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Social network markets: a new definition of the creative industries

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Abstract We propose a new definition of the creative industries in terms of social network markets. The extant definition of the creative industries is based on an industrial classification that proceeds in terms of the creative nature of inputs and the intellectual property nature of outputs. We propose, instead, a new market-based definition in terms of the extent to which both demand and supply operate in complex social networks. We review and critique the standard creative industries definitions and explain why we believe a market-based social network definition offers analytic advance. We discuss some empirical, analytic and policy implications of this new definition.

Keywords Social networks · Creative industries · Innovation systems

1 Defining the creative industries

The concept of creative industries has been a feature of academic and policy literature for over a decade. During this time, the standard definition—in terms of creative inputs and intellectual property outputs—has not much changed from its initial DCMS (1998) conception, which was an extension of the cultural industries

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definition to incorporate the copyright industries.[1] This definition was implicitly accepted by, for example, Caves (2000) in his transaction-cost-based analysis of the microeconomics of the creative industries. The creative industries are regularly defined in terms of an industrial classification of what they do, what they produce, and how they do it. Although there have been many grumbles and even dismissive critique of the details of the classifications—too narrow, too broad, too inconsistent with extant classification, arbitrary and even opportunistic[2]—the broad notion that an industrial classification should proceed on industrial lines is seemingly on firm foundation: for agriculture, biotech and service industries are similarly defined. The creative industries are thus implicitly defined and classified according to industrial sectors.

This article will argue, instead, for a market-based interpretation of the creative industries. The standard industrial classification system was developed over half a century ago when the economy could be categorized much more readily than now by the type of industrial activity in which a firm is engaged and the nature of its material inputs and outputs. Since then, however, the economic system has become considerably more complex and service-oriented and the creative industries have risen and developed into this space.[3]

Yet a more general problem with this standard industrial classification (SIC) system exists: specifically, industries do not actually exist in microeconomic theory. They are not natural categories in themselves. What exists are agents, prices, commodities, firms, transactions, markets, organizations, technologies and institutions. These are what are economically real at the level of an individual agent's transformations or transactions. An industry is a derived concept, and creative industries doubly so. So, what are they?

The cultural and creative industries thus fit uneasily into the generic economic framework for two reasons. First, because they share many characteristics of the service economy; and second, because they are to a large extent an outgrowth of the previously non-market economy of cultural public goods and private imagination that seeks new ways of seeing and representing the world.[4] Yet the creative industries have come to recent prominence as these once marginal activities now have significant market value and contribution to individual wealth and GDP.[5] These cultural services are now at the vanguard of economic growth. We think this is not accidental, but rather a natural process of the development of markets through their origination phase of social networks.[6]

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[1] See Howkins (2001), Hartley (2005), Cunningham (2006).

[2] See, for example, Roodhouse (2001), Florida (2002), Garnham (2005), Hartley (2005: 26–31).

[3] See Beinhocker (2006) and Foster (2006).

[4] 'Culture proceeds incrementally, building on whatever was available before, sometimes using a well-tried and established formula, other times innovating radically. No-one is sure what is going to "work", the failure rate is high. … Culture creates its own markets and the pleasure of consumption is also the pleasure of possession because the consumer never faces the object of consumption as an isolated individual. We want some things few people have, but we also want things everyone has. Being in a market is a social activity.' (Sassoon 2006: xvi).

[5] See Howkins (2001), Cunningham (2006), Potts (2006), Potts and Cunningham (2008).

[6] See White (1981) and Dopfer and Potts (2008a).

A better analytical foundation for the creative industries can, we suggest, be provided by taking the perspective of an emergent *market economy* rather than an industrial one.[7] The economics of the creative industries, then, is not the same as the economics of the agricultural or industrial economy, as is implicitly represented in neoclassical economics.[8] The central economic concern, we argue, is not with the nature of inputs or outputs in production or consumption per se, or even with competitive structures, but with the nature of the markets that coordinate this industry.[9] We think they are both complex and social, and that this offers a useful analytic foundation as in creative industries markets complex social networks play at least as significant a coordination role as price signals.

The very act of consumer choice in creative industries is governed not just by the set of incentives described by conventional consumer demand theory, but by the choices of others in which an individual's payoff is an explicit function of the actions of others. Examples are given by Arthur (1989), De Vany and Walls (1996), Ormerod (1998, 2005, 2007), Kretschmer et al. (1999), Beck (2007) and Bentley and Ormerod (2008). Schelling (1973) described this entire set of issues as being 'binary decisions with externalities'. There is overwhelming evidence (e.g., De Vany 2004, Potts 2006, Beck 2007) that this applies generally to the creative industries. Our new definition of the Creative Industries (CIs), therefore, proceeds not in terms of individual 'artistic' or creative novelty in a social context, but rather in terms of individual choice in the context of a complex social system of other individual choice. The CIs, then, are properly defined in terms of a class of economic choice theory in which the predominant fact is that, because of inherent novelty and uncertainty, decisions both to produce and to consume are determined by the choice of others in a social network. This class of social network choice is, we suggest, the proper definition of the creative industries.

