmly rooted in Marxist UPE. The danger being that it may suggest that the conceptual inversion searched for is one in which there is co-existence between the 'networks' and 'everyday practices'. Lawton *et al* (2014) have drawn on the conception of power as being diffuse and relational to show that radical incrementalism can effect structural changes. However, the scale of the transition to sustainability required, infers that it is necessary to do more than merely reconcile the 'network' and 'everyday practice' view.

4.6.1 Making sense of informality

Now that it is generally accepted that urban informality is and will be the norm for the majority of the urban populations in Africa (see Figure 4.10), it is critical how we interpret this reality. Alsyyad (2004) traces the evolution of the different ways in which urban informality has been posed in urban studies with the aim of demonstrating how this has influenced policy formulation. Broadly, it has been incredibly unhelpful that structuralists and legalist notions of urban informality have tended to dominate historic urban scholarship. Unfortunately, 'the 'newer' transnational geopolitical view of informality has meant that urban informality has 'come to be studied and even celebrated in transnational circuits of pedagogy, policy-making, and academic research' (Alsyyad 2004:24). Alsyyad (2004) suggest that this results in an unhelpful conception of poverty. He states that 'this

aestheticisation of poverty is a transnational transaction, one where a First World gaze sees in Third World poverty hope, entrepreneurship, and genius' (Alsyad 2004:24). Collectively this has prevented and will not stimulate the type of 'conceptual inversion' needed. It is contended here that the conceptual inversion contemplated by Lawhon *et al* (2014) needs revising. It cannot be allowed to further entrench the view that only the co-existence between the infrastructure development, and the emergent collection of everyday practice-driven, community infrastructure development is enough. The work of Jaglin (2013) on the heterogeneity of service-delivery configurations presents an opportunity to achieve the required conceptual inversion contemplated earlier. Jaglin (2013) poses service-delivery methods as being a socio-technical dispotif (systems or configurations see Figure 4.11). These dispotifs consist of 'actors, tools and values' that are situated within an urban context and are conceptualised to enhance ANT's analyses of human and non-human interaction (Jaglin 2013:435). These dispotifs are however not the constantly emergent and undetermined assemblages, as they tend to be perceived in recent currents of urban thought (McFarlane 2011; McGuirk 2012). Instead these dispotifs are not predetermined and fixed assemblages (Jaglin 2013). Jaglin (2013) assert that dispotifs are imbued with a definite dynamism generated by the conditions underpinning their emergence (Jaglin 2013). Jaglin (2013) suggest that these dispotifs derive their stability from the manner in which they become embedded within existing networked service-delivery configurations (Jaglin 2013). This approach to service-delivery configurations focusses on 'the political nature of their regulation and the conflictual dimension of any public control that might seek to manage the forms of domination/exploitation which, in each configuration, are the source of the inequalities (in access and consumption) observed' (Jaglin 2013:437). It also highlights of the 'unequal sharing of the efforts and externalities (positive and negative) associated with the operation and expansion of services' (Jaglin 2013: 437).

This represents the application of assemblage thinking in a way that retains its significance to critical urban theory. It does so as Jaglin (2013) ensures that the study of dispotifs or socio-technical assemblages acknowledge that service delivery includes technical, economic and political-legal dimensions. This work is important as it represents the antithesis to the textbook approach to the city. It ensures the adoption of a provincialised, planetary, urban perspective provides the context within which service delivery configurations are studied. Jaglin (2013) states that the understanding of the multiplicity of urban assemblages or the diversity of urban forms requires thinking about urban conditions in terms of their socio-material, historical and geographical depth. This is the only means to draw concrete conclusions regarding the implications of the diversity of urban forms for the co-evolution of technology and social practice (Jaglin 2013). Lawton *et al* (2014:502) argue that the normative proposition of Marxist UPE leads scholars to move beyond drawing attention to the

operation of capital and towards a larger critique. Lawhon *et al* (2014) submit that this has resulted in UPE focusing on describing the problem instead of actually making suggestions about how to effect the type of systemic change that Marxism demands. In Jaglin's (2013) attempt to avoid doing this, she recommends alternative forms of governance to regulate the type of alternative service-delivery configurations. These alternative service delivery configurations result from the removal of the binary distinction between public and private, and formal and informal operators in the provision of public goods and services that has occurred since urban informality become the new norm. In Chapter 3, this research project suggested that Geels's (2014) triple-level embeddedness framework provides an appropriate tool for understanding the co-evolution of industries and their economic, cultural, political and social environments. It was suggested that Geels's (2014) framework did not fully account for the challenges of the Anthropocene. More specifically the review of Geels's (2014) framework revealed that it did not take into account that the challenges of the Anthropocene renders obsolete the binary distinction between the state as the sole producer of non-rival goods and the private sector being responsible for rival goods. This research highlighted the importance of the centre of innovation that is located within socio-political systems. This is what Jaglin (2013) alludes to when she suggests that there is a need to realign institutional frameworks. This suggestion stops just short of what is required to attain a fuller understanding of the conceptual inversion required. Explaining this assertion requires a Marxist UPE inspired enquiry of networked infrastructure.

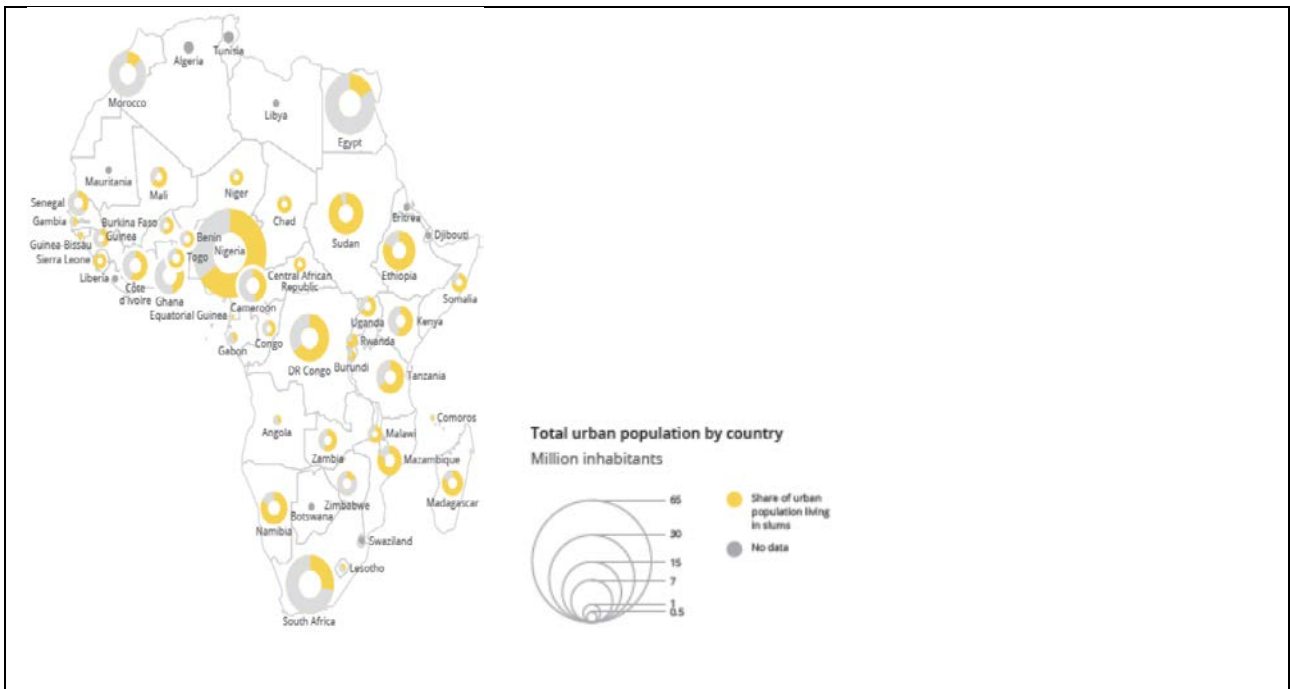


Figure 4.10: Map showing the proportion of the urban population living in slums (African Development Bank 2014)

