Rethinking Regional Innovation Systems

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Abstract
The objective of this paper is to review influential theories of regulation and corporate governance with a view to arriving at a rigorous inter-disciplinary framework for the analysis of centrally coordinated regional innovation and regional development policy. In particular, it will combine Lazonick and O’Sullivan’s Conditions of the Innovative Enterprise framework with a ‘Spatial Keynesian’ Analysis, to highlight the often-overlooked linkage between (spatially articulated) macroeconomic policies of full employment, infrastructure development and training and regional innovation policy. It will then examine opportunities for empirical analysis that are afforded by this integrative approach.

1. Introduction
Using as a ‘springboard’ debates that centre on the specific relationship between economic sociology and economic geography (see section 2), the central aim of this paper is to construct a synthesis across Post Keynesian macroeconomics and theories of regional and enterprise innovation. It will provide an overview of a variety of generic approaches to government regulation, as it pertains to issues of corporate governance, as well as different theories about the nature of regional innovation and development; with a view to demonstrating the value of the ‘Social Conditions of the Innovative Enterprise’ (SCIE) perspective developed by William Lazonick and Mary O’Sullivan.

Moreover, it will identify fields of complementarity between this latter framework and Spatial Keynesian policies, which entail a regional implementation of Job Guarantee policies to remedy macroeconomic problems of unemployment and underemployment that are unevenly distributed across local labour markets (see Mitchell and Juniper, 2007). In constructing this theoretical synthesis, which clearly questions the orthodox division between macroeconomic and microeconomic analysis, it has the objective of addressing Jamie Peck’s (2005: 48-9) concerns about the need for concrete complexity and analytical pluralism in economic geography, his arguments for conceiving economies as historically, geographically, and institutionally specified, and his statements about the need to articulate in theoretical terms both the social construction of scale, and processes of market making and state building.
In section 3, which addresses the issue of corporate governance the paper will review a range of influential theoretical approaches championed in the interdisciplinary literature on public administration and politics. Seven major schools of thought will be briefly examined to highlight their advantages and disadvantages. Theories will be evaluated in terms of their comprehensive capacity to span the division between macro and micro policy. It will be argued that Lazonick & O’Sullivan’s framework performs well on the basis of this criterion.

Section 4 examines policies that have the aim of promoting regional innovation systems, specifically through support for clusters, networks, and strategic alliances or the exploitation of certain agglomeration effects. To this end, different theoretical conceptions of what underpins regional processes of cumulative causation will be examined. In particular, the tendency of many researchers working in this field to ignore, if not to explicitly advocate a blithe indifference towards macroeconomic considerations and constraints will be exposed.

The paper will then consider Post Keynesian approaches to macroeconomics that adhere to a Chartalist conception of the monetary and macroeconomic role of national governments that have responsibility for the production of fiat currency. In this context the paper will examine reasons for a reluctance on the part of many sociologists, political economists and sociologists to take on Chartalist understandings of how monetary production economies actually work.

2. The Need for a New Approach to Economic Geography

In his review of the intimate relationship between economic sociology and economic geography, Jamie Peck (2005) asks, How might economic geography reposition itself within the interdisciplinary field of heterodox economics? Observing that economic geography and economic sociology share a respect for concrete complexity and analytical pluralism, a recognition that real-world economies are historically, geographically, and institutionally specified, and a concern for the social construction of scale, Peck (2005: 47-9) engages in a critical evaluation of the New Economic Sociology (NES) of Granovetter (1985), instead calling for a deeper engagement with social-constructivists and advocates of macro-sociology, in particular advocating detailed analysis of actual historical processes of market making and state building.

Peck observes that economic geographers have largely adopted a heterodox, pluralist, and decentered perspective, and while some might lament the abandonment of a regional science agenda—one closely affiliated with neoclassical economics—he comments favourably on the successive advocacy of a political economy of industrial restructuring in the 1980s, the take up by geographers of Italian and French theories of flexible-specialization and the neo-Marshallian analysis of industrial districts in the 1990s, and the more recent cultural and institutional turn. However, in a cautionary note, Peck also suggests that many geographers share an unease about this analytical decentring and splintering of the discipline, with some voicing concerns that researchers are spreading their resources too thinly, and that centrifugal tendencies are undermining theoretical and methodological integrity.

Accordingly, Peck (2005: 6) assents to Amin and Thrift’s (2000) argument that a revival of economic geography largely turns on “the kind of economic theory that is practiced”. In particular, geographers should reject the dichotomous notion that economic fundamentals should be the preserve of neoclassical economics while deviant formations, curiosities, and leftovers are passed on to sociology and geography. While the NES challenges the Parsonian division of labour between an economics, which focuses on rational actors in market settings (i.e. the ‘means’) and a sociology, which focuses on cultural norms, values, institutions (i.e. the ‘ends’), Peck (2005: 7) argues that this seemingly confrontational rhetoric is belied by a conciliatory, complementary,
and reformist practice. Despite Granovetter’s (1985) announced ‘revisiting’ of Polanyi, Peck (2005: 8) suggests that the resulting conception of economic behaviour as embedded within a broader network of interpersonal relations, compares unfavourably with Polanyi’s own notion of an organic relationship between economy and society. In particular, NES plays down the Polanyian conception that markets are political constructions requiring on-going state intervention (Peck, 2005: 22; citing Bloch, 2000). In contrast, Polanyians hold firmly to Marx’s insight that land, labour, and money are not true commodities, but political constructs (Peck, 2005: 40; citing Bloch, 2002: 223-4). As such, progressive reconstructions of the economic sphere can also be envisaged and enacted. Peck muses on the fact that what must be explained is how diverse, contradictory practices are welded into a unity through the production and deployment of different market ‘scripts’. This would include an explanation of the various ways that neoliberalism functions to reduce the variety of existing capitalisms.