These social networks thus function as markets, and the CIs are, therefore, defined in market-based choice-theoretic terms that are, we believe, best analyzed in a complex systems theory framework. So recognized, it becomes equally apparent that the CIs are also a crucible of new or emergent markets that, typically, arise from non-market dynamics (e.g., Internet affordances) that often then persist and develop at the complex borderland between social networks and established markets.[10] This point, we note, was of course made long ago by White (1981) in the context of producer markets in which monopolistic competition arises from a selection process of producers following producers. Social network markets are this same dynamic extended to all economic agents.

The analytic distinctiveness of the CIs rests thus not upon their non-market value, but upon the overarching fact that the environment of both their production and consumption is essentially constituted by complex social networks. The CIs rely, to a greater extent than other socio-economic activity, on word of mouth, taste,

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[7] For the importance of moving beyond the 'industry' metaphor, see Hartley (2008b).

[8] For example, Baumol and Bowen (1966), Throsby (1994), Heilbrun and Gray (2000).

[9] This position is also advanced by Caves (2000), but in terms of information and transaction cost economics, as opposed to a conception of the market process.

[10] See for example Castronova (2006), Chai et al. (2007), Potts et al. (2008).

cultures, and popularity, such that individual choices are dominated by information feedback over social networks rather than innate preferences and price signals. *De gustibus non est disputandum* is simply not the point, but rather that other people's preferences have commodity status over a social network because novelty by definition carries uncertainty and other people's choices, therefore, carry information.[11] Economic and cultural evolution is a consequence of this process.

This sort of 'industry definition' in terms of market characteristics does overlap significantly with the extant definition of the CIs. It is not a radical redefinition; rather, it provides an analytic foundation that sharpens economic analysis by isolating the central features that matter: namely, (i) agent cognition and learning, (ii) social networks, (iii) market-based enterprise, organizations and coordinating institutions. These three terms are strongly homologous with the triad that forms the 'unit of analysis' in media and communication studies, namely audience (reader, viewer, consumer), content or distribution (e.g., TV network or press with their associated content or text), and producer (especially large-scale state or private corporations). Reconfiguring this standard formula of a 'textual system of modernity' (Hartley 1996: p. 32) as 'agent—network—enterprise' has the advantage of removing the assumption held in most political-economy accounts of media of a one-way flow of causation along this 'value chain', from (active) producer via text-distribution to (passive) audience. In our formulation, the interrelationship among agents, networks and enterprise is dynamic and productive; all are engaged in the mutual enterprise of creating values, both symbolic and economic.[12]

Our definition, therefore, builds upon and improves a longstanding model of communication flows derived from media and communication studies. This is particularly important in light of the increasing significance of consumer-generated content and user-led innovation in new media (see Hartley 2008a). When triangulated, these components (agent—network—enterprise) point to a definition of the CIs in terms of the system of activities organized and coordinated about flows of value through the enterprise of novelty generation and consumption as a social process—with the economic dimension extracted by modeling this as choice on social networks.

The CIs are defined over the space in which choices about both production and consumption are predominantly shaped by feedback from social networks.[13] In Sect. 2, we outline the social network re-conception of the CIs. In Sect. 3, we review the basic models to underpin such an analysis and suggestively develop analytical implications. In Sect. 4, the broad outlines of policy implications arising from this new classification are sketched. Section 5 concludes.

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[11] Watts (1999), Earl and Potts (2004).

[12] See Potts et al. (2008).

[13] This explains why contemporary emergent producer-consumer integration (as in the neologisms: *prosumer* or *produser*) and the so-called pro-am revolution (Leadbeater and Miller 2004) is a feature of this process, along with the emergence of new organizations and markets.

2 The social network market definition of creative industries

Consider a simple model of two extremes of consumer choice. At one extreme, consumers rely purely on the decisions of others in making their choices, so network effects predominate. At the other extreme, consumers act like the autonomous rational agents of neoclassical theory and select purely on the attributes of the product. Almost every market will have elements of both. However the empirical issue is where on the spectrum any given market lies. So, in mature markets, most consumers have already learned their preferences, so it is *as if* tastes and preferences are fixed. This is never completely true, but it is a good approximation in such markets. The creative industries, in turn, refer to market contexts that are much closer to the extreme of network effects dominating. The 'economics' of creative industries is, therefore, an economics of networks.

A new social network-based definition of the creative industries is proposed as such:

> The set of agents in a market characterized by adoption of novel ideas within social networks for production and consumption.[14]

In this view, the CIs are not the subsidized arts; although such sectors are routinely incorporated (e.g., performing or fine arts or heritage). They are also not the cultural industries; although again, there is some significant overlap (e.g., fashion, media, and music). Nor are they firms alone, since cultural and educational agencies are active players. Rather, the CIs are the subset of commodities and services over which consumers do not have well established decision rules for choice (and so must learn them) or where the 'use value' is novelty itself (Caves 2000). This is also, significantly, where producers do not have deep knowledge or power regarding what products will be of value and so must experiment to discover these, and produce repertoire rather than standardization to reduce risk (Garnham 1987). The CIs are the space of market foment and evolution.

