Creative Economies and Research Universities

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After the Culture Wars, now come the Economy Wars

When the world recession in 2008 began, the economy wars, which had been dormant for two decades, flared again. After thirty years of the culture wars, this came as a bit of a relief. In one corner, we had the followers of John Maynard Keynes (1883-1946), who were filled with a kind of self-belief that we had not seen since the 1960s. They had a few scores to settle. In another corner were the market-friendly followers of Friedrich Hayek (1899-1992) and Milton Friedman (1912-2006). They were looking a bit bloodied after having dominated public policy for two decades. Looking on skeptically from outside the ring was another cohort, the admirers of Joseph Schumpeter (1883-1950). These were, as usual, less combative than the other pair, and had a quizzical eye trained on both of the pugilists.

Part of the skepticism of the Schumpeter camp was a wariness of public policy tout court. It didn't matter whether this was a policy bent on big government or one in love with small government. Schumpeter had been a student of the great Austro-Hungarian Empire Finance Minister, Eugen von Böhm-Bawerk. Schumpeter himself was the first Minister of Finance of the modern Republic of Austria. He seemed to take away from that unusually intimate experience of public policy a strong sense of the need for economists to look beyond the policy cycle, and explore the deeper structures and long-run temporalities of economies. Schumpeter was a great economist who at the same time understood the power of history and society in shaping economies. He also appreciated the power of the imagination. He observed that modern capitalist economies were driven as much by creative impulse and imaginative insight, as they were by the more commonplace behaviors that arose out of greed, interest, need or calculation. It was not that societies could not—or should not—control such behaviors or encourage them, depending on prevailing economic philosophy. It was just that some of the most decisive economic outcomes could not be determined by such policy tools. Somewhere beyond them, in a larger social-historical zone, lay the human drive to innovate and create.

This is a view at odds with both Keynesianism and the contending philosophies of Friedrich Hayek and Milton Friedman. It sits at a tangent to both 'liberal' and 'neo-liberal' views of the world. Whether it is the social liberalism of the Keynesian or the classic market liberalism of the anti-Keynesian, each exemplifies the manner in which economists became enthralled by the temporal horizons of public policy and indifferent to the deeper cultural and historical causes of economic and

social prosperity. Economic crashes, such as the one that occurred in 2008, trigger a stock set of responses. Keynesians suppose that capitalist economies tend to stagnation and that the motive force of these economies is immoral. Economies accordingly must be stimulated by government spending in order to return an economy to prosperity, and then must be regulated with a sure hand. So contracts for public works are used to sustain businesses. Government bail-outs rescue firms from insolvency. In a recession, with declining revenues, a government can still spend more if the state increases tax levels, borrows from banks, or prints money. All economic policy tools, however, have limited and negative effects. Higher taxation means less consumer spending and less investment. Government borrowing competes with private borrowers, restricting business access to credit and pushing up the price of money. The repayment of high levels of public debt is a long-term drain on the economy. Printing money on the other hand causes rampant inflation and government spending is often wasteful. Neo-liberals are a much more optimistic breed than Keynesians. They assume that capitalism tends to prosperity, politics is a primary cause of recession, competition is effective, and self-interest is not immoral. Market failures are caused by too much regulation, too much taxation, and too much government borrowing. Yet market liberals on the whole show only a muted interest in the roles of management, technology and industrialization in securing the success of markets. The firm is peripheral to their explanation of economic dynamism.

Schumpeter's understanding of capitalism differed in significantly interesting ways from both Keynes and Hayek. He thought that the capitalism that he observed was dynamic not stagnant, but that its dynamism came not from markets in general but from the power of innovation that had been unleashed by modern industrial capitalism. Schumpeter took a long-term view of economies. From this historical viewpoint, economic crashes are a normal part of the dynamics of modern capitalist economies. Periods of genuine prosperity and long-term increases in wealth and general standards of living are followed, as night follows day, by a sequence of speculative boom, slide, panic, crash, and recovery. Boom-time actors never predict, and cannot predict, the time of the crash. They always think the good times will last forever. But in fact business cycles trend in waves, up and down. These waves cycle over the short, medium and long-term. Schumpeter was most interested in the long-term dynamics of capitalist economies because these, he observed, had the most important effects of all. Public policy, in contrast, is concerned principally with short-

term effects. Public policy instruments have moderately foreseeable impacts that run over periods of eighteen months to three years. Very few tax or spending policies have observably sustainable effects beyond that. Yet, as Schumpeter outlined in his classic work *The Theory of Economic Development* in 1911, the most powerful drivers of modern capitalism work over periods of twenty, thirty, sixty years and more. These are the forces of innovation that create new industrial sectors.

The first chapter of *The Theory of Economic Development* set out a model of a static capitalist economy. This is essentially what the tradition of economics from Adam Smith to John Stuart Mill to John Maynard Keynes thought a capitalist economy looked like. Like all economies hitherto, it had no real endogenous driver of growth. Schumpeter noted that a handful of economies, beginning with Britain in the 1820s and Germany in the 1840s, behaved differently. They had a built-in source of expansion. Schumpeter set out to explain what this was in the brilliant second chapter of *The Theory of Economic Development*. 'Development' meant those changes in economic life that are not forced from without but that arise from their own initiative from within.[1] In this economy, change does not occur continuously but in fits and starts. This is a type of economy that tends not towards homeostatic equilibrium but rather towards dynamic equilibrium.[2] This is a mildly enigmatic form of equilibrium, a kind of balance that is slightly off-balance all the time. Schumpeter explained the discontinuous change, the periodic ruptures, and the disturbances in the economic equilibrium of modern capitalist economies with one word: innovation. Periodically the most advanced industrial economies go through a phase of intensive innovation. At the heart of these innovations are new combinations of economic materials and forces. What follows from these new combinations are new goods, new methods of production, new markets, new sources of supply, and new kinds of organization. What these in turn create are new leading industrial sectors. This occurred with the Manchester cotton industry in 1780s, the railroads in the 1830s, Pittsburgh steel in the 1870s, the Detroit car industry in the 1910s, and the Silicon Valley information industries in the 1980s.