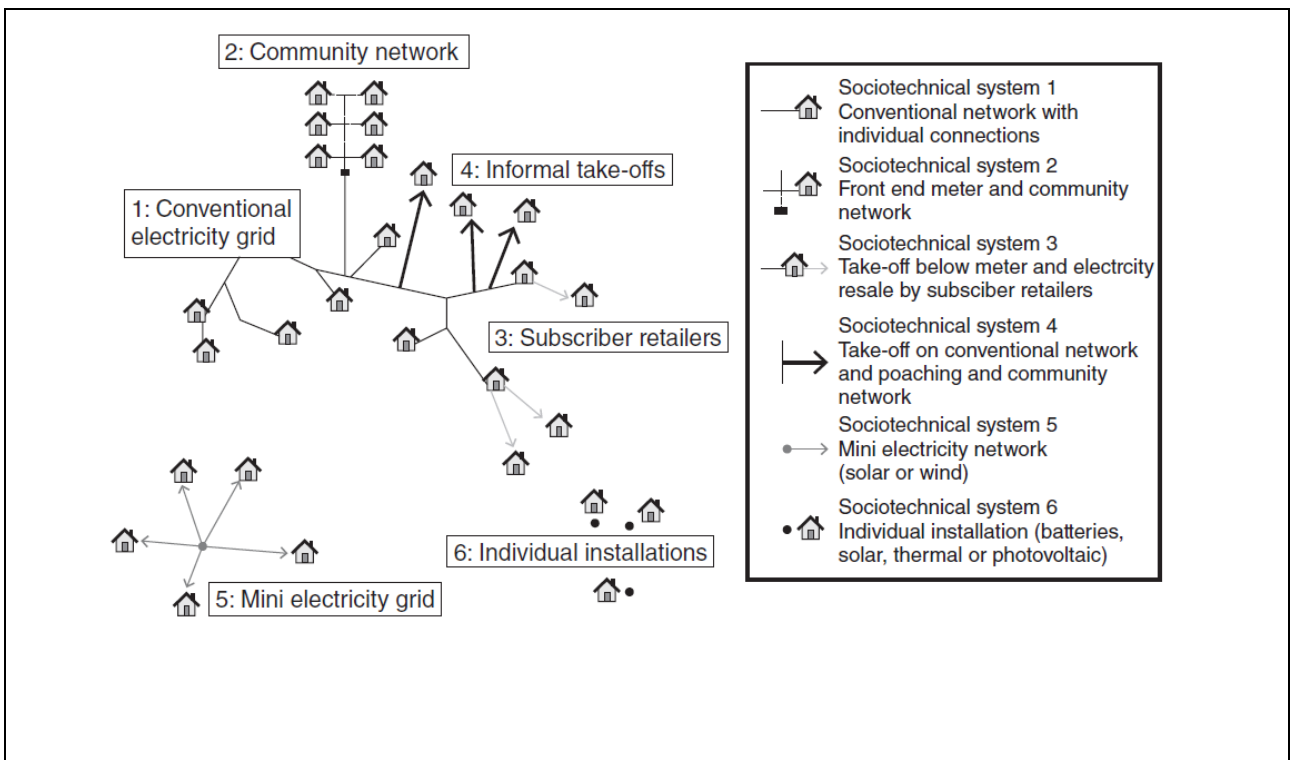


Figure 4.11: Jaglin's (2013) conception of a service delivery configuration

4.6.2 Returning to the spectre of the network model of service delivery

Jaglin (2013) argues that while the network model of service delivery is employed in many cities, it is not the universal way in which services are provided to all. Jaglin (2013) proposes that a new interpretive framework for the relationship between economics, urbanisation and networks is required to explain the mismatch between the conventional network model of service delivery and heterogeneous service delivery configurations, which, in reality, are found in urban spaces. In compiling this new framework, she draws on a perspective of networks that emphasises three elements. The first element is that the methods of managing networks reflect the different modes of capitalism that were developed in Europe in the 19th century (Jaglin 2013). The second is that the performance in the provision of service is associated with institutions that were created to solve specific problems in specific contexts (Jaglin 2013). The third element is that many of these arrangements are legacies of the past and continue to shape and limit the available range of strategies long after they were first devised (Jaglin 2013). Jaglin (2013) is defining an understanding of the production of urban space which is extremely useful when she draws on these elements. A perspective of networks informed by these elements ensures that the reorientation of the economic and governance constitutionalism underpinning this network service delivery is an important component of the new perspective of service-delivery configurations.

Farias (2011:3) asserts that there is an urgent need to move beyond Lefebvre's suggestion that 'capitalism was undergoing an urban revolution'. Lefebvre's perspective, is that the production of (urban) space, and not industrial production, was becoming the main process determining the advancement and functioning of capitalism (Farias 2011). Lefebvre's perspective was the antithesis of Castell's orthodox view which formed the basis for critical urban theory (Farais 2011). Harvey (2012) provides ample evidence in support of the suggestion that capitalism is undergoing an urban revolution. Harvey (2012) notes that urban construction absorbs more capital than labour. Harvey (2012) shows that the construction sector normally contracts in an economic downturn yet empirical evidence suggests that urban construction is unaffected by a slowdown of the economy (Harvey 2012). In addition this urban construction is often not related to addressing the service delivery infrastructure deficit within urban areas (Harvey 2012). These are particular characteristics of the current economic structure (Harvey 2012).

Jaglin (2013) is correct that any fresh perspective of service-delivery configurations has to take into account the role of these configurations in maintaining contemporary forms of capitalism. While Harvey (2012) emphasises that the private sector is driving urban construction, the state is important as it controls the political-legal institutions that co-ordinate and regulate urban

construction. Jaglin's (2013) work suggest that a broader scope is required to assess the roles of the state and various external partners in the provision or non-provision of public infrastructure. Jaglin (2013) assert that is important that the historical context of the provision or non-provision of public infrastructure is understood. Keeping in mind that that the aim of this chapter is to contribute to the development of an African perspective of urbanism, a review of the African infrastructure deficit will be useful.

4.6.3 Africa's infrastructure deficits: A brief historical overview

After World War II the world was faced with dealing firstly with the infrastructure deficits in Europe caused by the devastating effects of the war, and then handling the devastating effects that colonialism and the battles for liberation had had on the former colonies (Hynes & Scott 2013). Infrastructure deficits generally refer to the lack of the essential building blocks of economic progress and social development, such as well-maintained roads, railways, access to information and communications technology (ICT) infrastructure, water and sanitation, access to healthcare and education, and the institutions required to maintain the rule of law and facilitate trade (Hynes & Scott 2013). In terms of the Marshall Plan, state led industrialisation would drive the reconstruction of Europe. The first newly liberated colonies emerged in this scenario, along with their own infrastructure deficits. However, after carrying the burden for the reconstruction of Europe in terms of the Marshall Plan, the United States sought to share the burden of providing development assistance to the developing world (Hynes & Scott 2013). This lead to the formation of the Development Assistance Group in March 1961 (Hynes & Scott 2013). At this time, development aid to less-developed countries consisted of a disparate basket of resource flows comprising a multitude of sources of finance. This included grants, loans, export credits, mixed credits and associated finance and private investment (Hynes & Scott 2013). The adoption of Common Aid Effort by members of the Development Assistance Group in 1961, laid the groundwork for the expansion of the economic, financial and technical assistance that was to be provided to less - developed countries (Hynes & Scott 2013). More importantly, perhaps, it also piloted efforts to improve the terms and conditions of aid, and increase its developmental effectiveness (Hynes & Scott 2013).

The debate regarding the need to improve the terms and conditions of aid, and increase its developmental effectiveness was shaped by political factors (refer to the shift in governance and political economy in Table 3.2 in Chapter 3). While there was recognition that the terms of aid finance need to be better adapted to the requirements of less-developed countries, the perception of the level of indebtedness of these less-developed countries remained damaging. The problem of

indebtedness was perceived as the 'awkward problem of rescheduling which is likely to follow with its high administrative cost, loss of faith in contractual agreements and threat of serious interruption of future financing flows, the distortion of donor control over aid allocation and the disruption of orderly development planning' (OECD 1969a cited in Hynes & Scott 2013:4).

The deliberation of the concept of concessionality, or the provision of aid with softer terms, emerged as one of the core issues at the centre of the debate. High concession rates meant that donors would need to scale back significantly on providing hard loans, or loans at market rates, where capital is accessed from their export-credit agencies (ibid). By 1969, consensus was reached that resource-aid flows should be separated into ODA (official development assistance), OOF (other official flows) and private flows. The grant element of ODA would be used as a measure of concessionality. By 1970 this was set at 25% with ODA that passed this test having a discount rate of 10% (Hynes & Scott 2013). However, this did not settle the debate around concessionality. At issue, really, was whether the appropriate measure of concessionality is set by donor effort or recipient benefit, or whether both should serve as criteria (Hynes & Scott 2013).

By the 1980s, the neo-liberal counterpoint had been reached. Aid during this period was characterised by the application of a liberal definition of the criteria set in 1970. This meant that most ODA was in the form of associated financing, which is a combination of ODA (which may take the form of a soft loan, but is more usually a grant) and/or OOF and/or export credit or other transactions. Only the grant or soft loan qualifies as ODA, essentially meaning that only 20% of the aid would be concessionary in terms of recipient benefit (Hynes & Scott 2013). In addition, this allowed donor countries to borrow from low-interest capital markets and loan to less-developed countries. The fluctuating exchange rates of these less-developed countries would ensure that even the soft-term ODA financing could yield returns for those providing the ODA (Hynes & Scott 2013). The next issue, which is explicitly linked to concessionality and which is important to this section, is development intentionality. This refers to the determination of the judgemental/motivational determination of the purpose of economic development and welfare (ibid). Donor countries argued that ODA should be included in their balance of payments. This meant that, administration costs (the costs associated with managing the process of providing ODA), imputed student costs (costs to the education budget of foreign students in the donor country), donor refugee costs (costs for sheltering and training refugees arriving in the donor country) and development-awareness costs (cost of raising awareness within donor country of ODA obligations) should all be recorded as ODA (ibid). The net outcome was an aide structure and the Structural Adjustment Programmes, which had such a debilitating effect on development in Africa. The depth of the embeddedness of a certain notion of concessionary funding in the conceptualisation of development aid and finance is

demonstrated by a quick review of the G8 summit in 2005 (Hynes & Scott 2013). This is useful as it shows the way in which the debate regarding concessionality of aid is one that transcends policy cycles.