The CIs, in this view, are thus defined as the domain of new rules[15] that are both ostensibly socially produced and consumed. The CIs are central to the growth of knowledge process that is economic evolution. All new technologies have some aspect of this, yet the CIs are ostensibly characterized by the dominance of both social production and consumption through the flow of novel rules (as technologies). The principles of this definition derive from both the theory of open-complex-adaptive systems and from the behavioral and social empiricism of the economic agent in the modern economic environment, namely the choice of something new that, while variously socially produced or consumed, involves an individual value assessment based upon social information. This is the domain of the emergence of new choices over things not previously imagined rather than the universal substitution problem between known possibilities. The industries based on the

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[14] cf. DCSM: 'Those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property.'

[15] A rule is defined here generically as an operationalized idea (Dopfer and Potts 2008a). Behaviours, organizations and technologies are all instances of rules. See also Nelson and Sampat (2001).

markets in which this open-system process is chaotically routine are, recursively, defined as the creative industries.

Before we consider what industries would be included and excluded from this definition below, let us first review this analytic foundation. A social network is defined as a connected group of individual agents who make production and consumption decisions based on the actions (signals) of other agents on the social network; a definition that gives primacy to communicative actions rather than to connectivity alone. Social here means the ability of one agent to connect to and interpret information generated by other agents, and to communicate in turn; and network means that these are specific connections (often technologically enabled) and not an abstract aggregate group such as a nation, a people, or the like. All humans are engaged in social networks but we are each engaged in particular network structures. Models of social networks will be briefly reviewed in Sect. 3 below, but for now consider four salient properties.

First, a social network is not necessarily just the group of people an agent knows personally and communicates or interacts with regularly (e.g., family, friends, and colleagues). These are plainly examples of social networks, and often important social networks, but there are many others that are also important as information networks (Granovetter 1973). Social network feedback from reviews of movies or restaurants, for example, whether by expert opinion or just observation of box-office totals or whether a restaurant is crowded, provides social network information that agents use in making choices (e.g., Schelling 1973; Kirman 1993; Ormerod 1998; Ormerod and Roach 2004; Surowiecki 2004; Beck 2007). Social networks are reticulated throughout the economic system.

Second, a social network is not necessarily regular, but may contain hubs, weak and strong connections, and close and distant connections. Furthermore, agents may exhibit significant heterogeneity with respect to their connections in social networks. Social networks in economic space have complex topology. Yet the inherent complexity of social connections incident from the individual does not necessarily imply that social networks themselves are highly complex. Indeed, one of the main findings of network and complexity theory is how similar many seemingly different networks are in terms of their emergent structural and dynamic properties.[16] Analysis of generic complex networks may thus usefully inform analysis of social economic networks.

Third, a social network implies social origination, adoption and retention processes. In part, this renders social networks generally more complex than physical networks, in that the switching mechanisms (human agents) are far more complex than neurons or genes in cognitive or genetic regulatory networks. Yet because human social and communicative action is more directly knowable (subjective knowledge) than many physical networks, we may yet seek to create more realistic and parsimonious models of the higher-order complexity of socio-economic processes by integrating the behavioral, economic and social sciences with studies of anthropology, culture, media, etc., in the context of creative industries.

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[16] E.g., Strogatz (2001) or Barabasi (2002).

Fourth, social networks are not separate and distinct from familiar categories of social and economic system coordination, such as mature markets and other institutions, or organizations such as firms and coalitions. Rather, the CIs are part of the structure of a social and economic system, although with differential effect at different times and places. There are some aspects of the economic system where social networks play a more significant role than others. This property is what suggests social networks as a basis for identifying and classifying the CIs as the industries predominantly characterized by economic actions that occur in the context of and as a result of social networks, a definition that then holds over both production and consumption.

The creative industries are, therefore, an emergent category of analysis centred about the economics of complex social networks. Note that by defining the CIs in terms of social network significance, the logical implication is that (all) other industries and markets have less social network significance. Yet this, we think, is a defensible proposition.

First, it rules out industries such as agriculture, mining, extraction and the primary industries in general, because they are essentially constituted by physical resources and known technologies in production, and as inputs into further transformation in stable and generally mature markets. This does not deny the role of technological change and new markets in these industries, but instead emphasizes that social networks have relatively little role in explaining the dynamics of consumption or innovation in production. In turn, these industries and markets are best analytically described by the atomistic and field-theoretic (i.e., parametrically stable) neoclassical model of conventional economics. The CIs are not about the allocation of resources: they are about the creation of new resources.