The ICT industries reached maturity around 2000. That point was symbolised by the pricking of the dot.com stock market boom. In another thirty years, the ICT companies will probably look a lot like car companies did in the 1970s—far removed from their glory days. At the point of a serious market recession, the interesting question to ask is what new leading industrial sector will emerge? Unfortunately this

is difficult to predict. It is not the 'known quantities' that are going to constitute a new sector. If they did, how easy it would be to foretell the future. But, in reality, it is what is least known that is most important. From the standpoint of the unknowable future, capitalism's 'new wave', whatever it proves to be, will not be 'green technology', the pop economics obsession of 2008.[3] Versions of that neologism have been commonplace since 1973 when the economist E.F. Schumacher (1911-1977) published his influential volume of essays *Small Is Beautiful*.[4] Schumacher, a young protégé of Keynes, was deeply influenced by Catholic mysticism. While the intuition of the mystic is arguably a better cognitive model than rationalist prediction when dealing with the tricky matter of social creation, Schumacher's insight was original in the 1970s, not today. Whatever will form the leading economic sector thirty years onwards from 2008 is unknown and is only now being conceived in obscurity. What it is that makes such a thing possible is the uncanny conjunctions of the imagination. Such conjunctions are like the punch lines of great jokes. They are not predictable. They are not warmed-over clichés like 'the green automobile'. [5] When personal computers first appeared, the typical reaction was that 'they won't catch on'. Most observers did not say—'oh let's trade in the mainframe computer for the PC'. IBM certainly didn't say that, and it nearly destroyed the company. Similarly when technology becomes a favourite of public policy ('a computer on every school child's desk') it is already closer to being a sunset than a sunrise industry.

New industry sectors provide the basis of sustained periods of economic and social prosperity. Orthodox policy instruments like state taxes or budgets play relatively little role in economic innovation. Cities and regions are much more central to such innovation, a point made very clearly by the urban economist Jane Jacobs (1986, 1969) and, later on, by the urban sociologist, Richard Florida (2002).[6] One case bears this out strikingly. The most robust economy in the world after the 2008 global slump was Australia's. In 2009, it held the rate of unemployment to 5.8% and the economy grew in the first two quarters of that year (Uren & Hohenboken, 2009). In comparative terms, this was remarkable. It was the result of three factors: a flexible *national* labor market, *global* export growth, and powerful *local* urban economies. This was an economy that displayed strong 'glonacal' characteristics.[7] It fused global-export, national-flexible, and local-urban features in efficacious and uncanny ways. Firms reduced labor hours (thereby reducing the unemployment rate), low interest rates compensated for the income loss represented by flexible lower working hours,

the international demand for natural resources and Australian undergraduate higher education places (Australia's number three export industry) remained high, and Australia's urban economies continued to be a powerful source of demand.[8]

Public policy is a contributor, but only one contributor, to long-term economic well being. Australian national economic policy through the years of the Hawke-Keating (1983-1996) and Howard-Costello (1996-2007) administrations explains in part, but only in part, the capacity of the country to withstand the worst of the economic downturn in 2008. Policy-makers de-regulated the labor market and re-regulated the universities. Such policies, though, were meaningless without the support of flexible firms, first-class urbanism, and internationally-focused universities. This combination laid the foundation for the emergence of Australia as the 'Switzerland of the Asia-Pacific'. But, like everywhere else, these developments still begged the question of 'what next'. We will know the answer to that question in thirty years time. Much about creation can only be understood in retrospect. We understand the future by its past. All industry sectors, we know, eventually mature. That will apply to Australia's higher education export industry. Higher education for export became Australia's prime 'new industry sector' as the country emerged from the 1980s. It became Australia's answer to Silicon Valley. It was not clear at the time that this was the case, and the extent of the growth of this new sector only became widely understood as late as the 2000s. By 2009, Australia, with a population approaching twenty-two million people, had a half million foreign students in residence.[9] Conversely the sector was showing distinct signs of maturation and the inevitable strains that accompany sector maturity.[10]

When the education export sector reaches maturity, what will then serve as the new quinary industry sector? What will supplement, and in part succeed, the quaternary information, education, research and development (IERD) sector? The most that we can reliably predict, based on past experience, is that cities and city-regions will continue to be the crucible of new sector creation.[11] They are the point of intersection of art, science, production and distribution. Perhaps, given the speed of state-directed urban creation that we see in China and elsewhere, the template-like 'manufacture of cities' might even emerge as the quinary sector of the future. Yet, in spite of the fact that we can imagine such a thing, the workings of large-scale urban economies remain far from fully understood. This is in part because, in their case, economic factors are invariably overlain with aesthetic factors. In urban economies,

aesthetic, design and taste cultures intersect powerfully with housing and infrastructure demand. The discipline of cultural economics that might explain this remains undeveloped. The mutual suspicion of art and economics doesn't help this state of affairs. This suspicion applies even to economists with bohemian connections like Keynes. John Maynard Keynes' view of economies echoed that of Edwardian elites—namely that capitalism was a failure which proved itself only insofar as it generated wealth for Bloomsbury-style art. That art was intrinsic to modern capitalism was inconceivable for elites raised in pre-capitalist cultures, as it is equally for elites steeped in post-nineteen-sixties anti-capitalist cultures of complaint.[12]

