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A Natural History of Demic Concentration

It introduces a humanistic science of the economy – ‘humanomics’ – directing attention to meaning without abandoning behavior, using literary sources without ignoring numbers, combining the insights of the human and the mathematical sciences.

Deirdre McCloskey¹

The use of culture in society

This book has sought to elucidate a fundamental re-conception of what culture actually does. Culture is plainly a mechanism for carrying past knowledge, identity and meaning, and therefore a societal form of capital and wealth. ‘We’ (our clan) seek to protect and reproduce that stock of cultural capital and wealth; this is the basic model of culture that runs through anthropology, sociology and cultural economics, and forms the standard approach to cultural policy.

But culture is also a mechanism for the *production of newness and the growth of knowledge*. In addition, culture is a mechanism for the production of newness from sources that *cannot be identified in advance*, but which may arise at any point throughout and among social and semiotic systems, in a dynamic process where newness includes new *sources and systems* of knowledge as well as new content.

The cultural science that we have proposed here is a hybrid of cultural studies (textual, historical) and evolutionary economics (analytic, complexity). Perhaps we should have called it *culturology*, as the Russians do,² rather than cultural science. But a ‘culture-ology’ – a scientific study of culture in a systematic anthropological or sociological sense: what it is made of, its functional

¹ Quotation at: www.deirdremccloskey.com/books/index.php#16; argument at: www.deirdremccloskey.com/docs/humanomics.pdf.

² *Wikipedia*: Culturology.

components, its micro-foundations and macro-ecology – has not been our primary purpose. Rather, we have conceived of cultural science as the study of *the use of culture* in society as, shall we say, an engine of the future for the growth of knowledge, newness and innovation.

From the start, we have been fundamentally concerned with a theme arising out of cultural studies – the study of ordinary culture in the Raymond Williams (1958, ‘culture is ordinary’) sense, and specifically of the uses of culture, or of culture as productive. The central theme of this book has been that culture makes groups, groups make knowledge, and that new ideas (contributions to knowledge) occur as the tensioned and conflicted boundary of a group changes. Newness and novelty are not ‘the production of an idea, using labour and capital inputs’ (as the economists formulate it), but the reformation of a *group boundary* such that an idea becomes meaningful. This is the evolutionary model of cultural dynamics through the mechanisms of demic concentration.

This is a different model of newness and innovation: a cultural science model. Culture, under particular conditions, is productive of newness as part of the growth-of-knowledge process. Cultural science is the study of *the growth of externalized knowledge* through this complex, evolutionary semiotic mechanism whereby culture produces groups within which ideas are meaningful and groups produce newness and knowledge. This is a wasteful and conflict-shaped process, but ultimately it is a mechanism by which knowledge grows. Cultural science is the study of culture as a source of change and dynamics.

It is useful to think of this not only as a new approach to *cultural studies*, with a focus on the agency of cultural dynamics, rather than the politics of cultural capital, but also as a new approach to the *economics of culture*, with a focus on culture as productive (a mechanism of newness and innovation), rather than culture as consumption (a segment of markets and industry). In the cultural science approach, culture is productive of newness and knowledge. The use of culture in society is less about the reproduction and consumption of cultural capital, and more about the production of novelty. In this sense, the cultural science model of externalized demic meaningfulness is actually an alternative theory, not to the anthropological/sociological or political-economy models of *culture*, but more accurately a competitor with the economic production function (or investment) model of *innovation*.

The investment model of innovation – in which new ideas and innovations are produced by combining resource inputs (capital, labour and so on) – is at

the core of modern growth economics in the form of a production function for knowledge (Romer 1990). To increase the output of innovation, we increase the level of inputs. That, in essence, is the economic model of growth through innovation and new knowledge. It is also the economic model of science (Arrow 1962). But culture can also be proposed as another model of innovation, in the externalized, demic conception we have proposed, where culture is viewed as a species of economics-via-language-and-stories, 'we'-group formation and meaningfulness. This furnishes a new approach to the economics of *groups* (cf. Frijters and Foster 2012) and the economics of *identity* (cf. Akerlof and Kranton 2000), but in both cases as a knowledge construct, not as a strategic or political construct.