The Global Call to Action against Poverty is a worldwide alliance of anti-poverty coalitions, groups, organisations and individuals from 70 countries, including each of the G8 nations. This ensured that the G8 leaders attending the 2005 Gleneagle Summit were under pressure to make commitments to increase ODA, to levels commiserate with what was required to realise the Millennium Development Goals (MDGs) (Lawson & Green 2005). While the eventual commitment by the G8 to increase ODA to 0.51% of gross national income (GNI) until 2010 and to 0.7% of GNI until 2015 did represent substantial increases in aid as foreign aid, it still fell short of World Bank estimates of what was required to achieve the MDGs (Lawson & Green 2005). Oxfam did acknowledge, however, that this was a substantial increase and that it would be helpful (Lawson & Green 2005).

The 2005 G8 summit was also significant as it included a resolution that some developing countries would have 100% of their multilateral debt written off (Lawson & Green 2005). In addition, there was a commitment to adhere to the Paris Declaration on Aid Effectiveness. This meant that there had to be an improvement in the quality of aid. This would be achieved by ceasing the practice of double accounting, where debt relief is taken from ODA disbursements – and ensuring greater regulation of the aid effectiveness (Lawson & Green 2005). This was necessary as ‘large amounts of donor aid was not directed at the poorer countries, and when provided it was tied to goods from donor countries and used on ineffective and expensive technical assistance’ (Lawson & Green 2005:4). Collectively this prevented countries who received aid from planning and setting the economic policy required to ensure that aid is used to meet the MDG’s.

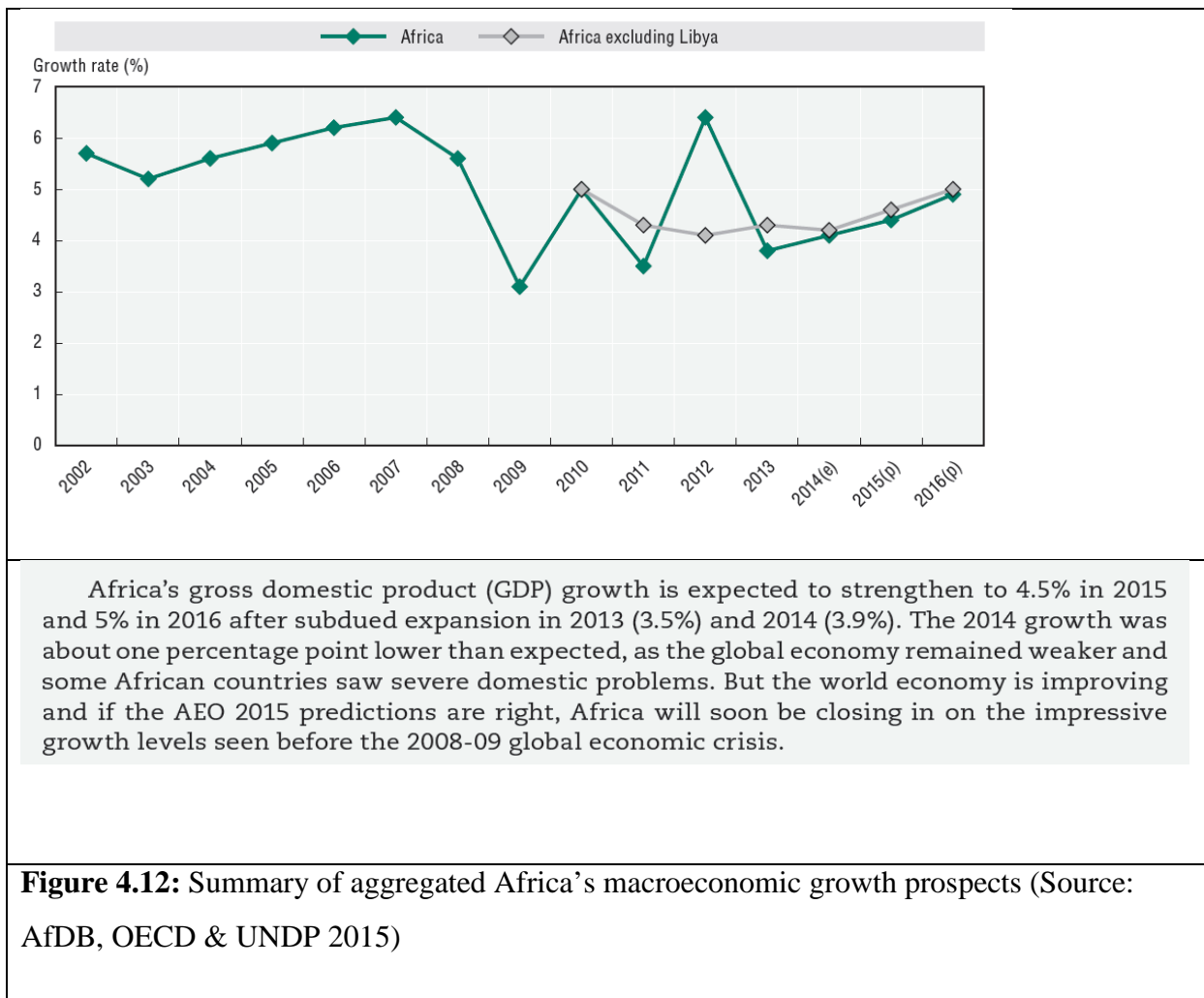
4.6.4 Changing financing trends to deal with infrastructure deficit

As shown in the previous sections, the issues of concessionality, the effectiveness of aid and the accounting thereof have remained on the agenda of ODA since 1961. It was resolved at G8 2005 that the Infrastructure Consortium for Africa (ICA) would act as a catalyst and facilitate the financing of infrastructure development in Africa. ICA membership comprises African countries, with bilateral members including the G8 countries, and its multilateral partners: the African Development Group, the Development Bank of Southern Africa, the European Commission, the European Industrial Bank and the World Banking Group (ICA 2014). The ICA seeks to fulfil its mission by improving co-ordination between its members and other significant sources of infrastructure finance, which include China, India, Arab and Islamic financiers, the African regional

development banks and the private sector (ICA 2014). The ODA landscape and the global development imperatives have changed quite dramatically from what they were in the last decades of the 20th century. As noted earlier, the ratification of the Sustainable Development Goals dominates the new global development policy cycle. Sustainable and inclusive growth is the aim of this particular global pact. Again, this implies an aspiration to a specific economic and governance constitutionalism, within which Africa must plot its future growth. In the international development policy cycle of 1970, the starting point for Africa's growth story generally was its emergence from colonialism into a world where Keynesian growth theory enjoyed prominence (Pieterse 2015b). For the policy cycle starting in 2001 with the setting of the MDGs, the starting point for Africa's growth story was neo-liberalism (Pieterse 2015b). To determine the starting point for the next policy cycle, it is necessary to explore Africa's contemporary growth story in the lead up to this new policy cycle.

4.6.5 Africa's growth story

The strong economic growth experienced across Africa since 2001 and the positive outlook for 2015/16 has stimulated the debate about whether it confirms that reverse-coupling is occurring. Reverse-coupling refers to suggestion that the reorientation of the relationship between developing and advanced economies is occurring (Saad-Filho 2013). It suggests that the North/South economic convergence has been completed and that global economic growth is now dependant on the performance of developing economies. A summary of Africa's economic growth since 2001 is presented in Figure 4.12.



The importance of the reverse-coupling debate is derived from the fact that the SDGs represents the outcome of the way in which the polycrisis (see Swilling & Annecke 2012) has ignited a rethink of the development approaches required in the Anthropocene. This thinking has challenged the way in which development is thought of. The grand narratives of the Green economy discourse include the promise of transitioning current global economies to those that are low carbon and resource efficient and decoupling industrialisation from environmental degradation (UNEP 2011; Kaggawa *et al* 2013). The Green economy discourse suggests that green manufacture can create full employment reducing levels of inequality and poverty (UNEP 2011; Kaggawa *et al* 2013). The United Nations suggests that the current above-average economic growth being achieved in certain African countries means that Africa is well placed to lead the global charge of transitioning to a green economy (UNEP 2011; UNECA 2016). There are, however, significant caveats to Africa's observed and projected economic growth, which are not fully computed into this view. Economic growth achieved since 2001 occurred during a period of relative political stability (AfDB, OECD & UNDP 2015). This period was also characterised by high commodity demand, soaring prices and debt relief (AfDB, OECD & UNDP 2015). Economic gains were achieved via the implementation

of more prudent fiscal policies and not via structural transformation (AfDB, OECD & UNDP 2015). Economic growth also did not occur uniformly across the continent. Resource-rich countries, such as Angola, Chad, Nigeria and Sierra Leone, and countries with extractive economies such as Mozambique and Ghana achieving annual GDP growth of between 7–8% (AfDB, OECD & UNDP 2015). There is also unevenness in regional economic growth, with growth highest in East, West and Central Africa and lowest in North and southern Africa. This reflects the regional variation in incomes, economic policies, natural resources endowment and political stability (AfDB, OECD & UNDP 2015). These trends are shown in Figures 4.13 and Table 4.2.