A cultural economics would explain the relationship between the arts and sciences on the one hand and economies on the other hand. The city, historically, has played the key mediating role in this relationship. Cities do several things. First they are the place where the arts and sciences flourish. Second, they create aesthetically-mediated demand. Third, they introduce science into everyday economic and social life through technology. Modern economies grow through aesthetically-mediated and technologically-mediated demand. Art and science do not create this demand directly. Rather their works are conveyed in a series of steps from artistic and scientific discovery through various institutional media, notably universities, galleries and laboratories, and then via firms and organizations, into the familiar products, processes, forms and artifacts of daily social and economic life. The chain of discovery-innovation-firm-organization-product-process-artifact is a long one. It is also one that is not continuous. Entropy commonly happens at all points along this chain. Correspondingly, established markets and firms play little role in the creation of new industry sectors. Schumpeter observed that it is new firms at the leading edge of new industries that are the core of capitalist innovation. Or, as he quipped, *add as many mail coaches as you please, you will never get a railroad thereby*.[13] These new firms are created by entrepreneurs, a class of business leaders who notably are distinct from both owners and managers of business. The business class of entrepreneurs is perhaps best understood in terms of what the philosopher Hannah Arendt called 'action' (1958). Action is the human capacity to initiate and lead—to bring things into the world. The business class of entrepreneurs create new firms that create new types of goods, technologies, markets, supply chains, and forms of organization that provide the basis for new industry sectors.

Innovation and Invention

In the wake of *The Theory of Economic Development*, much of the most interesting work of twentieth-century economists was devoted to rethinking the neoclassical formula that land, labor, and capital are the key factors of production. In the nineteenth century, Alfred Marshall already had added 'organization' to the neoclassical list. Information, knowledge, technology, cities, arts and sciences followed Schumpeter's theory of the role of the entrepreneur. Fritz Machlup (1902-1983) and Robert M. Solow (1921-) observed respectively that information and technology were as important factors of production as the trinity of land, labor and capital.[14] Machlup was a friend of Hayek's from their days at the University of Vienna; Solow was briefly a student of Schumpeter at Harvard University and later a close associate of the great American Keynesian economist Paul Samuelson, another of Schumpeter's students. Machlup coined the term 'the information society' and by the end of the twentieth century, Machlup and Solow's ideas had spawned the popular notion of the knowledge economy, which crystallized for understandable reasons in the wake of the rise of the information technology industries. As California's Silicon Valley grew into an economic powerhouse, the literature on knowledge economies ballooned. One of the central institutions of the knowledge economy was the university. Both Machlup and Solow were cited by Daniel Bell in 1973 when Bell prophesized 'the coming of the post-industrial society'. One of Bell's many canny observations concerned the central role of the research university in post-industrial societies. The research university played an economic and ideological role similar to the church in medieval society. The sociologist's prognosis would eventually be echoed by professional economists. Indeed such was the popularity of this idea that the American liberal political economist Jeffrey Sachs in 2005 even included the funding of universities, laboratories and research as a key developmental step for nations seeking a way out of poverty.[15]

Schumpeter was more cautious. When he wrote his classic work in 1911, he was well aware of the role that the arts and sciences played in modern economies. Indeed the theory of the arts and sciences as an economic driver goes back to eighteenth-century philosophers and political economists like Nicolas de Condorcet (1743-1794).[16] They observed the centrality of inventive knowledge ('the advancement of the arts and sciences') to modern capitalism—in the same way that Adam Smith had noted the key part that 'foreign commerce' cities play in dynamic

economies.[17] Yet Schumpeter also drew a distinction between innovation and invention. Innovation was the function of the entrepreneurial class. Invention was the responsibility of the creative class. There was a division of labor between the two. Schumpeter noted that it was not part of the role of entrepreneurs to find or create new possibilities. 'These are always present, abundantly accumulated by all sorts of people. Often they are also generally known and being discussed by scientific or literary writers.'[18] The function of the entrepreneur was not to find or create 'the new thing' but rather to lead others to accept or adopt it. This was not a division of labor between business on the one hand and the arts and sciences on the other. Schumpeter was very aware that leadership was just as important in the arts and sciences as it was in business, and that the acceptance of significant new ideas is just as difficult in a university as it is in a company, possibly more so. He observed that the history of science is one great confirmation of the fact that individuals find it exceedingly difficult to adopt a new scientific view or method.[19] So, by Schumpeter's own hands, his carefully-crafted distinction between invention and innovation begins to break down. As in all of the great works of creation, there is instability at the heart of things. Identities generate distinctions, and distinctions generate identities. That is the very nature of the process of creation that Schumpeter was trying to understand.

Interestingly, Schumpeter thought that innovation was a more difficult thing to achieve than invention. This is because innovation is the enemy of habit. Habits, including the habits of thinking, are very efficient. Rather than having to consciously think through every thing that we do, we form habits and act subconsciously on them in a time-efficient manner. One cost of this, though, is that when someone wants to do something new, the forces of habit rise up—Schumpeter noted—to bear witness against the embryonic project. An entrepreneur is someone who has the will and the drive to wear down the forces of habit, and side-line those who cry out that 'this is the way it has always been done'. As a result an entrepreneur must possess a series of distinctive traits: a desire to struggle against well-worn ways, to enjoy getting things done, to seek out difficulties and engage in ventures.[20] What Schumpeter was saying, in effect, was that while Andrew Carnegie (1835-1919) invented the idea of the vertical integration of a company, without the ability to impress that idea on his associates, and wear down their opposition to it, his idea would have meant little. He would never have reaped a massive fortune from the steel business. While this is true, the converse also applies. For the inventor—the creator—also must struggle mentally

against well-worn ways, enjoy getting things done, and seek out difficulties or engage in ventures. Thus, in the end, Schumpeter's distinction does break down. Invention and innovation share common characteristics.