Despite Peck’s critique it is important to acknowledge that the NES has led to a certain broadening and deepening of the orthodox economic framework. This is because network effects must be accounted for as an influence over the behaviour patterns of individual agents. With users and producers of goods and services increasingly linked together across vast, complex communication networks, on one hand, the greater the number of network members the greater the benefits flowing to each new member of the network, and on the other hand, the larger the size of the network, the lower the cost of relaying messages across the network.

These network externalities depart from orthodox notions of economies of scale and scope because, in important and intrinsic ways, they depend on the specific properties of and the configurations of the network, including: levels of ‘interactivity’ and denseness (e.g. the average path length), the nature of connectivity (e.g. how evenly dispersed nodes are), levels of redundancy (e.g. minimum spanning paths), how much agents use network services and the strength of ties, as well as scale of the network. The analysis of these properties has become an active area of both formal research (e.g. graph and tree theory) and empirical analysis (e.g. the estimation and simulation of network structures and influences).

Of course, network analysis can still be subsumed by economistic and reductionist forms of analysis where the main focus is on commercial interactions and exchanges rather than processes of production and collaborative learning, or for that matter, power relations. In this regard, Peck’s concerns about the neglect of macro-sociology are no less pertinent. As emphasized by Post-Structuralist’s working within a Foucaultian or Deleuzean framework, in both work-related and non-productive applications, modern information and communication technologies are, first and foremost, mechanisms of surveillance and real-time monitoring and control (Deleuze, 1990).

3. A Review of the Literature on Corporate Governance
In many respects, debates within the public administration literature mirror those occurring within sociology and social geography, in general, and within economic sociology and economic geography, in particular. Surveying the general literature on governance and governmentality at least seven major approaches can be identified. First, there is the Neoclassical School (see La Porta et al, 2000), which focuses on transactions costs, including imperfect information, which are seen to operate as barriers to successful deal-making. Irrespective of whether nations are characterised by bank-based or equity-based systems for the provision of long-term finance, from a corporate governance perspective the crucial issue is how the existing constellation of legal responsibilities and obligations works to protect those who provide external finance to the enterprise against various forms of appropriation, confiscation, and dilution of returns. As Lazonick (1991:19) argues, the fundamental flaws with this approach is that markets are viewed as a cause rather than as a consequence of economic development, and there is little or no
understanding of the role business enterprises play in the innovation process, specifically in regard to the basis on which firms allocate resources for innovation. And this, he argues, is fundamentally an issue of organizational rather than market control. Where the neoclassical approach focuses on barriers to deal-making, alternative approaches place more emphasis on barriers to learning about production. Unlike the Regulationists, who will be discussed next, and others working within the comparative political economy tradition (Lannoo, 1999; Rhodes and Apeldoorn, 1998), Neoclassical researchers focus almost entirely on the market for corporate control ignoring other aspects of political economy that influence corporate governance such as the labour market and labour organization, national and regional innovation systems, and education and training institutions.

A second approach is that pursued by the neo-Marxist, Anglo-School of Governance (Jessop, 2002), which represents a British version of Regulation Theory (RT). RT analyses successive phases of capitalist development in terms of the combined interaction of regimes of accumulation and modes of regulation. A strong analogy obtains between the mode of regulation and regime of accumulation, on one hand, and social relations of production and forces of production on the other. Nevertheless, RT is opposed to economic determinism in so far as structural forms are seen as outcomes to a significant degree of class and political struggles. The regime of accumulation is defined as a relatively stable and reproducible relationship between production and consumption defined at the level of international economy. During any period this relationship may govern production organisation, the pattern of income distribution, the time-horizon for investment decisions, and the relationship between capitalist and non-capitalist modes of production. Each national economy may have its own mode of growth depending on its insertion within the international division of labour. The mode of regulation is defined as a complex of institutions and norms which secures the adjustment of individual agents and social groups to the overarching principles of the accumulation regime, and include: particular forms of money and credit, the wage-labour nexus, the type of competition, and forms of state intervention.

Many of the criticisms of RT voiced by Brenner and Glick (1991) are still pertinent. They complain that Jessop and other advocates of RT adopt a Weberian ‘ideal type’ approach to theory, which has led to a proliferation of ill-defined, though flexible classifications of regimes of accumulation and modes of regulation. Although modes of regulation are characterised in relation to particular forms of money and credit, the wage-labour nexus, types of competition, and forms of state intervention, aspects of governance are discussed in very broad and abstract terms such as the “hollowing out” of the nation state. In practice, much Regulationist analysis privileges a single component of system such as the wage-labour nexus or the form of competition.

Moreover, to secure a credible and sufficiently complex relation between theory and particular empirical cases (eg. national modes of growth compared with, say, the dominant international regime or a succession of regimes contrasted with the capitalist mode in general) Regulationists engage in elision and stylisation of facts, and ad-hoc modification of categories (e.g. flex-Fordism, blocked, state-, peripheral-, primitive-Fordism). A major concern about the Regulation School is its uncritical adherence to neo-Marxist arguments about the supposed ‘fiscal crisis of the state’. In Mitchell and Juniper (2007) it is argued that pessimistic views of this nature about the implacable and severe nature of the economic constraints over effective fiscal policy merely

1 For a hard-hitting and more purist Marxist critique of this neo-Weberian approach see Albritton, 1995.
2 A particularly extreme example of this proliferation of descriptive categories is afforded by Boyer (2000) who variously distinguishes between Toyotism (supposedly associated with Japan until 1990), the Service-led regime (typically associated with the US in the 1980s), Information and Communications Technology-led regimes (seen to characterize Silicon Valley since the mid-1980s), the Knowledge Based Economy (KBE), Competition-led growth (characterizing the OECD nations since 1985), Export-led growth (associated with the East-Asian economies before 1997), and what he calls Finance-led regimes.
replicates orthodox macroeconomic justifications for the dominant neoliberal regime. These concerns will be addressed at greater length in Section 5 of the paper.