At the core of this 'new economics of culture', and 'new cultural studies', both of which we gather under the rubric of cultural science, is a theory of the use of culture in society in which culture is understood as a newness-making mechanism. We do not claim that this is the only function of culture. Other functions are cumulatively and variously co-present. Rather we seek to redirect emphasis in the *study* of culture towards this functional role in the production of newness and innovation. This is a broader point in studies of households, firms, and entire economies, in that analysis tends to be defined in terms of *production function* (i.e. input–output) and *efficiency*, such that each unit is defined as producing a particular thing. Increases in output or gains in efficiency will come from better technologies or more effective organization. The way to produce more output is to increase the level of inputs, or improve the technology of production. The implication that carries from the economics of firms and economies to the study of culture, whether neoclassical (cultural economics) or Marxian (cultural studies) in foundation, is that this same input–output model of production also applies to novelty and innovation. Newness, in other words, is just another good. However, this is not what cultural science argues. The production of newness, novelty and innovation has another class of explanation in *externalized demic concentration*. This is another important, yet much neglected and misunderstood, use of culture in society.

Implications

As a new approach to both cultural economics and cultural studies, cultural science has a number of specific implications.

1 Innovation is ordinary

If culture is ordinary, in the Raymond Williams (1958) sense – and as a founding principal of cultural studies – then *so too is innovation*. This is a statement about the causal distribution of innovation. In the standard economic model, innovation is proportional to investment in innovation, which is in turn a function of the institutional incentives for such creative and entrepreneurial, competitively driven and cooperatively organized economic action. In that respect, innovation is special. It is not the natural course of economic events, outside of some exceptional institutional conditions (that describe, in essence, institutional modernity and market economies). Innovation, in this investment-driven and institutionally conditioned model, is an endogenous dynamic force not at all ordinary, if for no other reason than a special class of agent – the entrepreneur – is tasked with this operation (Schumpeter 1942).

But from the perspective of cultural science, innovation and newness is ordinary in the simple sense that it is widely distributed (or externalized across subpopulations), and a product of demic (knowledge-making group) concentration and tensioned interaction.³

This suggests a reconsideration of the theory of innovation, to be formulated less in terms of exogenous shocks and high-powered incentives (the economic way of viewing the world), but broadly through a skein of considerations extending through economic, social, cultural, technological, institutional, legal and psychological systems. The cultural science conception of the ordinariness of innovation suggests a much more interdisciplinary approach to the study of innovation.

2 The aims of cultural policy might be reconsidered

Cultural policy is largely configured, in most countries, in what might be called a ‘welfare mode’, or ‘health care’ as opposed to ‘racketeering’ model (see Chapter 5: ‘Citizens’). It protects against risk of loss; it seeks to correct market failures; it supports those parts it favours. The *raison d’être* of cultural policy, viewed from the perspective of cultural economics, is to correct market

³ This reconceptualization of cultural productivity as widely distributed matches Thomas Paine’s reconceptualization of political leadership in *Rights of Man* (1792), where he argued against hereditary government and in favour of representative democracy on exactly these grounds – a momentous example of *newness* trumping behavioural, structural or power-based modes of explanation.

failures in the positive externalities of ‘good’ culture. From the perspective of cultural studies however, cultural policy is a battleground for personal-political and socio-economic consequences. In both cases ‘policy’ is restricted to the agency of the state (it rarely addresses *business strategy* as an interlocutor, for instance).

But from the perspective of cultural science, things look somewhat different. Specifically, cultural policy might reconsider its aims, and its addressee. It might not necessarily be centred about the state protection of cultural forms for the sake of the preservation of a rich (multi-)cultural ecology, or as a policy-warranted collective action correction (within a nominally ‘capitalist’ system) to a manifest market failure in the production of culture. Rather, cultural policy might be reconsidered as instead a ‘soft-power’ version of innovation policy.

Perhaps the simpler point is that cultural policy and innovation policy are related, and more closely than is commonly admitted. Indeed, according to cultural science, cultural policy can serve as a form of innovation policy – a business strategy, indeed – using cultural mechanisms to shape the development of new ideas and the coordination of knowledge, and therefore to shape innovation outcomes. Bad cultural policy may show up (hitherto, unexpectedly) as bad innovation policy, and, obviously, vice versa.