Appositional thinking

Given the number of times words like 'new', 'change' and 'innovation' occur in his work, it may be a surprise to note that Schumpeter described himself as a conservative. It is certainly surprising insofar as the role of the entrepreneur is to struggle against ingrained habit. One of the definitions of being conservative is to stand for habit against change. But just as most of the revolutionaries of the modern age created systems of sclerotic reaction, perhaps it is less surprising that Schumpeter the self-declared conservative also became the prophet of innovation. This is like the Big Bang, the moment of the creation of the universe, when nothing switches into something. If habit is the first economy of the human species, a recipe for the efficient use of energies, then habit turned against inefficiency ends in becoming a powerful force for change. If that is a paradox, then so is the act of creation that allows economies to defy stasis and grow.

Everything is its opposite. In that idea lies the core conception of creation. Schumpeter once said that he had long planned to write a book on conservatism. If he had written it, it might have begun with a meditation on the idea of value-free science. The words 'value-free' tend to be met with bemusement by social scientists today. But Schumpeter thought of value-freedom in an interesting way. A value-free science was a science that embodied all of the contradictory values of a society—by being one step removed from them. That was conservative in the sense that the conservative is, in a subtle manner, a sharp critic of all forms of ideology. Schumpeter belongs to a class of twentieth-century intellectuals and writers that includes G.K. Chesterton, Evelyn Waugh, Marshall McLuhan, Kenneth Burke, Saul Bellow, Daniel Bell, Hannah Arendt, Agnes Heller, Christopher Lasch, Cornelius Castoriadis, Roger Scruton, Christopher Hitchens, John Carroll, and Peter Berger. Each one of this group defies simple ideological classification. Some began, but none ended their intellectual careers as socialists or liberals ordinarily understood. Some were not camp followers even to begin with. Often they are best identified not by any kind of 'ism' at all but rather by a tone that either is wry, ironic, comic or skeptical. Tone replaces ideology. It is notable that many among this group either wrote comic works or else wrote

books or essays about comedy.[21] Arthur Koestler, in his illuminating treatise on the creative act, *The Act of Creation* (1964), observed at great length the structural parallel between comedy and creativity.

A person can be a conservative of the left as well as the right. That is not incongruous for the very nature of the conservative is to deal in incongruities. Wry tone rises above the bellows of modern politics. Or as Chesterton put it so well: 'The whole modern world has divided itself into Conservatives and Progressives. The business of Progressives is to go on making mistakes. The business of the Conservatives is to prevent the mistakes from being corrected.'[22] The aspiration to be free of the hum-bug of ideology, including the hum-bug of conservatism, might be another way of understanding Schumpeter's sense of himself as a conservative. He promised for a long time to write a book on conservatism, but didn't, which might be the best kind of book on the topic. The attitude of the conservative is one of dry humor. It is marked by a gleeful insistence in deviating from any right direction in thinking. It is executed in witty observations that deliver up unexpected twists and turns. Or in the screwed-up face that signifies impatience, disgust, or discomfort with human folly. The conservative and the humorist deal in ways of marrying incongruities. This might appear to be a useless talent excepting that the most successful societies in human history have been riddled with the most amazing contradictions and yet managed them with grace. Here we see explained the conservative prophet of innovation. What Schumpeter shared with other conservatives was an unusual sensitivity to appositions. Appositions are what drive dynamic economies.

Schumpeter's sense of his own self as a conservative was intimately bound up with his view of modern capitalist economies. He observed that what kept those economies growing were periodic bursts of innovation. Fundamental to these spectacular cloud bursts of ineffable creativity was the ability of entrepreneurs to think in new ways about products, markets and organizations. These new ways were always new combinations, unprecedented conjunctions of things that people conventionally thought of as different and unrelated. To achieve this, the mind could not be too partisan or too fixated on one side, one thing, or one approach. Ideology means the fixation on one value or set of values in a world that is subject to multiple and irreducible value currents. Schumpeter wrote generously about Marx and Keynes and Marshall, and many other economists of many different outlooks, because he

understood that great ideas come out of an uncanny confluence of often very contradictory precepts.

The conservative stance is to take a skeptical view of all of these in order to see what can be done with each of them. The underlying impulse is to conserve them all in order to overcome them by marrying them together. Overcoming is not an act of abolition but an act of conjuration that takes opposing qualities and, through uncanny tactics, forges new ideas from old precepts. Andrew Carnegie took the lateral-horizontal-procedural (what today is often called the 'network' idea) of a market economy and fused it with the vertical-hierarchical-personalized forms of the medieval and pre-capitalist imagination that the Social Darwinists, who Carnegie admired, loathed. This may have been very contrary—but it was also, so far as the act of creation was concerned, entirely consistent. Carnegie laid the template, or part thereof, of modern organizations. In the same spirit, it may have been paradoxical that the conservative Schumpeter was the great modern prophet of innovation, but this was for a very good reason. The kind of skeptical conservatism typified by Schumpeter illuminates the dynamism of modern capitalism because it grasps the kind of appositions that make it possible. It is difficult to over-estimate how peculiar these appositions are.

Appositional thinking is helpful to explain the dynamic mutating forms of successful modern societies and economies, without falling into the trap of idolizing pyrrhic fashions. The cult of the new is conspicuously mindless. Ironically, it requires a conservative instinct to explain innovation. What matters in acts of creation is not so much what is new, which often is uninteresting, but rather the surprising takes on what is old.[23] That in a nutshell is the problem of the creative economies. They exist, but what drives them is difficult to identify, let alone to subject to public policy prescriptions. The simplistic equation of 'the new' and 'the creative' can be very misleading. Schumpeter was the first to distinguish between creative industries and mature industries. Creative industries appear dramatically, as if out of nowhere. They capture appositions, unlikely combinations of ideas that are seized upon by mercurial entrepreneurs. Eventually with the passage of time, creative industries slow down, as invention idles and innovation turns into convention, and the profits of innovation decline. But at their peak, these industries race ahead on the back of startling ideas. They prove themselves to be much more dynamic than other industry sectors. There

is always an element of 'the new' in this. But one should also be wary of overstating the significance of the new.