A third tradition (Dean, 1999, Lemke, 2002) follows Foucault in his analysis of the *dispositive*, diagram or assemblage of ‘governmentality’. The focus of analysis in Foucault’s diagram is on how power-knowledge relations weave together the otherwise irreducible archaeological strata of visibilities (governed by conditions of emergence) such as ‘delinquency’ and statements (characterised by conditions of enunciation) such as discourses on the conduct of reformatory schools. Applications of this framework highlight the way that neoliberal discourse weaves together technologies of self and biopolitical rationalities of domination thus linking power to processes of subjectification. In his work on governmentality, therefore, Foucault reconceptualizes power as a total structure of actions brought to bear on the actions of others, combining it with a more expansive meaning of government addressing the well-being of children, souls, communities, and families in their imbrications with other things. The neoliberalism of the Chicago School is compared unfavourably with classical liberalism and the Ordo-liberals in post-war Germany. However, apart from explaining how neoliberalism reduces social problems to those of individuals, and draws on the private firm as a model even for government itself, in this otherwise insightful literature, little attention is paid to more specific aspects of corporate governance. Nevertheless, it is important to highlight the fact that the neoliberal penchant for using either the firm or household as a model for government has played a crucial ideological role in the mounting of ‘common sense’ attacks against deficit spending on the part of national governments.

The social constructivist framework as developed by Bevir and Rhodes (2006) represents another strand of theory. These authors adopt an anti-essentialist philosophy motivated by Wittgenstein’s analysis of language games. They advocate the analysis of individual actions, which themselves are viewed as an expression of diverse narratives about governance which, in turn, reflect contested traditions and systems of beliefs. In their pursuit of an anti-foundationalist theoretical perspective Bevir and Rhodes firmly reject any explanation on basis of social logics, including logics of modernization, or law-like regularities, including those arising from the application of institutional norms. However, not only is this kind of social constructivism open to challenges on strictly philosophical grounds (Badiou, 2005: 206-389), its rejection of ‘economic and social logics’ is clearly problematic. Ironically, in his earlier research on the “hollowing out of the nation state”, Rhodes (1994) adopted a more conventional macro-sociological perspective, although he was already heading in the direction of defining governance as ‘self-organizing interorganizational networks’ that ‘co-produce both the administration and its clients’ and even ‘blur the distinction between state and civil society’: an approach that can clearly to be distinguished from the ‘markets and hierarchies’ approach promoted by Oliver Williamson’s transaction cost theory (Rhodes, 1996: 666).3

In Australia researchers working within a largely legal framework have emphasised the limitations of both top-down systems of ‘command and control’ regulation and neo-liberal processes of self-regulation. As ‘third-way’ alternatives they propose mechanisms of “smart”

3 In this early research Rhodes equated ‘hollowing out’ with four dramatic and complex trends—privatisation and limiting the scope of public intervention, the loss of functions by central and local governments to alternative service delivery systems (such as agencies), the loss of functions to broader, multi-national institutions such as the EU and NAFTA, and the limiting of the discretion of public servants through the new public management with its emphasis on managerial accountability, and clearer political control through a sharper distinction between politics and administration—which he opposed to simple movements towards a Thatcherite minimal state. In his later work Rhodes (1998) adopts a fairly mild critical stance, warning against the loss of political responsibility and democratic accountability resulting from this increasing resort to network mechanisms.
(Gunningham & Grabosky, 1998) or “responsive” (Ayres & Braithwaite, 1992) regulation. However, this perspective focuses more on the juridical and psychological rather than on the strictly economic aspects of regulation and governance. These researchers argue that more flexible forms of regulation have the capacity to distinguish between virtuous and rational agents, non-virtuous though rational agents, non-virtuous and irrational agents and to selectively intervene with appropriate mechanism ranging from persuasion through to punitive sanction and ultimate incapacitation.

Yet another strand of socio-cybernetic research (see Aalders & Wilthagen, 1997; Teubner, 1988, and Luhmann, 1986) draws on the notion of “autopoiesis” to discuss systems of governance. Varela, Maturana & Uribe (1974: 188) have defined autopoiesis as “…a unity [achieved] by a network of production which (1) participate[s] recursively in the same network of productions of components which produces these components, and (2) realize[s] the network of productions as a unity of space in which the components exist. Teubner (1988) and Luhmann (1986) go on to argue that legal systems are processes of social communication with autopoietic characteristics. On this view, the normative closure of the law as an autonomous and self-organising system paradoxically heightens its openness and cognitive responsiveness to extra-legal forms of social conflict. Juniper (2007) has criticized the bio-cybernetic narrative developed by member of this school of research for reducing theory to the level of a biological artefact and knowledge to a product of psychological reflection. On a more prosaic level, as with the Australian School, the autopoietic focus on ‘third way’ resolutions of the dichotomy between equally undesirable ‘command-and-control’ and ‘self-regulation’ approaches to governance has encouraged a neglect of macroeconomic policy.