Second, it also excludes manufacturing industries that are successful according to a matrix of stable prices and technologies within which to combine, through efficient and scaled-up organization, resources and technologies to create commodities for supply. Again, there is little role for social networks in this process, which is largely driven by efficiency through competition on the supply side and income, and wealth effects on the demand side. This is largely what both Keynesian economics and industrial organization theory have shown.[17] Again, note this does not exclude the role of social networks in, for example, the diffusion of innovation in manufacturing, but instead emphasizes that these are not the prime consideration in the definition of these industries. The CIs are not about mature technologies and markets; they are about the evolution of new technologies and markets (Potts 2007a).

Third, this definition helps us to distinguish between different aspects of professional or skilled services, some of which are far more engaged in social networks than others, a difference we think matters. All professional services involve specific skills and capabilities and thus creativity, but not all of these are creative in the social network sense. Neurosurgery, firefighting and nursing, for example, are all creative occupations, in that they involve critical decision making and adaptive response. However, they are not essentially defined by social networks, even though

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[17] E.g., see the work of Paul Samuelson, J. K. Gailbraith, Michael Porter or Oliver Williamson. This is most clearly expressed in cultural economics through the work of Will Baumol.

certain aspects of them will be, such as recruitment, referrals or knowledge sharing. Dentistry and teaching, for example, are both creative occupations and social occupations, but the value they add comes from specialized and experiential knowledge, not from operations in social network markets. Still, sometimes these sectors will find themselves in social network space, as when seeking to establish a new business or expansion of a new service. Several pathways are possible: either social network markets are developed from within the organization; or they are contracted to specialist 'social network service providers', be these advertising or architectural services, information and publishing services, or other provisions of infrastructure and content. The software component of the standard creative industries classification is thus also part of social network services, as is the design and operation of physical social spaces (Jacobs 1969; Currid 2007). There are many possible ways that professional services may come to demand social networks and many professional services in supplying these. The CIs are services to the growth of knowledge and economic evolution and defining this in terms of social network markets is, we argue, a superior demarcation to creativity in occupation combined with intellectual property in assets. Social network services are, in our re-classification, a subcomponent of the CIs,[18] the other being content as new ideas.

This distinction extents not only a systems view of the natural and logical structure of the 'standard' CI definition but also a clear departure point for critical review of further inclusions and specific exclusions. Importantly, this is not a distinction between organizations and markets, or public and private, or commercial and humanistic, for these aspects are everywhere in this distinction. Rather, it signals the distinction between the services that build and maintain social networks (infrastructure and connectivity) and the services that use these to create value (content and creativity). This is a symbiotic relation, in which each depends on the other, and in which the whole is symbiotic with all other sectors.[19]

Social network services contribute to the open-system process of coordination of economic activities and also to the innovation system. This reinterprets the CIs as part of the innovation system of an economy rather than just another industrial sector (QUT et al. 2003; Potts and Cunningham 2008; Potts 2008). The social network markets sector is thus composed of systems that build and maintain social networks (e.g., advertising, architecture, media, ICT software, etc.) and also (by definition) systems that create value on these social networks though content (e.g., film, TV, music, fashion, design, etc.). This distinction is certainly not clean; for example, media companies often both create networks and supply content. However, the basic principle is, we think, generally and usefully applicable:

> The creative industries are the set of economic activities that involve the creation and maintenance of social networks and the generation of value through production and consumption of network-valorized choices in these networks.

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[18] See Shy (2001) on the economics of network industries.

[19] In general equilibrium theory, everything is connected to everything else (Potts 2000), but in evolutionary theory structural sub-systems are defined that demarcate the complex order of the economic system (Simon 1962).

Several notable exclusions and differential inclusions are prompted by this new definition. First, and perhaps most controversially, it potentially factures the definition of cultural industries along the lines of 'old' and 'new' culture—where old means heritage, antiques, museums, classic arts, performances etc. and 'new culture' means anything experimental, or at least about which quality is unclear. This crude definition does not diminish the role of 'old culture', nor supposes it unambiguously closed to experimental re-visitation, but reassigns it to the social education system as knowledge with value 'embedded' as self-evident, institutionally acquired or infrastructural, thus requiring maintenance and continuity but not social network services. Strictly speaking, art history and heritage is no more part of the CIs than, say, knowledge of the science that enables the production of digital routers, which are also inputs into the CIs. The maintenance of cultural technology (e.g., history) is of no less value than the maintenance of physical technology (e.g., science) and social technology (e.g., practical ethics). However, its proper classification falls within the education system, not the revised social network market definition of the creative industries. In turn, the new cultural industries, both historically and contextually conditional, are rightfully included as their production and consumption is heavily influenced by social networks for the simple reason that their value is uncertain. The same, therefore, is also true of the new physical science industries, such as nanotechnology. New cultural technologies are part of the CIs, old cultural technologies are (mostly) not. As such, what is in and out of the CI classification will evolve and shift as industries emerge and mature and as new technologies and ideas emerge.