3 Increased importance of theory of groups

Cultural science is built around a theory of human social groups as knowledge-making formations (demes), whose founding characteristic is that they are construed in opposition to other, external groups. It is therefore important to direct attention to the study of groups in terms of the theory of formation, stability, productivity, and so on, and the cultural mechanisms used to achieve this, including semiospheres, the noösphere, and social networks using digital or other technological affordances. Essentially, a cultural science requires a sub-domain, assembled from an interdisciplinary consilience of theories, which furnishes a theory of groups.

The cultural science mechanism of innovation is a shifting of group boundaries to integrate (i.e. make meaningful) new ideas. Culture is a group identity-making process that makes ideas meaningful into knowledge. This is the conception of a deme, as a culturally coordinated knowledge group. Examples of these groups are basic economic units such as firms and households, but also demic groups such as social network markets (Potts et al. 2008), commons (Ostrom 1990), audiences and festivals (Hartley 2009), sciences, genres, cities. With groups

reconstructed as a culturally formed site of productivity-in-tension, it will become increasingly important to develop a theory of groups that can underpin and explain this.

There are of course numerous theories of groups in the sciences, broadly considered. For biologists and economists, groups are a collective-action cooperation problem. For mathematicians they are an identity and aggregation problem. For sociologists they're a unit of analysis, and for anthropologists, political scientists and behavioural individualists, they're a puzzle. For linguists, language makes groups. For evolutionary linguists, groups make language. Groups can be an emergent phenomenon, or a linear consequence. Groups are made of information and groups are made of things. The point is that cultural science must ultimately be based on a unified and generalized theory of human groups (or demes, which is our hunch). Where cultural science is innovative in this regard is in the formulation of demes as 'universal-adversarial': open to all knowledge among the 'we'-group, but in antagonistic competition with the knowledge of 'they'-groups. That such antagonism is productive of innovation and newness can readily be observed in wars, hot or cold, real and metaphorical.

4 Reconsider previous works in cultural studies and evolutionary economics

An important implication of the cultural science programme is that it adds value by integrating two otherwise distinct research programmes: cultural studies and evolutionary/complexity approaches to economics. We have sought to formulate some key arguments in the different chapters of this book.

But there remains much yet that might be developed, and the most obvious place to begin this is with what we might call a 'back-catalogue trawl' of cultural studies, and evolutionary economics too, to review particular works through the lens of cultural science.

This means classifying work that has sought to describe: externalized knowledge; group-formation mechanisms; emergence of meaningfulness; production of waste; construction of newness; 'we-group/they-group' interface, interaction, hostility and boundary redefinition; citizenship; extinction and protectionism. A mapping of previous work along these lines would be a most valuable first step. But a second step would be to seek particular points from which to build out. Students of cultural studies might in this way find cultural science a possible research direction (Ostrom 1990).

5 Reconsider the value of interdisciplinary collaboration

An immediate further consequence of the general model of cultural science is that it invites closer collaboration between cultural studies with evolutionary economics and complexity approaches to social science and policy. The reason is simply that these offer conceptual, theoretical and analytic frameworks for the translation of particular elements of cultural studies into cultural science.

6 What is postmodern after cultural science?

Postmodernism is normally represented as a movement in twentieth century arts and letters marked by various modes of rejection, criticism and ultimately 'deconstruction' of the modernist conceit of an objective, observer-free interpretation of reality. But cultural science suggests a new theory of postmodernism that emphasizes a different aspect, namely multiplicity of starting points and combinatorial possibilities, arriving at an interpretation that emphasizes not only its deconstructive tendencies, but also its creative, or competitively re-constructive tendencies. This proposes a new theory of postmodernism that is less focused on its critical aspect and more on the world of *multiple simultaneous choice*, or *consequential choice under abundance*. Postmodernism hasn't been 'completed' yet: it has applied the test of doubt to realism, but it has not sufficiently moved on to investigate the possibilities of distributed intellectual innovation. By emphasizing the multiple starting points that then compete in a marketplace for ideas, we suggest that postmodernism has been abandoned too early, and somewhat misconstrued as a critical movement. It may better be understood as a decentralized creative movement in a world of abundance. This presents both cultural studies and evolutionary economics as part of a 'philosophy of plenty' (Hartley 2003). It is *DIY Darwinism*.