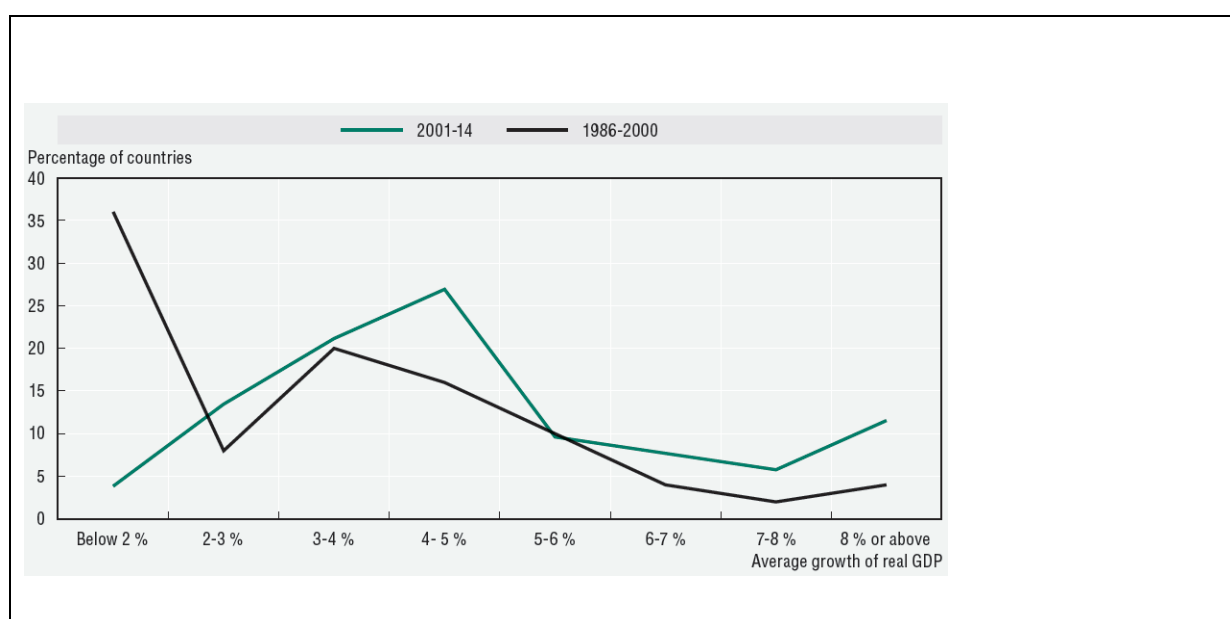


Figure 4.13: Diagram showing the unevenness of the economic growth achieved by country (Source: AfDB, OECD & UNDP 2015)

Table 4.2: Real GDP growth per region in Africa (Source: AfDB, OECD & UNDP 2015)

(Real GDP growth in percent)				
	2013	2014 (e)	2015 (p)	2016 (p)
Africa	3.5	3.9	4.5	5.0
Central Africa	4.1	5.6	5.5	5.8
East Africa	4.7	7.1	5.6	6.7
North Africa	1.6	1.7	4.5	4.4
Southern Africa	3.6	2.7	3.1	3.5
West Africa	5.7	6.0	5.0	6.1
Memorandum items:				
Africa excl. Libya	4.0	4.3	4.3	5.0
Sub-Saharan Africa (SSA)	4.7	5.2	4.6	5.4
SSA excl. South Africa	5.4	6.2	5.2	6.2

4.6.6 Drivers of economic growth

In the introduction to this research project, it was indicated that the economic sociological assessment of Africa's growth story is of concern and that there was a conventional and a critical view. The conventional view of the drivers of the economic growth reveals a few points that are salient to the discussion of whether Africa is primed to lead the transition to a green economy. AfDB, OECD & UNDP (2015) assert that demand-side and supply-side factors have driven growth. On the demand side, the following observations are important. The segment of the population defined as being middle class (those earning between US\$2 and US\$20 per day) has more than doubled to 350 million since 1980 (African Development Bank 2014). While it is debatable if this classification is ethical, it must be noted that consumer spending did reach US\$1.3 trillion in 2010 and is expected to double by 2030 (African Development Bank 2014). This suggests that domestic demand, boosted by public infrastructure investment, is a significant driver of economic growth (AfDB, OECD & UNDP 2015). On the supply side, the significant improvements in business regulatory efficiency is noted as being significant (AfDB, OECD & UNDP 2015). Since 2005, 20 African countries have featured among the top 50 countries worldwide in terms of business efficiency, with Côte d'Ivoire, Senegal and Togo appearing in the top 10 (AfDB, OECD & UNDP 2015).

There are a couple of stylised sectoral trends which are significant and serve to highlight some of the concerns expressed by the critical view of Africa's growth. Agriculture, which is Africa's largest sector by employment (60%) and GDP share (25%), is contracting at a pace faster than labour is transferring out (African Development Bank 2014; AfDB, OECD & UNDP 2015). The construction sector has expanded significantly, fuelled mainly by public infrastructure and housing, to the extent that, in some countries, it has surpassed the manufacturing sector in GDP share (African Development Bank 2014; AfDB, OECD & UNDP 2015). The service sector is the principle engine of growth in most countries, but the sector is still prone to the tendency to create informal jobs (AfDB, OECD & UNDP 2015). While traditional services, such as transport, trade, real estate, financial and trade, continue to grow, ICT is growing the fastest (African Development Bank 2014; AfDB, OECD & UNDP 2015). The manufacturing sector remains small, hampered by expensive energy, the lack of a skilled workforce and proper road infrastructure (AfDB, OECD & UNDP 2015). There has been expansion from low levels of economic growth in some oil and mineral-rich countries, such as Nigeria, Angola, Chad and Gabon, but sub-Saharan Africa has seen a significant contraction in economic growth (UNDP 2015). With the expected moderate recovery of the global economy, the extractive sector (oil, gas and minerals) will continue to support growth

in most resource-rich African countries, even if its share of GDP continues to decrease (African Development Bank 2014; AfDB, OECD & UNDP 2015).

4.6.7 Is Africa's growth inclusive and sustainable?

It is impossible to make a case for the sustainability of the current trajectory of economic growth. Average income inequality, as measured by the Gini coefficient, is at 44%, which is only slightly better than what it was in 1980 (African Development Bank 2015). Pieterse (2015a:5) notes that, the work emerging from the African 2050 diagnoses reveal that 'large-scale income inequality and material deprivation will remain the norm', despite 'robust growth over the next few decades'. There is nothing about the prospect of 730 million people attempting to live on less than US\$2 a day, which suggests that growth has been or will be inclusive (Pieterse 2015a). The conditions under which the impressive economic growth since 2001 has occurred suggest that Africa's growth has not been inclusive or sustainable.

4.6.8 Current development-finance trends in Africa

Over the last decade there has been a distinct trend towards external partners supporting public investment in infrastructure (IMF 2014). Public investment in infrastructure doubled between 2007 and 2012 (IMF 2014). Finance was generated by a combination of domestic public resources, loans or grants from multilateral institutions and bilateral creditors, private financing, and the issuing of sovereign bonds (IMF 2014). Other forms of finance are also emerging, including utility investments, internally generated budget funds, and sub-national government bonds (ICA 2014). The use of syndicated loans to the government to fund infrastructure development became more prominent as an instrument from 2007–2012. China has been leading the way in providing finance in Africa using the wide range of financing types described above. China's infrastructure financing in sub-Saharan Africa has tripled in the period 2007-2012 and it now accounts for about half of the external funding for infrastructure development in Africa (IMF 2014). It is, however, noted by ICA (2014) that Chinese lending to African infrastructure projects in 2014 of US\$3.09 billion was substantially lower than the average US\$13.9 billion reported in each of the previous three years. These investments were mostly in the transport and rail sectors. The slowdown of investment is apparent in the total funding Africa has received from all external partners The ICA (2014) contend that across the continent the infrastructure investment in 2014 totalled US\$74.5 billion. The breakdown of this investment per source is shown in figure 4.14. This is less than the US\$99.6 billion invested in Africa in 2013, and which included a one-off US\$7 billion investment from the US Power initiative (ICA 2014).

The breakdown of the 2014 investment per sector was as follows: transport (46.1%); energy (30.1%); water and sanitation (13%), ICT (3.2%) and multi-sector (2.9%). This is shown in figure 4.15. ICA members reported investments of US\$ 18.8 billion in 2014 with 12% of this going to capacity-building and other soft infrastructure programmes: 75% was in the form of loans, and 25% in the form of grants (ICA 2014). The largest investment of US\$ 35.4 billion came from the central governments of African countries, with Africa's regional banks committing a further US\$ 1.6 billion and sub-national funding originating within African countries totalling US\$ 9.1 billion (ICA 2014). The investments from other non-ICA members (Brazil, India and South Korea) totalled just more than US\$ 1 billion, with the African Co-ordination Group committing US\$ 3.46 billion (ICA 2014). South–South funding has increased remarkably since the 1998 financial crisis (Gelb 2005). Lastly, the ICA (2014) contends that the emergence of new funding streams, such as Africa50, Global Infrastructure Fund, and the New Development Bank (formerly known as the BRICS development bank), should greatly expand the pool of funding for infrastructure projects in Africa.