Second, it extends the set of CIs shamelessly into often low-brow cultural and highly commercial domains such as tourism, sports and entertainment. This conception has always been a point of contention in the standard definition, as it includes factors rightly regarded as not within the ambit of 'public good' policy attention (e.g., major league football, monster truck rallies, fashion magazines, holiday resorts, etc.). The anti-elitism in this conception is not unfounded, for what matters most to this definition is the value of the new, not the value of the good. Yet, the problem is that because we can never know where new value will come from, artificial exclusion of some socially produced and consumed services on grounds of low-brow consumption is not a viable analytic proposition. Novels, for example, were initially regarded as low-brow, as are almost all new ideas. The socio-cultural-political connotation of an idea matters less than its relative novelty and, therefore, uncertain value. From this basis, new scientific ideas—which are both produced and consumed in social networks[20]—are just as much part of the CIs in their formative and adoption phases as new artistic or cultural ideas. Dopfer and Potts (2008b) argue that this classification should be further extended to 'institutional entrepreneurs' who introduce new social technologies that may evolve into new public goods, thus allowing celebrities, advocates, journalists and politicians into the mix.[21]

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[20] As the science studies scholars have explained, e.g., see the work of Philip Mirowski, Deirdre McCloskey, Steve Fuller, etc.

[21] See also Swedberg (2006).

A third notable re-evaluation relates to design, which becomes far more central than previously implied by the standard definition. In essence, design is the new engineering, but between physical and social technologies. Both architecture and software are therein frontloaded into this definition as the design of physical and information spaces for social interaction. Design is also the connection between CI services and the rest of the economy, as design is used to sculpt and position products through advertising and fashion, from cars to kettles to wine labels (Postrel 2005). This, we think, is a significant shift of emphasis. In the standard classification, the performing and visual arts were implicitly regarded as central to the cultural industries as the creative resource stock from which an extended conception of the CIs radiated outward from that crucible (Throsby 1994, 2001). In the social network definition, however, it is design and media that are elemental, and these are not services of pure creative novelty, but about the interaction of human ideas with the human environment. They are thus manifestly functional (often commercial) in the creation of new spaces and opportunities and, therefore, markets and choices.

The core business of the CIs is, after all, the representation and coordination of new ideas. This redefinition, it should be noted, completely bypasses any need for non-market evaluation studies of the creative industries, as it locates the value added in the creation of market spaces (i.e., in solving coordination problems) rather than in resolutions of market failure. The creative industries are, to coin a phrase, about the 'creation of industries' through social network market dynamics and institutional emergence rather than about creativity in industries, which may often be routine and functionally asocial.

So, what do we gain and lose by this new definition? The main loss is that of a political or sociological definition of the CIs, yet that is not necessarily a bad thing as that traditional foundation has hitherto underemphasized the coordinating role of markets and market-like institutions. What we gain, however, is a non-political definition that registers the properties of the structure and process of an open market order, not the concerns of aggrieved coalitions in a closed democratic order. This definition will, of course, change with new knowledge. In the early twentieth century, for example, automobiles, social clubs and romantic tourism were significant creative industries under the social network definition.[22] By the late twentieth century, these industries had mostly matured and CIs had become deeply embedded in these sectors (as e.g., automotive designers, software designers and package holiday designers). Yet the CIs did not just quietly embed along the industrial way, but moved on to new domains, for example in digital content, games, new media, etc. Politics is always at a lag to culture and the economy, and the loss of political definition implies a further weakening of the redistributional welfare basis of traditional CI policy. What we gain, then, is a definition of industries as charged by their generic novelty, in the sense of being the industries of new ideas with products of uncertain social value, rather than a definition based about the set

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[22] An obvious problem here is the term 'industries' itself, as what we are essentially arguing is that the creative industries is better defined in terms of social networks and markets. The term 'creative economy' is preferable.

of industries which produce known cultural goods, but are yet subject to operational failure in a competitive environment (i.e., the Baumol thesis). This enables the shedding of much of the ill-fitting and unnecessary baggage of the standard CI definition and a more sensible attitude to, in prime instance, the effects of globalization (Cowen 2002).

A further benefit is that this new definition offers a deductive assessment of whether an industry, firm or economic activity fits the CI definition by whether its structure and process, and therefore outcome, is significantly determined by social networks. Some activities have this quality, others do not. This affords a micro-based (i.e., agent) and meso-based (i.e., population and system) classification of economic activity. In making this classification, we get closer to a substantive macro definition of the creative economy as an evolving complex system than we do by industrial classification.[23] The social network market definition links directly into analysis of the entrepreneurial process and the formation of new markets and organizations, and in general with the process of innovation as an experimental endeavour of what Joseph Schumpeter called 'creative destruction' (Metcalfe 1998). This connects directly to analytic models of social process of the adoption and diffusion (or evolution) of new ideas on social networks. Although most of these models are derived from physics and biology, there is much scope for analysis of homologies among these complex systems domains (e.g., Hahn and Bentley 2003). In consequence, this new view re-connects cultural studies with modern science in a fundamental way through recognition of its basis as the study of emergent complex (social) systems (Lee 2007).[24]

In consequence, a social network market definition of the creative industries is effectively a platform for the study of *cultural science*,[25] which we may therein define as the study of open-system dynamic cultural phenomena and the institutions they form. This includes the new parts of the economic system along with the parts that rely on perpetual novelty, both of which are social network markets.