The Marxist analysis of Stefano Harney represents a sixth approach to the analysis of government. Harney criticizes the public administration literature for its privileging of governance, post-bureaucracy, and network theory during a period of ‘cruel reterritorialization of hierarchical and sovereign state power’ (Harney, 2006:2). In his review of the literature Harney discerns a sliding from theories of the state to those of government, and from government to bureaucracy. As an alternative to what he describes as a narrowly focused, Weberian analysis of bureaucratisation he advocates a re-working of labour process theory, which he suggests can readily be extended to account for the “institutional materiality of capitalist state”. A theoretical approach of this kind, he contends, would overcome the absence of a ‘concept of the State’ within neo-Weberian research, thus helping to undo what he characterises as an on-going ‘repression’ of theoretical efforts to acknowledge the transformative potential inherent within the living labour of State workers. Harney argues that repression occurs because this kind of living labour threatens an ‘excess public’ to the extent that state labour is directly social labour. Any theoretical recognition of the public nature of state labour would lend support to the notion that all that is ‘private’ amounts to a ‘privatization’ of social labour. It also betokens a new ‘principle of association’ where, in Marx’s terms, the ‘government of men’ could be replaced by the ‘administration of things’. Harney observes that for members of the Italian *Autonomist* tradition the expanded cooperative ability of state labour is described by the evocative term “mass intellectuality”. In this struggle against what the living labour of the state ‘stands for,’ Harney points to the social character of production, the fraught reality behind the production of surplus value, and the fact that the state is responsible both for determining the very split between the public and private spheres and for asserting an ‘equality of rule’ through its responsibility for issuing the general equivalent⁴.

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⁴One of the dangers in Harney’s approach is his sympathy for the objective of de-linking work and income. Instead of promoting a *Basic Income* policy, proponents of the Job Guarantee privilege the struggles of the workers’ movement...
The final theoretical perspective is one developed by Lazonick and O’Sullivan (2000). This approach, predicated on the Social Conditions of Innovative Enterprise (SCIE), deals specifically with issues of corporate governance, and constructs a rigorous political economic framework informed, in particular, by the Alfred Chandler’s historical analysis of the US Corporation. Moreover, the SCIE framework is broad enough to encompass influences derived from the conjunctural relationship holding between macroeconomic policies and those designed to promote regional innovation and development.

Lazonick (1991: 198-206) presents a cogent summary of his theory of the innovative organization. He argues that the crucial problem faced by business organizations is that of fixed costs. Because neither production nor sale are certain or instantaneous, firms must choose between two opposing strategies (Lazonick, 1991: 199). On one hand, they can be innovative, developing productive capabilities and resources. On the other hand, they can be adaptive, staying with known technical specifications and existing capabilities. This choice is made in the context of two forms of uncertainty. Productive uncertainty is concerned with the internal organization of firm, while competitive uncertainty concerns rivalry on the part of other firms (Lazonick, 1991: 200). Both forms of uncertainty obtain over the two sequential stages of development and utilization of capabilities (Lazonick, 1991: 202).

Lazonick (1991: 203-4) emphasizes the fact that higher levels of innovation imply more uncertainty as the firm must invest in vertically integrated activities, R&D, planning and coordination. These costs are minimized for the adaptive firm, which maintains a lower level of fixed commitments. The innovative enterprise must invest in management capabilities, the development and coordination of specialized skills, coordination mechanisms that increase the speed of throughput, and higher levels of backward and forward integration. All these activities are associated with both the transformation of variable into fixed costs, and competitive uncertainty productive uncertainty. Nevertheless, the firm can exercise more control over the process trading off a higher risk of failure against enhanced opportunities for growth (Lazonick, 1991: 201). Moreover, even late movers face some uncertainty over their ability to manage the requisite investments, and they are exposed to an increased threat of ‘creative destruction’. Accordingly, oligopolies always confront the temptation of relaxing into regimes of adaptation. At the same time, Lazonick (1991: 206) notes that effort saving technological change creates opportunities for achieving high throughput. However, this imposes the need for extensive backward and forward integration, the conversion of variable into fixed costs, the conversion of competitive into productive uncertainty, and the successful exploitation of both scale and scope economies so that fixed costs can be spread over larger production volumes.

From this exposition is should be clear that macroeconomic policies that successfully achieve full utilization of capacity are highly conducive to innovation at the level of the individual enterprise. In her evolutionary analysis of innovation and corporate governance O’Sullivan (2000) identifies three characteristics of the innovation process that, she suggests, render it immune to neoclassical understanding: development, organization and strategy. By development she means the irreversible commitment of resources over an unknown period of time for uncertain returns. Her reading emphasizes the exploratory nature of the innovation process, its dependence on learning of skills that may quickly become obsolete, the productive uncertainties associated with the building of capabilities, and the competitive uncertainty associated with rivalry. As such, in terms that should now be increasingly familiar, she suggests that states of the world are not so much

over the ‘right to work’. On the up-side, his emphasis on the living labour of State workers lends support to public sector employment programmes.
defined as discovered. O’Sullivan interprets organization as referring to a cumulative process of collective learning: integrative capabilities are developed around problem definition and shaping, the transmission and transformation of know-how, and the sharing of experience or complementary skills (O’Sullivan, 2000: 408). This collective process is therefore difficult to replicate although, infrequently, it can be rendered completely obsolete. Moreover, it is difficult if not impossible to isolate the contribution made by individuals to the overall outcome. Finally, she (O’Sullivan, 2000: 409) interprets strategy as referring to the development of new means-ends structures as a response to learning and the unfolding of new insight.

Associated with this set of characteristics O’Sullivan (2000: 410-411) distinguishes three conditions of corporate governance, namely: financial commitment, organizational integration and insider control. Financial commitment refers to the need for on-going commitment of resources to irreversible forms of investment that yield uncertain returns. Organizational integration refers to the need to integrate human and physical resources and provide incentives for the development and effective utilization of technology. Finally, insider control refers to the need to vest strategic control in the hands of those with the ability and incentive to allocate resources for learning and innovation.