As Schumpeter often observed, creation comes through the unlikely combinations of what exists. The word 'unlikely' is important. The unlikely character of protean combinations requires exceptional insight. The act of conjuration underlying them is very unusual. Terms like progress, contemporary, modern, up-to-date and so on are not always very helpful in understanding these conjurations. Words like these point to the temporal dynamic of creation but what they screen out is the appositional structures of innovation and invention. It is not time that explains creation but rather the finding of similarities in what is dissimilar. Creation connects the unconnected. This is a process that is much closer in nature to poetic analogy than it is to social progress. The assembly line radically changed the methods of industrial production. Henry Ford's car assembly technique had a very significant impact on the organization of labor in the twentieth century. Someone sometime along the way looked at the dis-assembly techniques used in the Chicago slaughter houses and meat packing plants of the late nineteenth century. Not every person's way of looking at things is the same. Someone looked at the dis-assembly line and imagined it in reverse where the parts of the animal were not pulled apart but were put together, this time as an automobile. Later in the 1960s, Andy Warhol, who grew up in then industrial Pittsburgh, reworked this idea into 'the Factory', a multi-medium, output-driven art loft studio in New York City. This in turn was echoed in the early twenty-first century business model of the 'art firm'. From the slaughter house to the aesthetic company, we see the analogical power of the mind at work. The analogy drawn is not a literary one per se, but it is no less powerful for that.

Creative achievement in real terms

One of the great laboratories for understanding the 'breath of capitalism'—the diaphragm-like growth-and-recession pattern of modern capitalist economics—is the 1980s. That period illustrates a number of very Schumpeter-type issues—the role of ideas-production in economic life, and the very interesting matter of where those ideas come from. The 1980s saw the start of what became known as 'post-industrialism'. Post-industrialism was an imperfect term. It implied that the driving forces, the catalysts, of this era were fundamentally different from the industrial age, whereas in fact it is the symptoms of what those catalytic forces produced that was

different. New information and communication technologies saw the rise of new industrial sectors. That was spectacular in its way, but it was not different in ultimate type from what had created a previous series of leading industrial sectors and that had driven capitalist economies since the latter part of the eighteenth century. In every case, the driver was the application of ideas to production, or perhaps more precisely the new ways of conceiving goods, markets, and organizations. New in this case always meant contradictory or uncanny ideas—like the idea of a soft industry or an item of soft ware as opposed to older notion of hard ware, or the imagining of a computer as something personal rather than institutional.

This is at the point where we see Schumpeter exceed all of his students. The best of them grasped that knowledge, information, technology—all of those iconic words that defined the tail end of the twentieth century—were metaphors for the act of creation. Schumpeter, however, saw that creation was an act of metaphor. He saw that words like soft or hard, industrial or service were not just metaphors for economies, but that the engines of economies were metaphors. He was not suggesting that economics was a kind of literature, but rather that the serious entrepreneur and the serious artist, both rare birds, were comparable in nature. Science, technology, the social sciences, and so on, are important to economies not just because they invent useful, expedient and efficient ways of doing things, but because they are capable of harnessing the act of thinking which, at its core, where it is most powerful, is metaphoric. A metaphor is a combination, and as Schumpeter repeatedly observed innovations come out of combinations. When innovations are in the phase of discovery, they emerge out of metaphors. Even the most utilitarian innovation is poetic in its origins.

1980 was a very depressing year in the United States. Inflation was running at 13% and the unemployment rate was 7.8%. The economy was in deep recession. The old power-house industries of the American Mid-West had become rust-belt industries. Once the epitome of industrial power, dynamism and innovation, they were now mature or over-mature industries struggling to avoid bankruptcy. America elected Ronald Reagan as President (1981-1988). The 1980s saw America return to economic prosperity. In 1989, inflation was 4.0% and unemployment 5.4%. The official policy prescriptions of the Reagan era were neo-liberal, small-government policy inspired by the theories of Friedrich Hayek, Milton Friedman, and Arthur Lafter. But in fact government spending per capita continued to rise throughout the

Reagan years as did government deficits and government debt. Spending to win the Cold War drove this, as did the fact that the conservative Reagan had a large streak of liberalism in his soul. He was a man of interesting contradictions. He had begun political life as a Democrat before switching to the Republican Party. Personal income tax fell dramatically in the Reagan years, but Social Security taxes rose. Reagan was a man with a grasp of the economics of laughter. He promised that as taxes went down, tax revenues would rise. Liberal economists guffawed. But, in truth, economic policies often have quantum effects of this kind. As Austrian Finance Minister, Schumpeter had experienced that reality at close quarters, and the experience of it had made him skeptical of the efficacy of public policy.

What really made the Reagan years an economic success story was the beginning of the rise of the new information and communication (ICT) industries that would transform the face of the American economy. The genius of the Reagan Administration was to do nothing to throttle this new industry sector in its crucial early phase of growth. The ICT industry followed a classic Schumpeter script. It emerged from the heat of recession. It was pioneered by entrepreneurial figures (Bill Gates, Michael Dell, Steve Jobs, etc.). It generated super-profits. It developed separately from existing industries and firms. Yet its technologies and methods of organization spread to existing industries and firms, transforming them. Then gradually it ran out of creative energy. Its pioneering figures lost interest in innovation. They took their profits, and turned to social activism and philanthropy. Gates became the Carnegie of his time. As Schumpeter might have observed, it's a pattern; it's been done before. As the ICT industry took off, sociologists began to talk about 'post-industrialization'. But in fact looking backwards, the emergence of the digital communications sector was part of the normal process of industrial capitalism at work. What happened in the 1980s was one of the periodic re-energizing phases of modern capitalism as a new and unpredicted industry sector took off. American GNP per capita, in Year 2000 dollars, rose from $22,346 in 1982 to $27,514 in 1988.[24] In 1974, 1975, 1980, and 1982 U.S. real GDP per capita had actually fallen. It rose steadily thereafter through to 2008 with the exception of 2001. In 2008 it stood at $38,262 in Year 2000 dollars.