4.6.9 Notable qualifications to the ICA data

The ICA figures for sectoral infrastructure investments are collated from aggregated project-level data provided by ICA members, non-ICA members and recipient countries. This project-level data is recorded on specific databases using criteria determined by the ICA. This system favours the reporting of mega and large projects (e.g. South Africa's Renewable Energy Independent Power Producer Procurement Programme – REIPPPP). This is a problem and there is a need to develop better reporting systems to capture smaller projects. The methodology for the collection of data relating to the allocations of funding from Africa's national governments are done by analysing the published allocation of 42 African countries, sourced from finance ministries, central banks and embassies (ICA 2014). Capital expenditure is clearly identifiable in 21 of the countries, for the others total expenditure budgets per sector were used (ICA 2014). The sub-national funding category was reported on for the first time in 2014 by the ICA. This category quantifies the mobilisation of financial resources by local government from revenues generated internally from electricity, water and sewerage tariffs, transport fares or tolls, property and business tax. Other categories of local finance include municipal bonds, commercial paper and medium-term notes (ICA 2014). The reporting of a sub-national category is useful as the success of raising this funding requires the alignment of policies, strategies and priorities of the sub-national entity and national government, which serve as security.

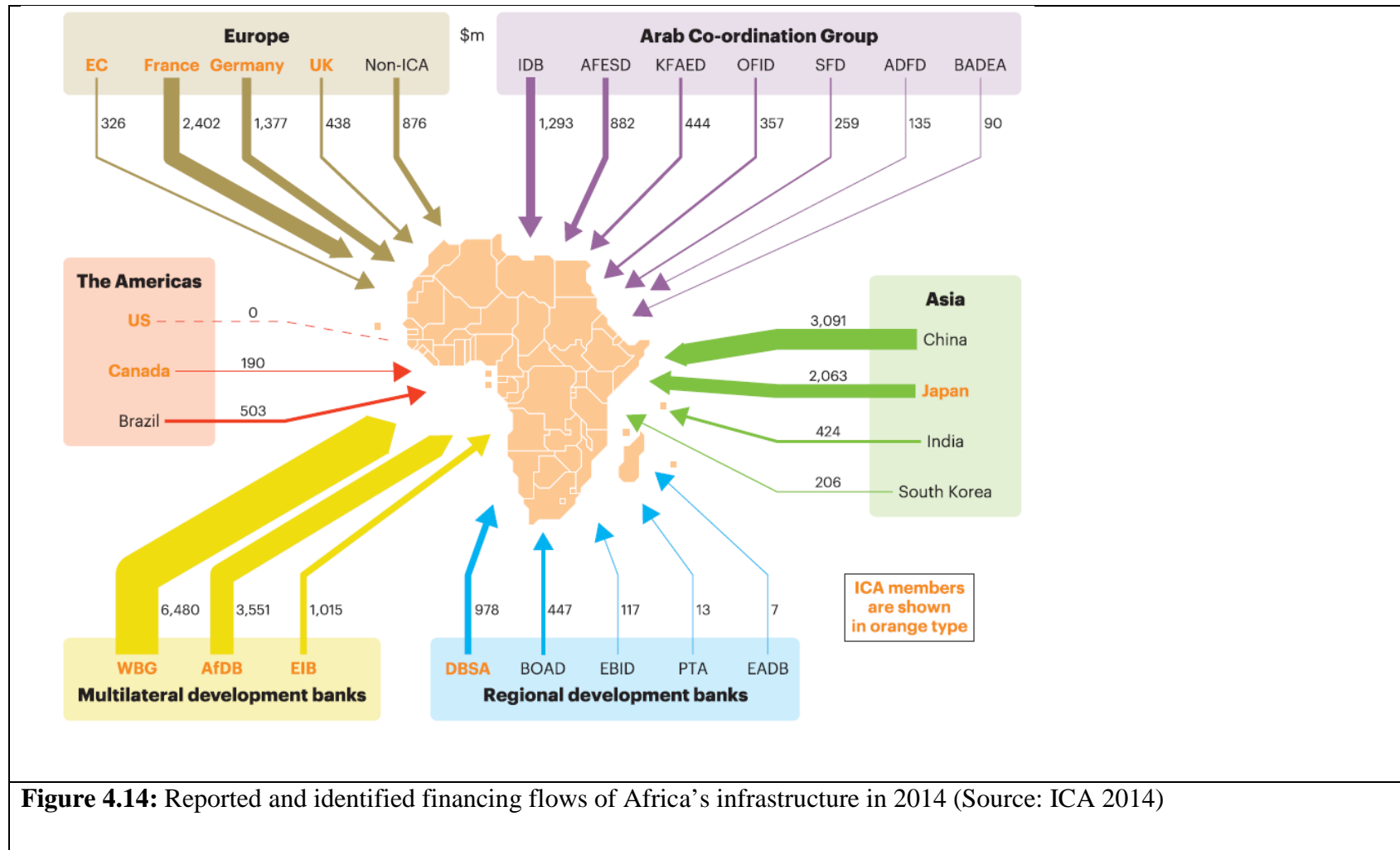


Figure 4.14: Reported and identified financing flows of Africa's infrastructure in 2014 (Source: ICA 2014)

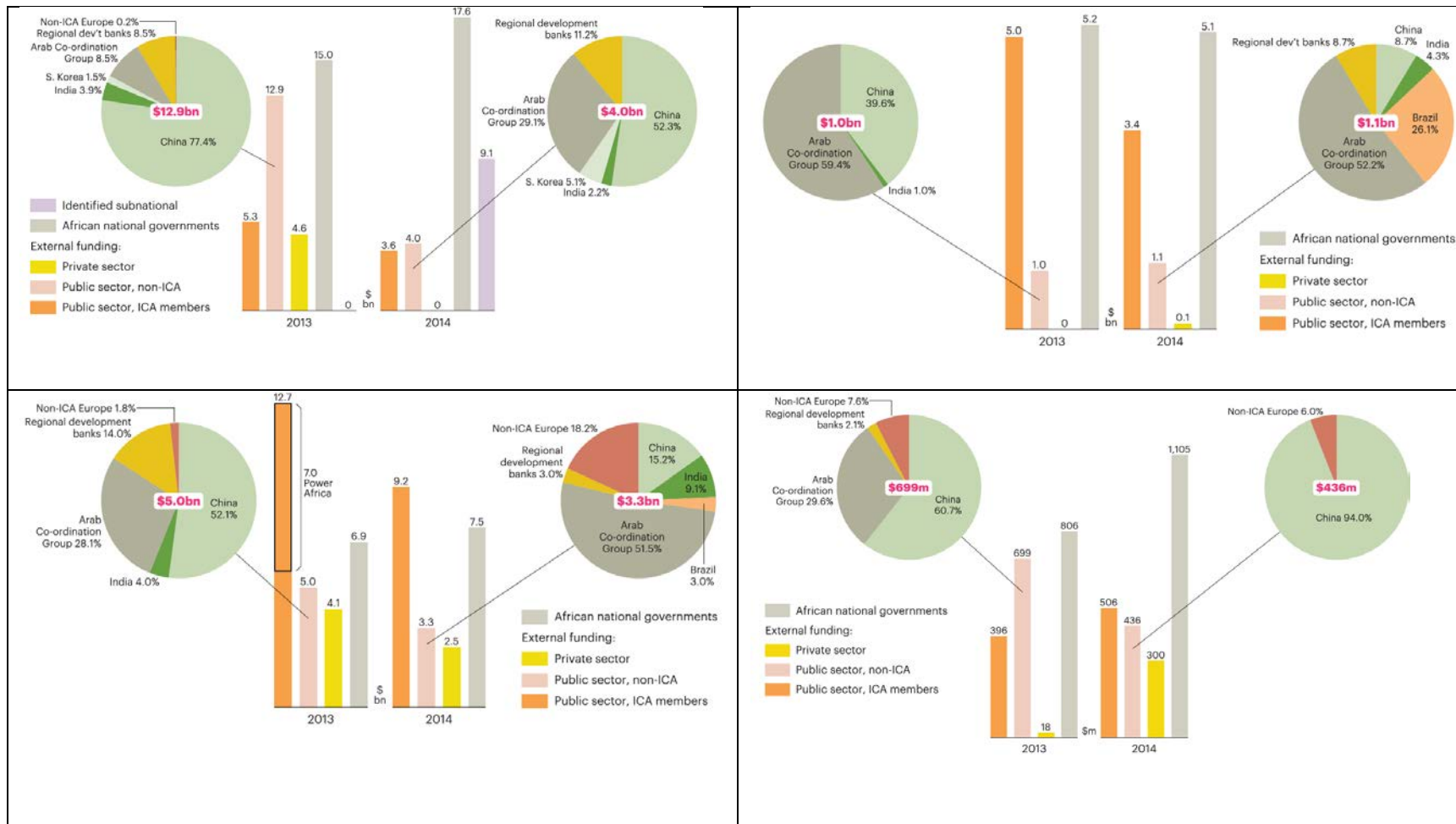


Figure 4.15: Breakdown of investment per sector, shown clockwise from left, for transport, water and sanitation, energy and ICT (Source: ICA 2014)

4.6.10 The green economy and the rise of the South: Framing alternative institutional frameworks for service-delivery configurations

But what does this mean in the context of Jaglin's (2013) thesis? This study contends that Jaglin's (2013) suggestions on the institutional, governance and regulatory changes that need to be made to govern heterogeneous service-delivery configurations requires the activation of the centre of innovation within the socio-political systems (Geels 2014). The alternative institutional frameworks for service delivery configuration which Jaglin (2013) propose requires modifications of the way in which factors of production, labour and capital are used. This, infers more than simply a change in governance, but rather an attempt to trigger structural change in an economy. However, the incrementalism implied by finding ways for alternative service providers, using low-cost techniques and inexpensive manufactured products to coexist with conventional service operators (Jaglin 2013), is not linked to a larger project of recursive empowerment, which is required for this incrementalism to be radical. Pieterse (2015a) provides an indication of what the provision of service delivery infrastructure must aim to achieve if it is to be the catalyst for a structural change in the economy. First all infrastructure and other investments must strive to contribute to an efficient resource metabolism, especially in cities where the bulk of economic activity takes place (Pieterse 2015a). Second all infrastructure investments must find the optimum balance between achieving universal coverage of basic services to satisfy socio-economic rights (such as the eradication of poverty), while transitioning the underling technologies onto an affordable resource-efficiency footing that does not threaten the financial stability of a given country or city (Pieterse 2015a). Lastly all urban investments must be subjected to explicit spatial and design criteria that can ensure optimal densities in relation to broader goals of environmental sustainability, social integration and economic efficiency (Pieterse 2015a).