3 Social network models and analytic implications

The standard definition of the CIs had the advantage of immediate relevancy to the concerns of extant policy platforms. However, the main benefit of the social network definition of the CIs is its license to import wholesale analytic models from late twentieth century mathematics and science, in particular those of network and complexity theory (see Watts 1999; Strogatz 2001; Newman 2003; Ormerod 2007; Vega-Redondo 2007). Social network theory is the application of network and

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[23] On this point, see Foster and Potts (2006) and Dopfer and Potts (2008a).

[24] Cf. Garnham (2005).

[25] See cultural science: http://www.cultural-science.org/.

complexity theory to the dynamics of social processes.[26] Recently, there has been considerable growth of research into complex networks in social and economic systems that has developed analysis of, among other things, random networks (Bentley et al. 2007), small world networks[27] and scale-free networks.[28] There is now a significant body of theory and tools for analysis of complex social networks that is becoming increasingly integrated into the complex evolving systems framework of economic analysis (Kirman 1993; Potts 2000; Foster 2006; Ormerod 1998, 2005; Dopfer and Potts 2008a).

Analysis of the creative industries fits easily into the framework of social network models of both production and consumption (see Potts et al. 2008; Potts and Cunningham 2008). Social network theory provides an analytic modeling language that parsimoniously represents the essential features of the sorts of organizations and institutions, including markets and information networks, that characterize both the production of CI output (see Caves 2000) as well as the processes by which consumers make choices over new products (which are often experience goods) of uncertain quality.[29] Indeed, it is notable that both Caves and De Vany strongly emphasize the radical uncertainty of demand as an essential feature of the economics of CIs. The analytic implications of adopting a social network definition are potentially considerable.

First, this offers a first-principles rationale for developing further the so-called 'trident' methodology for statistically tracking the extent of 'creative embedding' in the general economy (see Cunningham 2006; Higgs et al. 2008) in terms of network structure based on social network classification. The trident methodology extends standard mapping by incorporating both occupational and industrial data to reveal a broader and more embedded structure of the creative industries. Social network mapping would then seek to develop this further by integrating social network elements and extensions as economic evolution unfolds due to new technologies, organizations and institutions.

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[26] A network (or a *graph*) is formally defined as a set of *vertices*, or elements, with *edges*, or connections between them. Models of complex networks have been widely developed in sociology over the past three decades and have sought to model networks through several key dimensions including *size* (number of vertices), *degree* (average number of edges per vertex), *centrality* (measure of degree distribution), *diameter* (longest shortest path) *clustering* or *transitivity* (measure of triadic probability of vertices) and the existence of *hubs* (measure of preferential attachment of new edges differential degree vertices). An excellent overview of this general literature is Newman (2003) and of social networks in particular, see Vega-Redondo (2007). These methods have been greatly advanced in recent years with the application of computational techniques developed in statistical physics (Ormerod 2005). Models of social networks have been widely used in sociology to study the topology of social network interaction to estimate the connectivity of the social system (which is then applied for the study of e.g., the spread of sexually transmitted diseases, political opinions, fashions, etc.). Social network models have also been in economics (see Kirman (1993), Ormerod (1998), Potts (2000)) in the similar context of adoption/diffusion of new messages and technologies in order to explain how market (i.e., social) structure affects market dynamics (whether of prices or technological adoption).

[27] Small world networks have the property of balancing high clustering with low diameter, see Watts (1999) and Strogatz (2001).

[28] Scale-free networks with power-law degree distributions in which hubs occur at all scales, Albert and Barabasi (2000).

[29] See De Vany (2004), Earl and Potts (2004), Chai et al. (2007).

Second, it makes possible a further endeavour to classify and map the types of social networks in the CIs according to the theory of network types and metrics. This in turn further allows us to refine the idea of 'emergent socio-markets' by recognizing that almost all industries started as hobbies by enthusiastic amateurs or shunned obsessives, or through unpredicted breakthroughs—in other words, outside established market norms (see Potts et al. 2008). It is this situated liminal zone between the social and the market, not just in start-up conditions, but when it is normal in established sectoral activity, that defines the space we seek to delimit.[30]

Third, developing a new economic model of the CIs from social network theory opens a path toward further unification of analytic frameworks in behavioral economics, institutional economics, media and cultural studies, and other domains that study agent behavior and changing environments in terms of the knowledge base (or generic rules) of the CIs.[31] In particular, it relates to the emergent spaces of communication and coordination that are not yet fully formed markets but complex social spaces reticulated with socio-cultural frames and institutions. A better understanding of the micro rules of CI activities may then be developed into new simulation models or used to calibrate existing models of socio-economic processes (Foster and Potts, forthcoming). The network foundation further suggests a basis for macroeconomic analysis of how the process of growth in the CIs connects to other sectors and to macroeconomic growth when the CIs are re-interpreted in terms of the innovation system not the welfare system (Potts and Cunningham 2008).