In summary, then, Lazonick and O’Sullivan’s evolutionary economic approach to the governance of innovation amounts to a thoughtful intervention into what often amounts to a technocratic and politically attenuated field. Governance issues are seen to play an essential role in influencing aspects of organizational renewal, processes of technological diffusion and the commercial outcomes of innovation-related activity. Lazonick (2003: 35-6) also briefly addresses the issue of how Developmental States can influence the SCIE, although these influences are not examined in any detail. Nevertheless, he stresses the importance of recognizing that both enterprises and States contribute to SCIE (Lazonick, 2003: 25). For example, each can adopt different modes of ‘accessing’ foundational finance. The motivation for this paper is the desire to explain the nature of these interactions. The intention is to overcome conventional dichotomies between the microeconomic analysis of industry policy and corporate governance on one hand, and the macroeconomic analysis of growth and the business cycle on the other hand. In policy terms it proposes a coordinated approach to macroeconomic stabilization policy and policies orientated towards the augmentation of productivity growth and national welfare.

4. A Critical Analysis of Regional Innovation and Clustering Theories

Michael Porter has become the doyen of OECD policy makers and advocates of the “New Regionalism”. In recent years he has re-vitalized the ‘competitive advantage of nations’ framework initially promoted in 1990, by incorporating the notion of cluster development. Effectively, Porter (1990:120) argues that the intensity of interaction between firms within the ‘competitive diamond’ can be heightened if firms are geographically localized (Martin and Sunley, 2003:7)5. Moreover, he suggests that most globally competitive industries likely to be

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5 Porter’s key theoretical argument in his 1990 text is that firms (and nations) create advantages by developing institutional mechanisms for creating specialised factors or discovering new ways to produce and market goods and services. He suggests that there are systemic influences behind competitive success arising from interactions between factor conditions, demand conditions, clusters of related and supporting industries and individual patterns of firm rivalry, structure and strategy. He cautions that the Ricardian theory of comparative advantage has become less relevant in globalised industries where firms are increasingly decoupled from the factor endowments of host-nations and can gain access to internationally traded resources and factors (including capital and information). At the same time, he observes that modern technology nullifies the importance of specific factors of production. Moreover, many nations with markedly divergent industry and trade compositions now have relatively comparable pools of factors (e.g. skills and infrastructure). Finally, he notes that specific factor disadvantages within a region or nation can act as a spur to the
clustered. Hence the national economy, in Porter’s eyes, has become manifestly ‘spatial’ with spatial clustering conceived as both a driving force and as an expression of sustainable competitive advantage.

However, Martin and Sunley (2003:10) observe that the definition and mode of application of this cluster concept is highly elastic. Clusters are defined by: (a) linkages between firms that can either be vertical (along supply chains) or horizontal (insofar as they are associated with complementary products or services, inputs, technologies, and institutions); and, (b) geographically proximate. However, they go on to argue that this conception is marked by a lack of clear boundaries; the absence of meaningful metrics in regard to the strength of linkages and their degree of specialization or integration; and inadequate notions of spatial scale or the density of cluster processes.

They suggest that, in a number of ways, an almost deliberate opacity is at play evidenced by the fact that, in empirical studies, definitions of industry boundaries violate standard industrial classifications, with the intent of reflecting known productivity and innovation spillovers. Moreover, the notion of ‘proximity’ is the most elastic concept, varying across all levels of spatial scale—cities, regions, states, nations, and cross-national regions—so that its determination is ultimately dependent on the whims and objectives of the policy maker. One manifestation of this elasticity is a proliferation of different cluster typologies ranging from nascent, new, and established, to declining, potential, or over- and under-achieving, with the result that, in theoretical terms, all firms are seen to belong to clusters, rendering the concept virtually meaningless (Martin and Sunley, 2003: 11-13).

Porter and his followers use the notion of the cluster as a self-reinforcing system: they view strategies on the part of firms as mutually correlated with the competitiveness of the cluster (Martin and Sunley, 2003: 14). One result of this mutual determination is that concepts of SCA, productivity, and competition are used interchangeably in the literature. In contrast, Martin and Sunley argue that economic geographers apply three major definitions of cluster activity: agglomeration effects, which go back to Marshalls notion of external economies; clusters as a manifestation of the industrial complex (as determined by mapping of regional input-output relationships); and the cluster as a social network reliant on inter-personal ties and trust. However, even in this context, they ask (Martin and Sunley, 2003: 16), When is one model going to be more or less pertinent with respect to scale and economic characteristics? Alternatively, those wedded to Dynamic Competency Theory have argued that the cluster mechanism is embedded in commonly held firm routines oriented towards problem-solving and adaptability, yet Porter himself, largely ignores internal organization and the relation between firms and processes of regional learning. As a result, clusters are entirely abstracted from their economic environment. In this context it is therefore understandable why empirical applications are often stylistic and unsophisticated, with no apparently unified methodology.

In their efforts to explain why Porter’s work has met with such acceptance Martin and Sunley (2003:9) point to an (1) overarching focus on competitiveness and, thus, a strong resonance with conventional microeconomic and supply-sided interventions; (2) the provision of ‘practitioner guidance’ and the possession by Porter of an authoritative profile as a ‘business economist’ whose understanding of ‘business strategy’ appears to bridge theory and practice (in contrast, economic geographers talk of the immanent contradictions of post-Fordist modes of regulation with policy issues taking a back-seat); and, (3) in this light, the indeterminate nature of the cluster development of compensatory mechanisms, which in time come to serve as new and sustainable sources of global competitive strength.
concept enables it to serve as an ‘obscure objects of desire’. With an ironical twist, Martin and Sunley (2003:29) turn the notions of SCA back onto Porter’s interventions, arguing that they amount to a successful case of branding associated with positive images of a high-productivity, knowledge-rich, decentralized, entrepreneurial and socially progressive economy that is “within-reach” of the visionary policy-maker or enthusiastic regional practitioner.