Lawhon *et al's* (2014) suggests that the narrow scope of Marxist political ecology approaches must be avoided if the critical enquiry of African urbanism is move forward. The starting point for this study's critical enquiry of African urbanism is the return to the rise of the South and the green economy debate. The green economy proposes the transitioning of current global economies to those that are low carbon and resource efficient. Despite the reservations expressed about whether Africa is best placed to lead the transition to a green economy, it remains the applicable larger recursive project for which the collective must be striving towards. The value of the rise of South literature is that it uses the experiences of developmental states to first dismiss the North–South convergence thesis and then to propose what suite of economic and trade policies may work to stimulate a real North–South convergence. This is critically important because the green economy discourse really should be about the critical question of how to build 'social forces and political

structures which are able to produce a green economy which prioritises social welfare, tackles poverty and exclusion, and defends non-monetary ways of valuing the natural environment' (Death 2014 cited in Khan & Mohamed 2014:52). To answer this question one has to link the idea of the green economy to that of the developmental state. This provides an indication of the political, transnational integration, fiscal and industrial policies that will be required to transition to a green economy (Saad-Filho 2013; Khan & Mohamed 2014).

The expansion of the state's role in the economy is key and it must include strategic ownership of and intervention in, key sectors (Khan & Mohamed 2014). State intervention must drive 'a growth-acceleration strategy focused on investments in transport, renewable energy and infrastructure; transforming the labour market via formalising employment, combatting atypical work, raising wage levels and promoting collective bargaining; and 'rethinking modes of fiscal intervention and redistribution of society's collective wealth that is generated through industry' (Isaacs 2014 cited in Khan & Mohamed 2014:52). In addition, Saad-Filho (2013) contends that South-South trade should be prioritised in the realisation that there is an urgent need to move beyond the 'flying geese' paradigm, and that industrial policy should seek to actively effect intersectoral shifts of labour and other resources to the manufacturing sector. When considering the continued enormity of Africa's infrastructure deficit, it follows that development finance remains explicitly relevant. Khan and Mohamed (2014) confirm that substantial subsidies and concessionary funding will be required.

4.6.11 Reposing the aims of urban governance

Parnell and Pieterse (2014) assert that the decentralisation of power to local government has been the trend, globally and in Africa in the last few decades. The review of development finance to Africa showed that disbursements from African national governments, African sub-national and southern streams remain important. It is important that this funding be used to ensure that the provision of urban service delivery infrastructure effects systemic change and not merely preserve the status quo. The aims of Agenda 2063 cannot be achieved if this does not occur. African governments and sub-national infrastructure spend should seek to counter the resource-seeking and the market-seeking character of historic and contemporary development finance (Gelb 2011). It was noted in the previous section that the transition to a green economy will require state intervention in key sectors. Reconstructing service-delivery governance configurations presents an opportunity for state intervention in the key sector of urban construction. Jaglin's (2013) thesis suggest that that a system of contracting and licensing be used to disrupt the way in which conventional service delivery networks are being developed. Khan and Mohammed (2014) suggest that 'transforming the labour market via formalising employment, raising wage levels and promoting collective

bargaining' will be an essential component of the developmental state required to transition to a green economy.

Giang and Pheng's (2011) assert that the construction sector is important for economic development. The construction sector serves as a means to increase the productive capacity of an economy by potentially offering the full utilisation of the factors of production (Giang & Pheng 2011). It also serves as a means to increase national income or value added via the aggregation of, among others, wages and salaries (Giang & Pheng 2011). The extensive literature on the backward linkages between the construction sector and economic development means that these are well defined and empirically substantiated (Giang & Pheng 2011). The backward linkages are derived mainly from the benefits associated with the local manufacture of the materials used in construction (Giang & Pheng 2011). The forward linkages are less well understood. It is generally accepted that these forward linkages are related to the fact that the supply of infrastructure services can determine the profitability of production, the level of returns, the output, and the income and employment of other sectors (Giang & Pheng 2011). Even less well understood is how actual or proposed changes in other economic sectors, or resource constraints affect the supply capacity of the construction sector to generate the benefits to the economy that were outlined above (Giang & Pheng 2011). Giang & Pheng (2011) assert that there are two main views regarding the way in which the construction sector contributes to macroeconomic stability through its impact on the labour market. One view is that 'the misuse of construction by the government as a cheap way to absorb unskilled unemployment through an ill-planned public work program would only damage the healthy development of the construction industry' (Turin 1978 cited in Giang & Pheng 2011:122). The other view is that these 'large scale programs for employment intensive construction and maintenance have successfully created employment without compromising cost, quality or time' (McCutcheon 2001 cited in Giang & Pheng 2011). These views fail to take into account the role that infrastructure, as a public good, should play in the recursive project outlined earlier. In Chapter 3 it was shown that public goods must be conceptualised as rival goods in the resource-stressed Anthropocene. This would ensure that heterodox conceptions of the most efficient use of labour would be inserted into the supply of public goods. This is critical if the provision of public goods in Africa is to stimulate the types of structural changes that are required for a transition to a green economy. This study described the importance of the second demographic dividend in relation to economic performance. It was suggested that the means to ensure the intergenerational transfer of wealth must be in place before this dividend can be realised. These means include the benefits of pension schemes and access to credit, and these are dependent on the switch from informal to formal employment. Therefore Jaglin's (2013) work is critical because it represents the first tentative steps away from the way in which the state's significant involvement in the construction

sector is perceived. The state should not see the construction sector as merely a convenient means of absorbing labour via the creation of informal employment opportunities (Giang & Pheng 2011).

4.7 Section Six: Unravelling the Manichean compartmentalism of colonialism

A common criticism levelled against assemblage urbanism is that it, like conventional urban theory, does not address important explanatory questions regarding the broader (global, national and regional) structural contexts within which actants are situated and operate (Brenner *et al* 2011). In defending assemblage urbanism, Farais (2011) responds by returning to the relevant aspects of the original DeleuzeGuattarian notion of assemblage thinking. Farais (2011) suggests that assemblages are a combination of arrangements and agency. This allows assemblage thinking ‘not just to account for the intermingling of heterogeneous agencies, but also to facilitate the study of the variety of forms of action these forces are capable of generating’ (Farias 2011:6). Farais (2011) argues that the study of urban assemblages involves revealing the actual practices that create the asymmetries in the distribution of resources, of power and of agency capacities (Farais 2011).

4.7.1 Embeddness: demonstrating an understanding of actor-network theory (ANT)

The complexity or counter-intuitiveness of ANT means that caution must be exercised when using it (Latour 1996). It is important that the fundamentals of ANT be well understood. These fundamentals are that: (1) ANT proposes that the fibrous, thread-like, wiry, stringy, ropy, capillary nature of modern societies can never be captured by the notions of levels, layers, territories, spheres, categories, structures and systems; (2) ANT claims that the only way to achieve the reinjection of the facts generated by social and natural science, and the material objects created into our understanding of social fabrics, is through a network-like ontology and social theory (Latour 1996). Latour (1996) asserts that the ontology of the notion of a network adopted by ANT allows one to move beyond the following dichotomies: (1) far/close – lifting the tyranny of geographers in defining space, it offers us a notion that is neither social nor ‘real’ space, but rather associations; (2) small scale/large scale – the metaphor of scales going from the individual to the nation state, through family, extended kin, groups, institutions, and so forth, is replaced by a metaphor of connection; and (3) inside/outside – it allows us to get rid of a third spatial dimension after those of far/close and big/small, in that a network is all boundary with no inside or outside. Critically though, the objects are never left unchanged as they circulate within the network because, in ANT, a network is not one in which information travels from one point to another unchanged (Latour 1999).