The postmodern humanities and postmodern science are central to the cultural science project. Unifying consilient questions are: What makes a group? What happens at boundaries? How does knowledge grow? This revisits the 'boundary crossing' themes of postmodernism and cultural studies from the demic perspective.

7 Reconsidering the cultural value of openness

A final implication we can note is that *openness* is a major and perhaps central principle of cultural productivity. Openness implies an adaptive rather than a planning strategic perspective. Planning requires standardized inputs and

centralized control of agents and resources. This type of structured bureaucratic model works well in instances whether there is a known goal in mind, known methods by which it will be achieved, and an environment that is knowable or controllable. But such methods work much less well in more open (uncertain) environments.

An effective cultural system is in many ways an adaptation to an open environment. But this isn't at all the same as *laissez-faire*, for such adaptive capabilities require complex organization. The point, rather, is to guard against too much detailed planning and endeavours to enforce such plans: looser and more adaptive approaches are better because they make better use of distributed and continuously changing information and opportunities among multivalent agents.

Openness implies the tolerance of conflict and tension; indeed, an active search for it, inviting it, and then managing it as a mechanism of knowledge testing, variety creation, and opportunity discovery (Stark 2009). This idea has been expressed in the theory of 'novelty bundling markets' (Potts 2012). In these models harmony and consensus is not always an unalloyed good because it limits the ability to test and regenerate knowledge and to discover newness. Without it, it's a bit like accountability run by public relations (PR) rather than by criticism or adversarial argumentation – which is itself the foundation of both legal and scientific testing. In the same spirit, conflict, tension and complexity are not the enemies of knowledge systems. These are features, not bugs.

A natural history of demic concentration

Demic or cultural evolution enables the *reproduction of knowledge*, not of individuals or even cultural groups as such. But knowledge cannot simply be reproduced unchanged (that way extinction lies). It has to be reproduced with *growth*: added newness. The continuous productivity of that process over the extreme long term can hardly be overstated.

Indeed, over the time since *H. sapiens* emerged, we can see a correlation between knowledge technologies and economic transformations. That correlation is schematized on the logarithmic horizontal and right-hand vertical axis of Figure 10.1.

But we can also see that this process corresponds with continuous growth in a stylized measure we call demes-per-person (on the logarithmic left-hand vertical axis). We suggest this as a model of the evolution – the natural history – of culture, knowledge technology, and economy.

Figure 10.1 Demic concentration in relation to technologies of knowledge reproduction.

The horizontal axis of Figure 10.1 runs on a logarithmic scale from Paleo/Mesolithic humans to the present. The first event in that timeline is the so-called Neolithic ‘revolution’ (but see Chapter 3: ‘Demes’), when bands of *H. sapiens* began to switch from hunter-gatherer subsistence to early settlements. This period was increasingly complex and technologically equipped, but it was still an oral culture, with most semiotic expressions of knowledge in sound (and, later, a few special ones in stone).⁴ Following that axis, we track the successive, ‘explosive’ changes in knowledge that have been associated with particular technological inventions – writing/maths, print, broadcasting, internet – and the cultural reordering that followed their widespread adoption. Each step enabled a broader social base to use *knowledge stocks* (access) and saw rapid, game changing increases in *knowledge flows* (detached from ethno-territorial descent).

In developing this logic we acknowledge Marshall McLuhan (1962) and Walter J. Ong (1958, 2012). We are interested here in the relationship between

⁴ ‘Stone’ includes megaliths, stone-carving and painting on stone.

communications technologies and *group formation*, whereas both of these pioneers focused on the relations between technologies and the *human mind*. We are not confident that writing, printing, broadcasting and the internet impact quite so directly on 'the mind', especially when literacy in any medium remained a minority capability among humans until very recently.

However, it is not necessary to posit changes in 'the human mind' (an irrecoverable object of study at this distance of time) in order to investigate the relationship between culture and knowledge. Instead, we have hit upon a different metric, based on the number of different demes – actual social groups plus virtual or imagined groups – to which an individual person could belong in different epochs. We think the familiar sequence of oral, chirographic (writing), print, and electronic cultures proposed by Ong (2012) is still significant, but not as part of the 'evolution of consciousness' directly; rather as part of the growth of knowledge, which we conjecture impacts on individuals not by changing their minds (or brains, as neuroscientist Susan Greenfield asserts), but by expanding the number of demes to which any individual can belong.