As we have seen, Martin and Sunley observe that economic geographers have adopted apply three major explanations for cluster activity: agglomeration effects, which go back to Marshall’s notion of external economies; clusters as a manifestation of the industrial complex (as determined by mapping of regional input-output relationships); and the cluster as a social network reliant on inter-personal ties and trust (a view obviously promulgated by the NES). However, this taxonomy is far from comprehensive. Additional perspectives on clustering include Richardson’s (1972) argument that inter-firm relations (clusters, networks, and strategic alliances) enable member firms to bring closely complementary assets together in environments where cognitive barriers might prevent outright forms of vertical integration; and Teece’s notion of tacit knowledge, seen as central to the development of sustainable competitive advantage, which can only be disseminated through face-to-face processes of learning-by-watching and learning-by-doing. Teece’s Dynamic Capabilities framework has been applied to strategic location decisions and networking on the part of multinational enterprises in Cohendet et al (1999), Zander (1998) and Zanfei (2000). Lawson (1999) provides a more comprehensive review of the capabilities or competencies literature, explaining how competencies (which span a variety of different products, vary more slowly than products, and operate at a deeper level as the most important site of competitive rivalry) can be developed at both an enterprise and regional level.

Of course, this raises a series of important questions for the policy maker and theoretician: (a) can an alternative theoretical framework be constituted to inform regional development and innovation policy (including environmental innovations)? (b) what is the linkage between regional policy, and broader Keynesian concerns about the role of effective demand in promoting both full-employment and high rates of innovation and productivity growth?

While it appears difficult to justify a direct link between levels of effective demand or degrees of unemployment and underemployment, on one hand, and high levels of regional innovation and cluster development, on the other hand, one common link would have to be the government’s direct and indirect influence over investment, albeit, investment that is increasingly intangible. However, as will be explained below, additional linkages include the effect of state interventions in the labour market on enterprise decision-making given the complementarity between innovation and the capacity of private firms to offer high quality jobs and the related capacity of the state to manage inflation through non-monetary means.

5. Post Keynesian Macroeconomics and the Role of the State
On the basis of a detailed analysis of the uneven duration and persistence of regional unemployment, Mitchell and Carlson (2003: 12) recommend what they term a ‘spatial Keynesian’ policy regime combining demand expansion to remove the spending gap occasioned by the desire of the private sector to net save, spatial distribution of public sector employment creation, and

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6 The work of Sergio Rey (2000) develops a quantitative methodology for modelling of multiple spatial scales and interacting regions that is based on the integration of regional input-output analysis with spatial econometrics. However, to pick up on influences that are emphasised by strategic and evolutionary approaches to the economic analysis regional innovation systems, this would have to be supplemented with more detailed research on innovation-related flows of research services.

7 The existence of feedback from effective demand to levels of innovation is confirmed by Brouwer and Kleinknecht (1999) using data for the Netherlands economy.
regionally directed public sector infrastructure and industry policy. This section of the paper provides a succinct overview of the key tenets of the Spatial Keynesian approach advocated by Mitchell and Juniper (2007), who draw on Chartalist insights into the essential roles of nation state.

Mitchell and Juniper (2007) adhere to five core propositions in their Post Keynesian interpretation of macroeconomics. First, in contrast to orthodoxy’s supply-side determination of equilibrium, for Keynesians the point of effective demand determines aggregate output. Second, there is recognition of the distinction between nominal and effective demand in the sense defined by Marx: demand backed by purchasing power. Third, price deflation is totally ineffective as a mechanism for restoring both full employment and normal rates of accumulation. Fourth, the labour market determines nominal not real wages. Fifth, within a monetary production economy the money supply is endogenously determined. This principle is further extended to accommodate the Chartalist position of Knapp and Keynes: namely, that fiat money irreducible to credit money.

It is further argued that, with respect to the key policy objectives of full employment and price stability, the power of the State as issuer of fiat currency is poorly understood even by many Post Keynesian advocates of government intervention. The provision of a buffer stock of public sector full-time employment, providing remuneration at the minimum wage is regarded as a ‘base level’ intervention. Mitchell and Juniper argue that the orthodox concept of the Non-accelerating Inflation Rate of Unemployment (NAIRU) is completely untenable even though it is often accepted by those Post-Keynesians referred to as the “deficit doves”. Moreover, much of what passes for open economy macroeconomics is simply irrelevant. This is a critical point of divergence within the heterodox tradition, with many so-called progressives swallowing the orthodox line about ‘balance-of-payments’ constraints over expansionary policy. It is argued that such fears are irrelevant for nations with floating exchange rates.

With the government operating as an issuer of fiat currency, this monetary medium becomes the only unit acceptable for payment of taxes. This sets up a vertical relationship between the government and non-government sectors, which is far less significant than any horizontal relationship within government itself: the government deficit (surplus) must always equal the non-government surplus (deficit). Government deficits are the only source of net financial assets (net savings) for the non-government sector (by definition net financial assets must be equal to currency plus reserves (the monetary base) plus outstanding government securities).