The classic political economic analytical framework relied on here has embeddedness as one of its core premises. It was shown in Chapter 3 that Geels's (2014) triple-level embeddedness analytical tool is relevant to conceptualising the transition to sustainability. This is because it places the agglomerating dynamics – which together produce the social – within a network consisting of geopolitical capital flows, and firm level and institutional dynamics. The aim was to show that embeddedness must move beyond the dichotomies which tend to frame how the relationship between macro and micro economics, and society is conceptualised. Moving beyond these dichotomies is one of the fundamental tenets of ANT. It was inferred that embeddedness would be useful for furthering the cause of contemporary sociological projects concerned with testing the plausibility of social theory and that it could assist in the development of contemporary definitions of society. Elliot and Turner (2013) argue that finding contemporary definitions of society requires reconciling the three discourses of the social. Elliot and Turner (2013) suggest that these discourses contain the following registers: (1) *society as structure* (a conceptualisation that designates the descriptive aspects of structured competition, conflict and rivalry, and the normative aspects of refinement, morals and manners); (2) *society as solidarity* (a key term in the development of theories of society, it represents a social discourse that turns on care, concern, sentiment, affection, tenderness, sympathy and love); and (3) *society as creation* (arises when the social is constituted with explicit reference to its own self-implementation, design, construction or creation). Reconciling these registers is not possible without moving beyond the dichotomies mentioned earlier.

Elliot and Turner (2013:825) claim that understanding the production, reproduction and transformation of society rests upon acknowledging that 'social life rests upon a profound interlocking and cross-referencing of the registers of structure, solidarity and creation'. Social life is understood as an assemblage or network unfolding in time and space (Elliot & Turner 2013). Elliot and Turner (2013) assert that the agency/structure debate continues to polarise social theory. Sassen (2006) showed that the notion of a city has changed significantly and the traditional notion of a city, as a spatial defined entity, should no longer be accepted. The traditional notion of a city fuels the agency/structure debate within social and urban theory (Sassen 2006). It has been demonstrated how the concept of embeddedness imbued with the ontology underpinning the fundamentals of ANT is useful. However, Rodgers *et al* (2014) suggest that a new spatiality of the urban will have implications for the study of urban politics.

4.7.2 Urban politics: repurposing ANT

In Rodgers *et al* (2016) it is shown that traditional notions of urban politics can be delineated into a number of different schools. Firstly they note the twinned urban politics of the capital accumulation and class-struggle school, and they identify the work of Harvey (2012) and Brenner *et al* (2009) as being good examples of this school. Rodgers *et al* (2016) then identify the revivalist school of urban politics, which followed the Arab Spring of 2011. Lastly, they identify the school in which urban politics is defined by the specialities of labour (Harvey 1989 & Castells 1977 cited in Rodgers *et al* 2016) and the school of the urban that focuses on the struggles around property. They assert that all these schools have tended to rely on a specific locality of the urban.

Rodgers *et al* (2016:7) notes that assemblage offers a ‘strategic relational’ approach to urban politics. Assemblage urbanism provides urban research with an anti-structural way to identify with the heterogeneity of urban assemblages, while preserving some concept of the structural so embedded in the enterprise of social science research (Rodgers *et al* 2016). Proponents of assemblage thinking assert that drawing on assemblage thinking and ANT enriches the understanding of the core concerns of critical urban thinking namely agency and structure, and the sociology of power. Rodgers *et al* (2016) suggest that research into the ways in which assemblage theory rediscovers urban politics is by no means complete. Latour (1999) argues that the purpose of ANT is to find an epistemological settlement within social theory. This settlement is premised on the acceptance that within social science there is not one problem of deciding what society is, a second of explaining why there is a psychology, a third of defining politics and a fourth of accounting for the deletion of theological interests’ (Latour 1999:22). Latour (1999) asserts that there is only a single predicament which, no matter how entangled, has to be dealt with at once. It follows then that following the progress that has been made in refining the purpose of ANT would be useful.

In Latour’s (1999) recall of ANT, it is asserted that the original ANT definitions of actor, network and theory has been lost. This has allowed the type of misappropriation of ANT lamented by Storper and Scott (2016). The definition of a network has already been provided. The definition of an actor is now dealt with. Latour (1999) asserts that there is no model of (human) actor in ANT. There is no basic list of competencies that an actor must have before being considered human because the self and the social actor is not on the agenda of ANT (Latour 1996). Instead Latour (1996) suggests that the attribution or assigning of human, unhuman, nonhuman and inhuman characteristics, as they exist within the social form of ANT, is on the agenda of ANT. Within the social form of ANT it is the social scientists ‘who lack knowledge of what they (actors) do, and not

they who are missing the explanation of why they are unwittingly manipulated by forces exterior to themselves and known to the social scientist's powerful gaze and methods' (Latour 1996:19). The multidimensional conception of human's material exchanges with nature – a core informant of the Cambridge classic political economic framework suggested as an alternate basis for social critical urban theory – is commensurate with Latour's (1996) attempts to recall ANT.

4.7.3 Avoiding relativity in making use of ANT: Towards a broader conception of agency

The discussion of the impacts of colonialism on urbanism in Africa is by no means a new or recent intellectual project. It was noted in Section 4.6.10 that the process of untangling the legacy of the colonial planning regime still impacts on current spatial and infrastructure planning in Africa. This explains why literature which deals with understanding the colonial and post-colonial condition is so applicable to plotting Africa's transition to sustainability. Latour (1996) asserts that social scientists must acknowledge that the means in which the attributing or assigning of human, unhuman, nonhuman and inhuman characteristics has occurred within social theory must be reviewed. Fanon's (1961) seminal work in identifying the abstract compartments of the Manichean world of colonialism shows that this is critical, particularly in the context of Africa. Fanon (1961) asserts that the colonial world is cut in two. His examination of this divided world reveals that belonging or not belonging to a given race was the starting point for how these worlds are parcelled out (Fanon 1961).

Fanon (1961) asserts that the totalitarian character of colonialism renders the colonised free of ethics, values, culture and theology in the eyes of the coloniser. This dehumanises the colonised, and the interrogation of how they live, breed and die becomes the subject of zoological discourse (Fanon 1961). The colonisers view the colonised as non-humans, existing in nature in a pre-modern world (Fanon 1961). Their customs, traditions and myths are seen as signs of a poverty of spirit and constitutional depravity (Fanon 1961). The colonial masters believe that human intervention and the use of Christianity to inoculate the colonised from their myths is an absolute requirement to deal with this inhuman species (Fanon 1961). Importantly, Fanon (1961) asserts that colonialism never moves completely beyond the human condition, in that both the coloniser and the colonised have to find ways to survive in this compartmentalised world. Equally important, Fanon (1961) contends that unravelling the colonial condition does not require communication between the two worlds but, rather, the abolition of one.

The value of Fanon's (1961) work in describing the Manichean mechanism of colonialism in demonstrates the need for the epistemological settlement Latour (1999) asserts is required within social theory. Rodgers *et al* (2016) argue that using ANT as a basis for urban politics could promote the 'post-political city' thesis. Within this thesis an ever-widening range of urban issues are being rendered mere technocratic problems, and thus placed beyond the scope of politics (Rodgers *et al* 2016). This could be prevented by using Fanon's (1961) work on unravelling the Manichean mechanism to support Latour's (1999) call for the development of a new epistemological settlement which will then include a new notion of politics. Referring to this new notion of politics Latour (1999:23) notes that the challenge for ANT, is to 'elicit the specificity of a certain type of circulation that is turning the Body Politic into one, that is, some type of circulation that "collects" the collective'. It is suggested that the unravelling of the Manichean mechanism moves us closer to doing this. This is premised on Fanon's (1961) assertion that unravelling the divided world of colonialism, and ensuring the well-being of those freed from colonialism, requires the abolishment of the compartment of the world inhabited by the colonised. Unravelling the Manichean world of colonialism is about recovering a whole account of the human actor i.e. moving beyond the attributes assigned by the colonisers. In the colonised world the economic sub-structure was also the superstructure (Fanon 1961). Fukuyama (2012) argues that a return to Hegel's non-materialist account of history, one based on the struggle for recognition, is one way of recovering a whole account of a human actor and not only the economic side. A full account of the human condition is given by considering the role of desire, reason and thymos (Fukuyama 2012). Fukuyama (2012) draws on Plato's work and asserts that desire (which induces humans to seek things outside themselves) and reason (which allows humans to calculate the best way of satisfying their desires) account for most of the behaviour of humans. Fukuyama (2012) suggests that desire and reason drives the process of industrialisation and economic life in general. Thymos is the part of the human condition that demands recognition of their own worth. Drawing on Hegel, Fukuyama (2012) asserts that thymos, and the accompanying emotions of anger, shame, and pride, are parts of the human condition critical to political life. Hegel's perspective is that desire for recognition and prestige drove humans into battle at the beginning of history, and that the outcome of this battle was the division of the world into classes of masters and slaves (Fukuyama 2012). This division of classes resulted in the perpetuation of a cycle of un-fulfilled desire for recognition for both classes, which only came to an end with the advent of the principles of popular sovereignty and the rule of law which are the bases of liberal democracies (Fukuyama 2012). The principles of popular sovereignty and the rule of law saw the inherently unequal recognition of masters and slaves being replaced by universal and reciprocal recognition (Fukuyama 2012). All citizens recognises the shared dignity and humanity of the body politik and the state recognises this dignity by granting

rights (Fukuyama 2012). Fukuyama (2012) notes that perspective of history relies on a Hegelian and Marxist notion of history as a coherent or intelligible process. This has been challenged by many as not being applicable in the modern world. Fukuyama (2012) proposes modern natural science as a regulator or mechanism to explain the directionality and coherence of history. Fukuyama (2012) suggests that the 'logic of modern natural science' is in effect an economic interpretation of historical change, but one which (unlike its Marxist variant) leads to capitalism rather than socialism.