A fourth point, yet broadly implicit in the above, is the connection of the network perspective to evolutionary and complexity theory. As first elucidated by Kauffman (1993), networks, complexity and evolution are all tightly interconnected concepts (Potts 2000; Newman 2003; Ormerod 2005; Beinhocker 2006). Yet they have often been treated separately, as in the application of network or topological modeling on the one hand, and with evolutionary or process modeling considered a distinct domain of analysis. Yet the social network market framework clearly illustrates how and why these fit together, and especially so in the realm of socio-economic and socio-cultural analysis. In short, the evolutionary effects of differential replication occur on complex network topologies, which are themselves evolving. This suggests the basis for a systematic research program guided by the framework of network theory, complexity theory and evolutionary theory. Social systems are naturally complex systems, a point that, once recognized, offers an analytic basis for further integration with other behavioral and social sciences and cultural, political and media studies, which are also studies of complex systems. The particular complexity of the CIs lies in the social network markets that form about the production and consumption of novelty. For this reason, analysis of the creative industries is properly based about the evolutionary economics of complex social networks.

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[30] This enables us to further develop work, such as by Benkler (2006), who recognises the centrality of networks to the new production-innovation-consumption synthesis, by bringing a network theory (as opposed to model/metaphor) in terms of social and economic systems.

[31] This is in particular in relation to what Dopfer and Potts (2008a) call the phase of Meso 1, or origination.

4 Policy implications

Although a speculative new classification is hardly the place for explicit policy conclusions, this new definition does serve to highlight the extent to which the policy landscape is changed by a new social network definition of the CIs. In prime instance, the social welfare theoretic basis of the standard definition is replaced by an innovation system definition in which the CIs are re-positioned from a lagging to a leading sector, and from which their policy needs are appropriately re-assessed. As a welfare sector, the prime policy concern is public resource transfer to maintain existing activities (e.g., heritage or performing arts, see Throsby 1994). As a leading sector (e.g., design or video games, QUT et al. 2003), the prime concern is to apportion risk and uncertainty to the appropriate social domain best able to carry it, and to develop institutions that facilitate experimental behavior and accommodate the dynamic costs of change (Potts 2007b).

The standard (DCMS) definition of the CIs is based on an extension of the cultural industries, and so inherits a propensity to view CI policy in terms of *market failure* in the provision of public goods.[32] The social networks definition, on the other hand, is much closer to the sorts of policy prescriptions that derive from evolutionary or Schumpeterian economics, and in particular the apportioning of the risks and rewards of innovation, the development of capabilities for innovation, and the compensation of the losers from innovation.[33] This broadly adheres instead to the *coordination failure* model of policy. This approach focuses attention on institutions in relation to education, finance and insurance, taxation, property law and other such aspects of an enterprise economy. The social network market aspect also adds further concern with social technologies and social infrastructure, and of the adoption patterns and coordination properties that result. However, unlike the standard model, there is no implicit presumption that this is a market failure argument, but rather an ongoing process of adapting existing institutions and developing new institutions (e.g., in media, communications).[34] There is a role here for institutional entrepreneurs (Dopfer and Potts 2008b) as well as traditional Schumpeterian entrepreneurs (Swedberg 2006; Potts 2006). However, the domain of policy is radically shifted from a top-down re-compensatory model to a bottom-up model of experimental facilitation and innovation.

A further implication of the social network market definition is that it allows us to model how technological change may impact on the CIs by evaluating the hypothesized effect on social networks—for example, will it just change the speed of diffusion, or result in different patterns of percolation, or reconfigure a new opportunity space? Or will the differential effect of different structures of networks matter—for example, is it a small world network or a random graph? This offers a theoretical basis for evaluating the effects of public sponsorship of not just how new technologies affect the CIs, but how the CIs may effect the adoption and retention of

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[32] Hesmondhalgh and Pratt (2005).

[33] Note this last point implies a dynamic approach to welfare, which is consistent with the evolutionary approach to policy (see Pelikan and Wegner 2003).

[34] Heilbrun (1991), Cowen (2002).

new technologies.[35] Social network markets are thus best analyzed as innovation technologies and, therefore part of the innovation system.