Universities played a part in the ICT-fueled resurgence in the 1980s. But, as in the case of all invention, the number of university actors was very small. Discovery in a measurable sense is overwhelmingly the preserve of a small number of research

universities, and a small number of professors and graduate students from those institutions. The decisive fact about research, as about culture creation generally, is that it concentrates. The rise of the ICT industry illustrates this perfectly. The principal technology building blocks of ICT were devised by a very small cohort of professors and PhDs from the universities of California, MIT, Harvard, Brown, Stanford, Illinois, Duke, Washington, and Oxford, along with contributions from the IBM, RAND, and BBN corporations, the Swiss CERN lab, and the US Defense Department's Advanced Research Projects Agency.[25] This high level of concentration is characteristic of invention generally across the arts and sciences. As Daniel Bell noted in 1973, 100 of the 2,500 accredited colleges and universities in the United States—or 4% of the total—carried out more than 93% of higher education sector research.[26] And of that tiny group, 1% of them—21 universities—carried out 54% of the total of the sector's research output, and 10 universities were responsible for 38% of the total research output. Today there are 2,618 accredited four-year colleges and universities in the United States.[27] In 2009, The Carnegie Foundation for the Advancement of Teaching classified 96 universities as 'research universities with very high research activity', essentially the same as Bell's 1973 figure.[28] If we look at the top twenty research universities in the world today, defined by output and citation, we find that not only are they all American universities, but that they are concentrated in specific geographical locations, principally on the Eastern and Western Seaboards of the United States and around the Great Lakes, and in the orbit of major nodal city-regions, some border-hoping.[29] New York City and Boston together with the strips and arcs connecting Los Angeles-San Diego, San Francisco-San Jose, Madison-Chicago-Detroit-Toronto, Portland-Seattle-Vancouver, and Baltimore-Washington DC-Durham-Atlanta are especially prominent. The Houston-Austin-Dallas-Tampa-Miami arc might one day be competitive with the others.

Research, and culture creation generally, not only concentrates in space but also in time. The rise of the ICT industries was a notable phenomenon in the second half of the twentieth century. But it was neither the most measurably creative period in American history nor was it time-unlimited. Per capita rates of copyright and patent registrations are a good indicator of national innovation. In the case of the United States, the peak year for patents registered per capita in the United States was 1916.[30] The rate trended downward till 1985 where it stood at 50% of the 1916 peak. It rose again, as would be expected, in step with the information technology boom from 1985

to the present day. But even at its renewed highest in 2005 it was still only 95% of the 1916 per capita figure. Notionally American registrations of copyrights per capita slightly increased between 1900 and today but only because the number of categories of copyrightable objects increased markedly in the same period—meaning that copyright registration per capita in real terms actually fell. The decades from 1890 to 1910 appear to be the peak time for copyright creation in the United States once we take into account the increase in copyrightable objects during the twentieth century.[31] In 1871, 12,688 copyrights were registered in the United States which had a population of 38 million.[32] That is the equivalent of 0.03 registrations per 100 Americans. In 1900 that figure had risen to 0.13. In 1925, it was 0.15, 1950, 0.14, 1978, 0.15. After this plateau, it rises in 1988 to 0.23, and then falls away again to 0.20 in 1994, then 0.18 in 2000 and 2007. Not only had the figure per capita risen only marginally in a hundred years, but in the period since 1900 many new categories had been added to the schedule of protected works.[33] In spite of all the additional copyrightable works that this represents, copyright productivity per capita expanded negligibly in a century. In real terms, in effect copyright activity shrank. As with patents, the peak of copyright registrations in real terms occurred at the turn of the century, around 1907, with 0.14 registrations per one hundred Americans.[34]

'Creativity' became a buzz-word in the later part of the twentieth century. The rise of the ICT industries encouraged this. Policy makers rushed to embrace labels like the knowledge economy, the information society, and the clever country. Universities hopped on the bandwagon. Yet there is little evidence that the late twentieth century was especially creative. In retrospect, the rise of a new industry sector is not something extraordinary. It is rather the norm of modern capitalism. That is how industrial capitalism functions, as Schumpeter reiterated ad nauseam. Without such invention, we are all dead. Why should we regard it as special? The evidence from copyright and patent registrations is that there was no explosive moment of innovation in the late twentieth century, even if ICT did manage to recover a badly faltering technology momentum that had reached a bleak bottom during the 1970s.

Achievements in fundamental discovery are even less impressive when we step back and look at them in historical perspective.[35] Per capita measures of fundamental discovery in Europe and North America strongly suggest that the golden age of the visual arts was between the mid-1400s and mid-1500s with a second peak in the mid-1600s. Music creation peaks in the early 1700s and sustains a moderate

high through to the middle of the 1800s. Western literature peaks in the early 1600s and again in the middle of the 1800s. Scientific creativity peaks in the later 1600s and then again for a remarkable period from the mid 1700s to the late 1800s. Huebner calculated that high-level technology discovery peaked in 1873.[36] Similarly after 1870, the rate of major achievement—that is, the number of outstanding figures, works and events per capita, in the United States and Europe—in mathematics, visual arts, and literature also declines.[37] There were some countervailing trends: an upswing in the number of significant figures (though not works and events) in literature, science, and visual art from 1900 to 1920 and an upswing in technology advances in the period 1920 to 1950. The film arts flourished in 1940s and 1950s, as did recorded music from the mid-1960s to the mid-1970s. But overall since 1870 there has been a long-term downturn in creativity.