Sen (1999) argues that liberal democracy is required to create the conditions which support human well-being and that this should be the system of political organisation which guides the transition to sustainability. Fukuyama's (2012) analyses of the failure of totalitarian governments of the Right and Left seemingly support this assertion. However, Fukuyama (2012) notes that a historical process driven by modern technology does not have political democracies as its logical conclusion. Fukuyama (2012) cites historical and contemporary examples of technologically advanced capitalism coexisting with political authoritarianism to support this assertion. It shows that the liberal economics of capitalism does not necessarily translate to liberal democracies. The liberation of colonised countries in Africa did in many cases not involve political or economic sovereignty (Fanon 1961; Stiglitz 2012). Fanon (1961) suggests that the imposition of liberal economics did not allow for the complete unravelling of the Manichean mechanism. Fukuyama (2012) suggests that capitalism and industrialisation only accounts for the economic side of man and that it does not automatically make provision for full-filling the desire for recognition. The desire for recognition provides the missing link between liberal economics and liberal politics (Fukuyama 2012). Fukuyama (2012) however explains that there are a multitude of ways in which recognition manifests and that the success of liberal politics and liberal economics frequently rests on irrational forms of recognition that could suppress the social structures, norms and practices of a certain group of society. In ANT, there is an actor whose definition of the world outlines, traces, delineates, describes, files, lists, records, marks or tags a trajectory that is called a network (Latour 1996). ANT is concerned with understanding the movement of this network (Latour 1996) and this cannot be done without an appreciation of the role of the desire for recognition. Latour (1999) asserts that the study of the spaces between networks is critically important. Fukuyama's (2012) work suggests that it is within this space where forms of recognition are rooted and from where they shape the trajectory of networks.

This is where the capitalist developmental state becomes so important. It is important not as a permanent condition but rather as a dynamic feature with a *limited time horizon* that seeks to correct irrational forms of recognition that could suppress social structures, ideology, and societal norms

and practices. Developmental states are not associated with specific policies; [as] at different times and in different places, very different policies have been used to realise social and economic transformations (Khan 2010). The features or attributes of an ‘emerging’ developmental state described by Khan (2010) represent the ways in which the spaces between different networks, and forms of recognition, are regulated. The study of the features or attributes of an ‘emerging’ developmental state (see Pillay’s 2007:185 delineation of these attributes in Khan 2010), within the context of the way in which the imbroglios of the Anthropocene potentially alter the conception of time and, concomitantly, the conception of place within social theory, should be an important focus of research in social theory.

4.8 Conclusion

Section One explored the divisions within critical urban thought. It was suggested that the significant movements in the thinking about the city and urbanism, which were described, are necessary to escape the divisive nature of the agency/structure debate that permeates social theory. Furthermore, it was shown how the adoption of an assemblage perspective of urbanism allows the core elements of critical urban theory to remain relevant, despite the new spatiality of what is considered urban. It was then showed that the distilling of critical urban theory to mutually constitutive propositions allows for a more unified approach to critical urban theory. In Section Two, the way in which assemblage thinking has been appropriated in critical urban theory was explored. This revealed that the value of assemblage thinking is not that it represents an alternative ontology to critical urban theory, but, instead, it could move this scholarship beyond it being negatively influenced by the discursive nature of the conflict between the analytical and synthetic traditions of philosophy. In Section Three, it was shown that assemblage theory allows critical urban theory to transcend the ‘urban age’ narrative debate to focus, instead, on how expanded notions of demographic migrations and dividends can be useful. Section Four situated the work being done to delineate alternative governance frameworks of service-delivery configurations in efforts to transition to a green economy. Section Five explored how the study of the unravelling of colonialism provides a useful means to unlock the potential of ANT to reintroduce politics and agency into critical urban theory.

Chapter 5: Conclusion

This research project aimed to respond to the research questions shown in Table 5.1. Questions one, two and three were responded to in Chapter 3. Question four was responded to in Chapter 4.

Table 5.1: The research questions and sub-questions	
	Research questions
1	Is the critical enquiry into sociology leading to the acceptance that a return to the analytical framework of classical political economy is best suited to postmodern nature-society relations?
2	What suite of analytical tools is required to ensure that classic political economy informs the transition to sustainability?
3	How do these tools need to be provincialised?
4	<p>How can the analytical and methodological orientations of assemblage urbanism link to the tools used to analyse the geopolitical economy in ways that contribute to a genuinely critical approach to ongoing African urban transformations that are attuned to local specificities and the broader intercontextual dynamics of the transition to global sustainability? (Brenner <i>et al</i> 2011)</p> <p>Sub-questions emanating from question four</p> <ol style="list-style-type: none"> 1. Does assemblage urbanism represent an alternative ontology to that of critical urban theory? 2. Does assemblage urbanism allow for a more unified approach to critical urban scholarship? 3. How does assemblage urbanism contribute to finding new urban governance configurations? 4. How does assemblage urbanism contribute to the trend of reinserting politics into critical urban theory?

5.1 Main points of the overall argument

The main conclusions made in each chapter are now summarised. In Chapter 2 it was concluded that the meta-theoretical framework of social-science research in the Anthropocene must be premised on the synchronisation of scientific and philosophical ontologies; the supplementation of the critical realist perception of knowledge with critical complexity; and the acceptance that linear causalities are a myth. It was shown that the methodology of social-theory research in the Anthropocene must be transdisciplinary. It was postulated that the foundation of knowledge production should be the experiences of individuals conducting the necessary material exchanges with nature. It was determined that this would return social science to being a creative endeavour of both the individual and the collective.

In Chapter 3 it was concluded that a return to a classic political economy, specifically the Cambridge classic political economy perspective, could provide the analytical framework that would make transdisciplinary social theory research possible. Core features of the Cambridge classic political economic perspective include the end of value-free economics, the ethical distribution of economic surpluses and environmental externalities, and well-being. It was concluded that this should be the basis of the political economy of the transition to sustainability. The suite of social theory analytical tools needed to operationalise this political economic framework was identified, and these were: Pendenza's (2015) description of the new cosmopolitan perspective of classic and contemporary sociology; Geels's (2014) triple-level embeddedness framework; Dosi *et al*'s (2014) Keynesian plus Schumpeter's economic growth theory model; and a synthesis of Seghazzo's (2013) and Allen's (2001) sustainable development paradigms.

In Chapter 4 it was concluded that the adoption of an assemblage urban perspective is necessary to revive the transdisciplinarity of the political economic framework underpinning critical urban theory. It was suggested that this would allow the adoption of a more unified approach to critical urban theory (Brenner 2009) allowing it to move beyond the discursive nature of the agency/structure and analytical/philosophic debates. It was asserted that assemblage urbanism allows for the generation of an African perspective of urbanism, and that this should be premised, firstly, on the exploration of expanded notions of demographic transitions, demographic dividends and migrations (Bocquier & Costa 2015). The second premise of this African perspective of urbanism is that Jaglin's (2013) alternative service-delivery configurations should be situated within larger recursive projects of the transition to the green economy (Khan & Mohamed 2014) and achieving real North/South convergence (Saad-Filho 2013). Lastly, it was suggested that the reintroduction of politics into urban thinking is possible if one uses Fanon's (1961) descriptions of

the mechanics of unravelling the Manichean world of colonialism as the basis for the application of ANT in assemblage urbanism.

5.2 Assessment of study and possibilities of further research

Markard *et al* (2011) note that the issue of how to promote and govern a transition towards sustainability – conceived as a fundamental transformation towards more sustainable modes of production and consumption – has received increasing attention both in the policy arena and in social-science research. Baker *et al* (2013) assert that there is an urgent need to improve the understanding of the politics and political economy of the transition to sustainability. Critically, they note that although a number of transition-writers contend that politics is important in the transitions approach, it is largely absent from much of the existing analysis. This is worrisome because the transition to sustainability requires structural changes in systems, such as energy and transport (Baker *et al* 2013). These changes require long-term and complex reconfigurations of technology, policy, infrastructure, scientific knowledge, and social and cultural practises (Baker *et al* 2013). Critical urban literature suggests that the dynamics of these systems are responsible for much of the character of how urbanism is unfolding. This reinforces the importance of studies such as this one, which attempt to improve the understanding of political economy in relation to sustainable transitions.

There are aspects of this study which could be improved. Firstly, it would have benefited from a deeper exploration of both classic sociology and critical sociology. This would have provided a sounder base for engaging with the literature that interrogates the efficacy and ethics of knowledge production within social science. Secondly, this study would have benefited from a more detailed review of the literature on the Cambridge tradition of classic political economy in relation to other traditions of political economy. Drawing on insights from case studies would have generated a more thorough basis for the discussion of the analytical tools discussed in Chapter 3. The contemplation of the capitalist developmental state praxis could have been enriched by following arguments that highlight its heterogeneity and diversity. When considered collectively, it becomes apparent that the contributions of this study are situated within an intellectual project that exists on a much broader canvas and that the possibilities for further study are numerous.

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