From this perspective the budget surpluses that are privileged in neoliberal policy circles are instead conceived a responsible for the destruction of private sector savings and the reduction of

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8 Post Keynesians (Harcourt, 1972; Arestis et al., 1997) argue that the capital debates of the 1930s and 1970s, though rarely discussed in mainstream economics journals, serve to undermine faith in the aggregative ‘parables’ of neoclassical economics. Apart from marginal theories of income distribution, however, the other casualty of these debates includes the supposed mathematical isolation of the real sector of the economy from financial sectors in dynamic macroeconomic models, as formally posited in Sargent (1979) who characterises this separation in terms of ‘block recursivity’.

9 One of the important contributions made by Piero Sraffa during the capital controversies was to undermine any notion that a Ricardian standard commodity could be constructed that would be invariant to both changes in income distribution and shifts in effective demand in the face of increasing or decreasing returns to scale (see Andrews, 1997). This insight justifies the Chartalist conviction that governments must exert control over nominal anchors such as the money rate of interest (to stabilize prospective rates of return) and the minimum wage (to stabilize the level of prices). Both of these phenomena relating to the inseparability of real aspects of the economy from nominal aspects serve to question the conventional policy division microeconomic analysis of market failures and macroeconomic problems of inflation and unemployment.

10 A formal demonstration of this fundamental principle is provided in Godley and Lavoie (2007).
Moreover, government spending is never revenue constrained because the government spends by issuing cheques drawn on the central bank while private sector bank accounts at the central bank are credited. This process is reversed through the imposition of taxation. Taxing transfers no real resources to government. This throws a new light on the idiocies of the Government Budget constraint according to which spending is financed by a combination of taxation (imposing a heavy burden on the non-government sector), printing money (seen to be intrinsically inflationary), and the issue of bonds (raising interest rates). Here, the model for government is the household budget, however, households fund spending ex-ante while governments ‘fund’ spending ex-post: the government must spend before taxing so that it can debit private sector accounts. In return, the private sector supplies goods to earn the money required to pay their tax liabilities.

The issue of government debt merely sets the interest rate, which otherwise, would fall to zero. Moreover, the central bank can’t monetize debt at will as the funds that purchase bonds come from government spending. The liquidity added by government and any purchases of treasury bonds is reduced by taxes and the sale of bonds by government. If the demand for cash is less than the injection, this is manifest as excess reserves. The bond supply is thus always equal to the funds newly created by government spending, while exchanges between clearing accounts net to zero as they are simply horizontal transactions. The resulting interest rate varies between the ‘operational rate’ and whatever rate is paid on excess reserves.

From a Chartalist perspective, it is the existence of State money that implies the possibility of unemployment. Taxes create unemployment and transfer goods and services to government, whereas government spending creates employment and provides the money to pay taxes. Therefore, unemployment obtains at all times if net government spending is too low given the need to pay taxes and the non-government sector’s desire to net save. Wage cuts only reduce unemployment if they lower the desire of the non-government sector to net save!

Orthodox macroeconomics is predicated on the quasi-Phillips Curve, which suggests the existence of a short-term trade-off between inflation and unemployment. With the so-called ‘rational expectation’ revolution in macroeconomics, the Phillips Curve was subjected to ‘expectations augmentation’, giving rise to the Natural Rate Hypothesis, unless observation error leads to temporary deviations from the optimal trajectory of output growth. Both NAIRU and the seemingly more progresive “Conflict Theories” of inflation imply a cyclical invariance that is not supported by properly conducted empirical studies.

An alternative approach to policy, acknowledging the merits of the labour movement’s long fought struggles over the “right to work,” would be for the government to offer a Job Guarantee providing public sector jobs to all who wish to work on an inclusive basis. It is argued that this approach would also offer a resilient inflation anchor through the determination of a minimum wage that would serve as a floor for the determination of wage relativities.

In addition Mitchell and Juniper contend that full employment invokes an important spatial dimension. Where neoclassical economists focus on wage differentials, labour immobility and related structural impediments in explaining unemployment Mitchell and Bill (2005) emphasize the importance of differentials in employment growth and regional job accessibility. Drawing on a range of empirical techniques, they contend that it is the interaction between accessibility and

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11 For obvious reasons, a formal treatment of these issues cannot be examined here. However, interested readers are referred to the recent paper by Godley and Lavoie (2007b) which, from a Chartalist perspective, elaborates on the stock-flow consistent macroeconomic modelling framework developed at length in Godley and Lavoie (2007a).
the exploitation of social networks, aggravated by agglomeration and spillover effects, which explains the isolation of the unemployed. Accordingly, Mitchell and Juniper (2007) affirm that communities serve as important building blocks in overcoming persistent and unevenly distributed pockets of unemployment. In this context, economic policy should nurture rather than override social settlements through the incorporation of an intrinsic spatial design.

6. Conclusions: Towards a Synthesis
At times it is difficult to know if more progressive economic geographers concur with the view that the Keynesian welfare state has been abandoned due to the success of neoliberal ideology, or whether this abandonment was necessitated by the internal contradictions of accumulation (i.e. the Marxist notion of the ‘fiscal crisis of the state’). While it is universally conceded that Fordist regimes of accumulation are no more, it is often acknowledged that no new mode of regulation—that is, one that could effectively assuage economic and financial crises—has yet arisen to replace it. Are the geographers who make these arguments engaging in mere description, ideological production, or some kind of praxiology?

Parisian Regulationists such as Robert Boyer argue that a clear economic transformation has occurred under neoliberalism, with the result that consumption is more volatile due to its increased dependence on movements in asset prices. However, with the renewed emphasis on the local determinants of competitiveness, many geographers have embraced evolutionary economics and the economics of strategy as an alternative to Post Keynesian theory. The current obsession with cluster development, agglomeration effects, and industrial districts finds its most extreme expression in New Regionalism, which argues that regions can entirely escape the vicissitudes of the national business cycle through a focus on export markets and inward flows of foreign direct investment. Countering this, many critics (including McLeod and Jones, 1991) favour a return to Keynesian policy prescriptions. This paper has been motivated by a similar desire. However, this has to be translated into rigorous theoretical terms if it is to go beyond mere wishful thinking.