The economics of laughter

The dynamic of creativity in the last 140 years has trended down with punctuated upswings. In the United States, the turn-of-the-century, the late 1920s and the late 1980s were relative high spots. The presidential eras of Theodore Roosevelt (1901-1909), Calvin Coolidge (1923-1929), and Ronald Reagan (1981-1988) were the most creative in the American twentieth century.[38] This pattern of punctuation, though, poses an interesting conundrum. In the last 50 years the overwhelming majority of academics in American research universities have identified with the liberal wing of the Democratic Party.[39] Yet the peak of American creation in the last 100 years occurred during Republican presidencies.[40] Very few American researchers or cultural figures today would identify with Teddy Roosevelt, Calvin Coolidge or Ronald Reagan. Most would bleach at the very thought of that. Yet such a thought may help us better understand one of the primary social conditions for creativity. Dean Keith Simonton posed the interesting question: what social factor most strongly correlates with periods of peak creation in societies generally? The answer that he drew from extensive historico-metrical data was, in a nutshell, political decentralization—the division of an overarching political world into autonomous states.[41] Correlated with this is the phenomenon that Philip Tetlock and his colleagues dubbed integrative complexity—the ability to tolerate ideological polarities and synthesize them.[42] High-functioning enigmatic political regimes—ones that internalize high levels of opposing views and yet at the same time exhibit high levels

of integration of those competing perspectives—are crucibles of peak creation.[43] A society that can cope with opposition at the same time as it can function in an integrated manner is a society that is able to meld incongruous values into a rich uncanny culture. On paper such a culture might be expected not to work. Yet in practice such cultures can and do work—wonderfully.

The ancient and Renaissance city states are classic examples.[44] The federal-state forms and distinctive city-regions of the United States resemble them in a structural sense.[45] However structural patterns, no matter how powerful, do not in themselves explain the conundrum of why it is that creative peaks in the United States correlate with Republican presidencies. This historical pattern contradicts the common assumption that liberal culture best supports research. Tetlock's conclusion that moderate liberalism best aligns with cognitive complexity is widely cited, though the underlying studies do have their critics.[46] Sometimes in these kinds of matters, especially where the interpretation of data is contested, it is worth going back to basics. About one thing at least there seems to be consensus. A defining characteristic of the imagination is that it comprehends things simultaneously in multiple dimensions. The imagination is ambidextrous—and integrative complexity, like value freedom, is an expression of that. But the very condition of multi-dimensionality begs serious questions about the equation of liberalism and complexity. The psychologist Jonathan Haidt conducted a number of survey studies. From these he concluded that liberals are politically responsive on the dimensions of protection/care and fairness/reciprocity—a commonsensical conclusion.[47] He observed that the same applies to conservatives but that conservatives are also responsive to three further dimensions: in-group/loyalty, authority/respect, and purity/sanctity. If the integration of dimensions is a key indicator of imaginative thinking, which very likely it is, then the conservative curiously has an edge over the liberal. It might be countered that the values of order or authority (for example) are not valid values but that then defines complexity out of the equation of integrative complexity. The imagination *stretches* to integrate contrary dimensions. Can a high-functioning contemporary society be 'Millian' without being 'Durkheimian' at the same time? Can such a society function without an ironic, even comic, relation to what to the great American sociologist Talcott Parsons called the AGIL dimensionality of modern society—the adaptive (economic), goal-orientated (political), integrative (normative), and latent pattern maintenance (cultural) aspects of these societies?[48]

Ambidextrousness and paradox are characteristics of strong cultures, and strong cultures in their turn are the principal drivers of knowledge.[49] Comedy and tragedy are iconic forms of strong culture. They meld the antithetical and incongruous. Shakespeare imagined history in this way.[50] Shakespeare could be cutting toward rebels yet damning of tyrants in same breath. The vocation of science that Max Weber appealed to is similar in nature. Its key tenet, value-freedom, is double-edged in the same way that history and tragedy and comedy are. The double-edge of creation exhibits itself in paradoxes—in which nothing is something, division and integration are identical, reduced taxes mean greater tax revenues, cats are simultaneously alive and dead in the thought experiments of science, and warfare economics coexists with welfare economics. Without Eisenhower's Advanced Research Projects Agency and the Cold War, the Internet—the research medium par excellence—would not exist. The military-industrial economy stands to the welfare economy as Spencer Dryden's bed-rock martial drum-beat does to Grace Slick's possessed singing on Jefferson Airplane's 1967 classic hippie-psychedelic masterpiece 'White Rabbit'.[51] As Californian Governor, Ronald Reagan had many testy battles with the 1968 generation of students and faculty at the University of California. Confronted on one occasion by protestors carrying banners saying 'Make love, not war', he quipped that they probably didn't know how to do either. Yet for of all Reagan's impatience with the baby-boom generation, it was his successor—the ascetic Democrat Jerry Brown—who slashed university budgets and made professors teach longer hours, while Reagan's America saw a jump in R&D spending as a share of GDP from 2.1 % in 1979 to 2.7 % in 1984. It has remained around that level ever since.[52]

The lesson of this is that, sometimes, your worst political enemy is in fact your best friend. Lessons in irony, in principle, should find a ready audience among researchers. After all, in matters of the mind nothing is more profound than the economics of laughter. What most becomes the human imagination is wit, and the brevity of wit is the mind at its sharpest. Yet while much is said in theory in the defence of irony, wit and paradox, in practice earnestness and complaint are often allowed to brush them aside. The dangers of that are not political. The ideology of researchers has a miniscule impact on politics. Researcher bias is like media bias. It has inconsequential effects on the political system. Journalists might be a very liberal cohort, but elections are not decided by that. As Paul Lazarsfeld (1901-1976)