A final point is the increased significance the social network definition gives to detailed micro data of agents, firms, and markets in the CIs, and the relative devaluation of aggregate statistics, such as gross sectoral product, employment or exports. Aggregate statistics have long been central to the industrial welfare perspective, where industry funding was essentially viewed as a zero-sum game of equity, in which industries were argued to be deserved of public supported in proportion to their aggregate 'significance'. The only data that matter in this view are those that measure economic significance by aggregate weight. It matters little what is actually occurring inside the industry, for that allocation of funding was almost entirely a political or managerial decision.

In the network view, however, the micro details of agents and markets are of prime significance for public policy, as they are the raw data upon which public action is proposed in the face of novel ideas, technologies and new economic possibilities.[36] The development of finer and better micro data about the creation and destruction of firms, jobs and patterns of activity has much greater prominence in the social network market definition of the CIs than the standard DCMS definition because of the light this may shed on the dynamic mechanisms of economic growth and transformation as well as the interactions among cultural, social and economic actions and institutions. CI policy is only as good as the analysis it is based on, and with the theoretical advance of network analysis, coupled with better micro data about these social networks and better models of how social network markets function a new space for CI policy may open up along similar lines to science, technology and innovation policy.

5 Conclusion

In the economic theory of consumer demand, the standard model assumes atomized individuals exercise choice in an attempt to maximize utility subject to a budget constraint. In this approach, given an individual's tastes and preferences, decisions are taken on the basis of the attributes of the various products, such as price and quality. In recent decades, the conventional theory has been extended to allow for factors such as the cost of gathering information, imperfections in the perception of information and limitations to consumers' cognitive powers in gathering and processing information. So decisions are not necessarily made in a fully rational way, but are nevertheless based on the (perceived) attributes of the products, without direct reference to the choices of others. In general, however, economists have paid little attention to markets in which fashion is important; i.e., markets in which the decisions of others can affect directly the choices made by an individual.

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[35] Interestingly, this would move the CIs from irrelevance to the forefront of *innovation policy*, when understood as a supervening set of industry, competition, cultural and education policy (Cunningham 2006).

[36] This will be adaptive economic policy (Pelikan and Wegner 2003).

Social influences are generally only invoked for cases considered exceptional, such as 'irrational' stock market bubbles or real estate crises.

However, evolutionary economists have long argued that economic growth is caused by the growth of knowledge. In addition cultural economists and cultural theorists have long argued that the creative arts, broadly conceived, produce knowledge. The concept of creative industries puts these two observations together. This article has added the further observation that this takes place in markets predominantly coordinated as social networks. We have argued that the creative industries are not well defined as a set of industries, as in the standard DCMS SIC-subset definition, but better defined as a class of markets—namely markets characterized in both supply and demand as (complex) social networks. We have mostly resisted the urge to label this creative agents or creative markets or creative economy, but that is what we mean.

Most interesting from the economic perspective is that these markets coordinate as complex social networks. We have called these social network markets and have indicated that this offers a rich analytic base to build upon. It offers, in prime instance, an analytically coherent way to connect the economics of evolutionary growth (in markets) with the social-science and humanities studies of how people socially create adopt novelty for retention as knowledge. Our implicit proposal has been that the CIs are better defined as the set of economic activities in which production and consumption outcomes are predominately determined by market-like processes on social networks. We have argued that this is 'significant' because the origination, adoption and retention of novel ideas is the primary cause of economic growth and development. CI products are not defined as such because they are creative per se, but because they are novel and of uncertain value in the creation of new opportunities. This value is, literally, socially determined by complex networks of individual interactions, a value that is true of all commodities, to some stage, and which results in all markets eventually.

The creative industries represent the continuously shifting domains of economic activity in which social networks are the predominant factor determining value. The CIs are thus re-conceptualized as not just another public goods sector, but as essential to the process and structure of both economic and socio-cultural evolution in which the leading edge occurs in social networks that result in emergent structures of coordination. The analytic basis of our proposed new framework for the economics of the arts and culture—as currently marked out by JEL classification Z1—is thus in terms of an evolutionary/complexity-based analysis of the creation, adoption and retention of economic novelty, as a market process, over social networks. This offers a new analytic foundation for creative industries economics that advances toward a generalized re-conception of the *creative economy* as distinct from the 'information society' or 'knowledge economy'.

Our proposal is plainly preliminary and inferential and not yet a comprehensive framework. Yet we suggest that further work in this direction might provide a better foundation for cultural and creative industries policy than the implicit extant basis in market-failure and social welfare arguments. We have argued that 'the arts' provide an evolutionary service that benefits both society and the economy, both individually and in the aggregate. The CIs, as the economic generalization of the

arts, have positive economic and social value, to be sure. Our specific hypothesis has been that this value is greatest when the technological and social conditions of human systems are changing fastest, as is seemingly now the case in 'post-industrial' economies.[37] This value derives from their social network market services, and so the social network market perspective thus offers a basis for analysis of how socio-cultural and economic systems co-evolve. Such a unified framework should be central, not peripheral, to analysis of both economic and cultural theory and policy.

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[37] See Beinhocker (2006), Benkler (2006).

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