The McLuhan-Ong model in précis is that 'the medium is the message', meaning that the medium of knowledge reproduction (oral, writing, print . . .) shapes particular modes of thought and therefore communicative and production possibilities, which we connect here to 'types of economy' (right-hand vertical axis of Figure 10.1). These types of economy are cumulative, such that an agricultural economy is built on top of and retains subsistence economy forms, just as an industrial economy is built on agricultural economy, and so on. The 'type of economy' designation characterizes its *expanding* frontier.

We can note two immediate points. First, these epochs are a *process*. They are cumulative and sequential, separated from one another by an 'explosion' (in Lotman's sense). Each epoch begins when an elite (e.g. priests, rulers, poets) adopts a 'new media technology', which diffuses through the population (both within a deme and across demes) before stabilizing as the dominant communicative knowledge reproduction institutions of an era. Each such era is associated with a particular type of economy. Second, this process is plotted logarithmically, meaning that it is *accelerating* (see also Hartley 2008: ch. 3, for an account of the increased frequency of 'public writing' across this range of media, from 'low frequency' stone to 'high frequency' social media).

Our novel contribution to this scenario is to track what is happening to *demic concentration* through these accelerating phases of technological revolution in knowledge reproduction and transformation of types of economy. We conjecture that the number of '*demes per person*' is also cumulatively rising.

We are not interested in the total number of demes in a culture or society or economy, just as a linguist need not count the number of words in a language or number of sentences uttered each day. Instead we believe it is possible to estimate (without needing fine precision) the number of demes that each individual inhabits in the course of ordinary activity; or, more important, the accelerating *growth* in that number across the *longue durée*. Obviously the number will differ from person to person, so we are referring here in our measure to a ‘representative’ individual. Equally obviously, the identification of a deme is not precise, and a great amount of work may be required to refine these concepts to the point of accuracy. Even so, some measures readily suggest themselves, such as belonging to groups organized around ethnicity, kin, gender, language, age-group, tribe (later; class), place (later; nation), specialism (later; occupation) and associative groups (later; citizenship). Conceptually, we suggest that while the dimensions of any one deme are fuzzy, the logic is distinctly monotonic (in ordered sequence), in that the number of demes per person rises cumulatively as time moves through successive ‘explosions’ in knowledge reproduction. An internet culture will have much higher demic concentrations (number of demes per person) than broadcast culture, where they are higher again than in print culture, and so on. Further, the later array of demic choice, compared to earlier epochs, includes many more ‘virtual’ demes (carried for instance in story, imagination, social network or audiencehood), as well as ‘abstract’ ones (nation rather than city, say; or ‘human’ rather than *our clan*).

In conceptualizing demes for the purpose of estimating changes in the number of demes-per-person over time, we follow Lotman’s model of the semiosphere, which does not seek to over-specify their content. We have not sought to restrict what a deme contains, or even to decide whether it is ‘empirical’ or ‘imaginary’ (because it is both, from the point of view of individual members). As Ibrus and Torop (2014) put it:

The semiosphere is presented by Lotman as an infinitely heterogeneous reservoir of dynamic processes with explosive potential. He emphasises the importance of space, interconnectivity and the multidimensionality of sign systems as well as foregrounding the relational and interactional elements of culture.

Thus, we cannot say with certainty how many demes or semiospheres were recognized in the Holocene, when the main technology of knowledge reproduction was oral communication – speech and song. We’re guessing that the number of demes-per-person was small, perhaps just two or three associated

with the band (of extended kin, mostly) and the language group. There would have come into play further demic concentration associated with specialized knowledge: men's/women's business, for example; or sacred knowledge particular to one's place in the tribal hierarchy or specialization (tracker, healer, hunter, gatherer, seer, etc.). Each individual person would occupy perhaps fewer than ten demes, depending on how many languages they retained in use and groups they interacted with over time: which 'knowledges' they could access. The archaeological record (e.g. grave goods) suggests that by the Neolithic era, the development of specializations associated with the 'domestic mode of production' bespoke increased social complexity and therefore demic concentration, which Marshall Sahlins, in *Stone Age Economics* (1974), characterized as *semiotic affluence*. In the same period, demic knowledge began to *externalize* further, communicated via stone and other sacred sites that 'broadcast' or mediated the stories and identity of the culture (as we described in Chapter 3). At this time, inter-demic communication occurred via trade, 'songlines' and boundary contact, friendly or otherwise, so each person's demic concentration may have been increased by such traffic, while 'imagined' demes – in play, story or expansionist and aspirational pressures ('promised lands' or 'greener grass over the hill', if you like) – were also available at an unknown scale.