When government’s maintain high levels of effective demand through deficit spending during downturns in non-government activity this ensures a buoyant and less volatile market for domestically produced goods and services. In developed economies, the amount of intangible investment is rising as a proportion of total capital expenditure. However, strong complementarities exist between intangible forms (such as training, R&D, investments in organizational change) and more tangible forms of investment (such as advanced computer-aided manufacturing equipment). Other forms of intangible investment that are closely related to regional development include expenditure on the negotiation of alliance relationships, the development of intellectual property agreements, and broader processes of collaborative learning. High levels of effective demand enable the high fixed cost of developmental investments to be transformed into low unit costs, thus supporting Lazonick and O’Sullivan’s requirement for organization integration.

Another transmission mechanism is associated with labour market interventions. During the current neoliberal epoch underemployment and precariousness has largely displaced unemployment as the principle mechanism for controlling inflation. Under a spatial Keynesian policy regime, members of the labour force would be offered full-time employment at the minimum wage. The latter provides the crucial anti-inflationary instrument for government, but one that can be supplemented by a variety of targeted fiscal policy interventions. To entice workers away from the public sector workforce, private firms would have to offer some combination of higher remuneration, more interesting jobs, or better opportunities for progression along a chosen career path. This obligation would boost aggregate levels of productivity growth
by providing further encouragement for private firms to adopt innovative rather than adaptive strategies.

A third transmission mechanism is associated with the government’s role in anchoring price levels and rates of return. Instruments for determining the minimum wage would provide the first of these anchors. This would afford a secure base rate for the evolution of wage relativities that would both reflect and distribute differentials in productivity across industries and enterprises within industries, thus meeting O’Sullivan and Lazonick’s requirements for a reward system that motivates employees as individuals to engage in collaborative learning. The second anchor relates to the short rate of interest. This refers to the capacity of government to deficit spend while maintaining low rates of interest: a macroeconomic condition that would obviously contribute to a high productivity growth trajectory through the provision of patient and low cost financial capital.

In summary, this paper has focused on the linkage between (spatially articulated) macroeconomic policies of full employment, infrastructure development and training and regional innovation policy. All that remains is to indicate opportunities for empirical analysis. Most of the literature on innovation and growth is influenced by the New Growth Theory (NGT). However, as Kurz and Salvadori (1997, 1998a, 1998b) establish, the resulting models amount to a case of ‘old’ wine in ‘new’ skins. They demonstrate that the NGT models are simple variants of classical long-period theory. In particular, the fiction of a representative, utility-maximizing agent is not required to close the models, and it can be replaced by a simple Cambridge equation (treating the savings propensities of workers out of wages and rentiers out of profit as exogenous constants) without changing the steady-state properties of the model solutions.

Kaleckian and Kaldorian models of accumulation, which incorporate the Cambridge equation, have played an important role in the development of alternatives to the neoclassical ‘parables’ of income determination. However, many Kaleckian models of accumulation are only short term in nature. Accordingly, Stockhammer & Onaran (2002) have extended the open-economy model of Bhaduri and Marglin (1991) by including three additional equations. A distribution equation that accounts for pro-cyclical movements in the profit margin, incomplete indexation of wages, and a negative effect of unemployment on real wages (a kind of Phillip’s curve effect). A Kaldorian technical progress function allows labour productivity to respond positively to capital accumulation and capacity utilization. Finally, an unemployment function allows for hysteresis effects (path dependency), demand effects, and neoclassical forms of factor substitution. The resulting model can accommodate both wage-led and profit-led growth regimes and, unlike the Kaldorian growth model set out in Palley (1996), it does not rely on the implicit presence of an aggregate production function.

To account for the influence of intangible investment on productivity growth, the technical progress function in Stockhammer & Onaran’s model would have to be extended to incorporate a variable capturing a variety of innovation-related activities. Such expenditure will also need to be explicitly accounted for in the investment function to model any feedback from effective demand to levels of innovation. Finally, in conformity with the Post Keynesian and Chartalist stance on the role of government, the model will have to be modified to incorporate an active role for deficit spending. Here, Godley and Lavoie’s (2007a,b) approach points the way. Finally, regional decompositions can draw on the techniques pioneered by Sergio Rey (2000).

Five main principles of policy development can be extracted from the above synthesis of Chartalist macroeconomics and theories of governance. First, it is necessary to recognize the complementarity of macroeconomic policies of demand management and microeconomic policies to promote innovation. This will require a reversal of the orthodox rubric about constructing firm
microeconomic foundations for macroeconomic analysis, with more recognition being granted to
the macroeconomic influences over microeconomic phenomena. Second, in achieving
macroeconomic objectives of low inflation, the arguments presented above suggest that the
implementation of a spatially coordinated Job Guarantee would afford greater advantages than
either their NAIRU or precariousness-based counterparts. Third, privilege should be restored to
(spatially-oriented) fiscal rather than monetary policy in promoting the objectives of
macroeconomic growth and stability. Finally, it should be acknowledged that Keynesian
monetary policies that aim to lower nominal and real interest rates—“euthanasia of rentier”—also
boost innovation and productivity. Fifth, the balance-of-payments- or budget-deficit pessimism
evined by certain traditions in economic geography and sociology—including Regulationist
tory and Social Structures of Accumulation—should be firmly rejected. Floating exchange
rates are advantageous for those wishing to embrace programmes of full employment.


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