The invention of writing (and mathematics) is associated with the surpluses created from the division of labour in social and political organization that was required for settled agricultural production, especially in the Fertile Crescent. But writing was revolutionary or 'explosive' because it enabled knowledge to travel across time and space unchanged. Writing enabled record keeping, and thus made trade, contract, money and law possible at greater scale and complexity, connecting communities separated in time and space. Mathematics and numeracy – abstraction carried much further – enabled knowledge to be created and used in a new way. The number of demes a person could connect to expanded beyond the compass of those within earshot. One could form demic concentrations with people from the past, and far away, or imagined. One could *project* demic groups, if powerful enough.

Print revolutionized demic associations further by its democratizing effects, breaking the ability of elites to maintain power and control by limiting demic concentrations (for example, the Protestant Reformation sought to do away with priestly intermediation in religion by putting a particular book into the hands of every family). Print enabled the three great textual systems of modernity – science, journalism and the novel (Hartley 1996) – to emerge, but only among

those who acquired print literacy, which was initially confined to a limited and mostly elite fraction of the population; the democratic potential of print culture took several centuries to flow through to the population at large. But the net effect of this expansion of the print form of knowledge reproduction was to increase the number of demes per person: the creation of a 'reading public' allowed individuals to align with groups whose members they may never meet (nations, fans, associations). This knowledge commons – and the exponential growth of specialized knowledge that could nevertheless be generalized across cultures using print – created the conditions for education and inquiry-driven discovery, for entrepreneurship and industry, indeed an industrial economy became possible, as did a representative democracy, and therefore the modern nation state.

Broadcast technology greatly expanded the process through a range of media (film and radio at first, then television from the second half of the twentieth century). The difference between print and broadcasting is that broadcast communication is no longer constrained by literacy-requirements, such that this technology of knowledge reproduction can reach everyone with a receiver. Electronic communication also hastened the development of information-based economic production. The number of demes per person again rises because of this expanded diffusion effect, and further virtualization or abstraction of groups.

The internet dates from the 1970s, although it only becomes a mass phenomenon in the late 1990s. From the start it had one major property that distinguished it from the previous era of broadcast forms of knowledge reproduction, namely that it is two-way by design: ordinary users can be content-producers as easily as receivers.⁵ It is participatory and searchable, and thus creative. Here, the demic space can be substantially large (multi-demic) and highly reticulated.

How culture works

The natural history of knowledge reproduction has evolved through several distinct phases, or Lotmanesque 'explosions', as above: from oral to writing

⁵ User-created content and participatory interaction were nascent in broadcast media, for example community radio (Rennie 2006), illustrating a more general rule, which is that many 'new' features of 'new media' have been thoroughly rehearsed, as it were, prior to the 'explosive' reordering of the system as a whole.

to print, broadcast and now internet. With each explosion, or jump in the capabilities of technologies of knowledge reproduction, the number of demes per person rises (we hypothesize that this rises exponentially).

Consider some implications. First, as demes-per-person increase so does the extent of access, and the level of abstraction achieved. The new technologies of knowledge reproduction lower the cost of discovery and entry into demes, lowering barriers, and making it harder to exclude others, or to protect knowledge and culture by excluding outsiders. Economists would view this as lowering rents (and thus an efficiency gain), but it can also be seen as opening access and attention (which itself has an under-acknowledged economic value: Lanham 2006), and raising literacy, thence both the levels of consciousness and competence of everyone in the deme. That gain is achieved by increased abstraction through a process of releasing knowledge from situated to more general (from knowledge locked in the here and now to knowledge applicable across novel situations, times, places and users). This process of enlarging the size and citizenship in a deme is enabled by changes in the externalized technologies of knowledge reproduction.

Second, as demes-per-person increase, so do scale and 'wastefulness'. The scale of culture is now global, and the size of demes can be measured in the millions and billions. But demes can also be very small; and most people are citizens in a large (albeit indeterminate) and changing number of demes. We live in an extraordinarily rich and complex semiosphere. To flourish in such an environment requires wastefulness in connections in order to generate proximity (many 'hooks' to achieve few 'hook-ups'), which is required for adaptation (or newness). Demic geometry is increasingly network geometry.

Third, as demes-per-person increase, so does choice and imagination. In the oral (speech and stone) period of knowledge reproduction technologies there was relatively little choice over demic belonging. Demes were local, inherited vertically and apparently unchanging (handed down from the ancestors, and modified only unwittingly). Culture was static, but for occasional boundary events. But each revolution in the reproductive technology of knowledge opened this situation up, and accelerated its growth and evolution. Demic citizenship was literally dislocated in space and time, and multiplied. It became virtualized, and storied. It became imaginative and creative as people were able to access constructed ways of being: for example modelling heroism, stoicism, piety, revelry, honesty, passion, earnestness, gentlemanly conduct or entrepreneurial adventure in stories from afar.

Demic citizenship also makes connections that build the organizations and structures that induce further growth and development in economic and socio-political (institutional) systems. The emancipation of the deme drives the evolution of the economy. The result is not just semiotic but also material affluence – the tide lifts everyone.

Consider the forces that act directly on the demes-per-person axis. We can think of a representative person in a given culture (at a particular point in the sequence of technology of knowledge reproduction) as having a particular ‘measure’ of demes-per-person, say 20. Obviously, that’s a population average: some people will have higher numbers and some lower. The relatively younger and wealthier will tend to amass higher numbers of deme-per-person measures by virtue of greater propensity and access.

Also, a person’s total will change through a lifetime: rising rapidly through childhood, peaking, then declining through maturity, along a quasi-stochastic, contextually dependent path. We hazard a guess that the graph of lifetime changes in ‘demes-per-person’ for each individual might resemble the famous Gartner Hype Cycle, which plots the hype surrounding the emergence and adoption of new technologies.⁶

Gartner’s evocatively named ‘peak of inflated expectations’, ‘trough of disillusionment’, ‘slope of enlightenment’ and ‘plateau of productivity’ (Figure 10.2) were designed to follow the ‘hype cycle’ of new technology adoption, but these stages may better describe a person’s journey through deme-accumulation and change, from childhood and youth (peak), through the onset of family and work commitments (trough), to what is called in German *Mündigkeit* or coming of age into responsibility, caring, action (slope), and then maturity and age (plateau). In each stage the number of demes per person varies, reaching a peak as young people turn from peer-group formation to employment and family-building, when the number of demes may fall, recovering later as shown. This is our hunch – but it can be tested.

People build demes with stories, and those who make good stories can become very powerful and celebrated. But we also build demes with children, or, more accurately, children build new demes. Culture is not just the product of adult genius, it is also assembled by children as they venture out to accumulate and combine demes, old and new. Demic boundary-shifting is impelled by the yearning energy (longing for new experience and knowledge) of a highly

⁶ See: www.gartner.com/technology/research/methodologies/hype-cycle.jsp.

Figure 10.2 Plotting the number of Demes per person over a lifetime (conjectured as a 'hype-cycle' graph).

social and intensely semiotic childhood, which learns by copying, playing, experimenting, timewasting, mischief and adventure. It can appear chaotic and wasteful, seemingly requiring protection, or inconsequential, which is perhaps why children do not figure in economics, where the default individual is the rational adult. But, in both cases, the problem arises not from culture but from the act of observation: from not identifying the right 'problem of culture'. The 'problem' of culture is how to grow new knowledge, which is where children come into their own, scooping it up, sharing it round, making it new.

The purpose of a cultural science is to provide an analytic framework for a general reconceptualization of the theory of culture – in the original cultural studies 'ordinary uses' sense – one that is focused not on its political aspect but rather its evolutionary significance as a generator of newness and innovation. We sincerely hope that this book will serve to gather together some ideas and models from which that project might be advanced, to tell a new story about the nature of culture.