concluded in the 1950s, the media has a weak influence and minimal effects on the political system.[53] Universities have even less influence on the political system. However, arguably, the political system or more precisely political symbolism has a significant influence on the universities. This influence may not always be positive. Max Weber observed the stifling effect that politics can have on research.[54] This is not because politics is capable of controlling the life of the mind. The ancient Greek Stoics already knew that was nonsensical. You can imprison my body but not my mind. Much more important are the subtle and indirect effects of political atmospherics. Certain common styles of politics have a sullen effect on the mind. These styles are ideological, moralistic, and non-ironic. They exhibit few signs of integrative complexity. They inspire priggishness and pomposity. They lack value-freedom and the kind of wit that accompanies it. The joke like the metaphor transports us from one idea or one value to another. Wit and analogy are conducted by the twists, turns, leaps and jumps of the imagination.[55] The act of imagination—the act of creation—causes us mentally to 'switch' sides. This is something that is indispensable to the scientist who is able thereby to imagine light as a wave and a particle simultaneously. It is not amenable, though, to the political ingénue who feels a deep urge to 'take sides' without any sense of irony. One wonders whether the triumph of the ingénue is reflected in falling rates of discovery and innovation measurable in copyright and patent registrations per capita and in the long-term decline in the production of great works per capita over the past 140 years in most areas of the arts and sciences. If so, the absence of laughter might turn out to be no laughing matter after all.

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List of references

Alvarez, G.C. (2009) *Study of the effects on employment of public aid to renewable energy sources*. Instituto Juan de Mariana, Universidad Rey Juan Carlos. http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf Accessed 6 October, 2009.

Arendt, H. *The Human Condition*. Chicago: University of Chicago, 1958.

Bell, D. (1996 [1976]) *The Cultural Contradictions of Capitalism*. New York: Basic Books.

Bellow, S. (2001) *The Adventures of Augie March*. Introduction by Christopher Hitchens. London: Penguin.

Berger, P. (1997) *Redeeming Laughter: The Comic Dimension of Human Experience*. Berlin: Walter de Gruyter.

Boldrin, M. & Levine, D.K. *Against Intellectual Monopoly* (Cambridge: Cambridge University Press, 2008), p. 100.

Burke, K. *On Symbols and Society* (1989) J. R. Gusfield (ed.) Chicago: University of Chicago Press.

Carlsson, B., Acs, Z.J., Audretsch, D.B., and Braunerhjelm, P. (2007) 'The Knowledge Filter, Entrepreneurship, and Economic Growth', *CESIS Electronic Working Paper Series*, Paper 104. http://www.infra.kth.se/cesis/documents/WP104.pdf Accessed May 15 2009.

Carnegie Foundation for the Advancement of Teaching (1989) *The Condition of the Professoriate: Attitudes and Trends*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.

Chen, S. (2009) 'Dirty Reality Behind Solar Power', *South China Morning Post*, September 10.

Chesterton, G.K. (1924) 'Column' *Illustrated London News*, 19th April.

Colebatch, T. & Lahey, K. (2009) 'Melbourne's population hits 4 million', *The Age*, September 23.

Davis, P. (2007) *Shakespeare Thinking*. London: Continuum.

Florida, R. (2002) *The rise of the creative class*. New York: Basic Books.

Graham, J., Haidt, J., and Nosek, B.A. (2009) 'Liberals and Conservatives Rely on Different Sets of Moral Foundations', *Journal of Personality and Social Psychology*, 96, 1029-1046.

Gruenfeld, D.H. (1995) 'Status, ideology and integrative complexity on the U.S. Supreme Court: Rethinking the politics of political decision making', *Journal of Personality and Social Psychology*, 68, 5-20.

Haidt, J. (2008) 'What makes people vote republican?' *The Third Culture*, 9 September. http://www.edge.org/3rd_culture/haidt08/haidt08_index.html Accessed August 10, 2009.

Haidt, J. (2009a) 'Conservatives Live in a Different Moral Universe—And Here's Why It Matters' *Mother Jones*, April 27, 2009. http://www.motherjones.com/politics/2009/04/conservatives-live-different-moral-universe8212and-heres-why-it-matters Accessed August 10, 2009.

Haidt, J. and Graham, J. (2009b) 'The planet of the Durkheimians, where community, authority and sacredness are foundations of morality' in J. T. Jost, A. C. Kay and H. Thorisdottir (Eds) *Social and Psychological Bases of Ideology and System Justification*. New York: Oxford University Press, 371-401.

Hall, P. (1998) *Cities in civilization: culture, innovation and urban order*. London: Weidenfeld & Nicolson.

Hambridge, J. (1967) *The Elements of Dynamic Symmetry*. New York: Dover Publications.

Hamilton, R.F. and Hargens, L.L. (1993) 'The Politics of the Professors: Self Identifications, 1969-1984', *Social Forces* 71:3.

Heller, A. (2005) *Immortal Comedy: The Comic Phenomenon in Art, Literature and Life*. Lanham, MD: Rowman and Littlefield.

Heller, A. (1982) *A Theory of History*. London: Routledge and Kegan Paul.

Huebner, J. (2005) 'A possible declining trend for worldwide innovation', *Technological Forecasting & Social Change* 72, 980–986,

Hitchens, C. (2004) 'Scoop' and 'The Adventures of Augie March' in *Love, Poverty, and War: Journeys and Essays*. New York: Nation Books.

Hughes, R. (1994) *Culture of Complaint: The Fraying of America*. New York: Warner Books.

Jacobs, J. (1969) *The economy of cities*. New York: Random House.

Jacobs, J. (1986 [1984]) *Cities and the wealth of nations*. Harmondsworth: Penguin.

Kenner, H. (1947) *Paradox in Chesterton*. New York: Sheed & Ward.

Klein, D. B. and Stern, C. (2005) 'Professors and Their Politics: The Policy Views of Social Scientists', *Critical Review* 17:3–4, 257-303.

Koestler, A. *The Act of Creation*. New York: Dell.

Ladd, E.C. and Lipset, S.M. (1975) *The Divided Academy: Professors and Politics*. New York: McGraw-Hill.

Lazarsfeld, P., Berelson, F. and McPhee, W. (1954) *Voting*. Chicago: University of Chicago Press.

Marginson, S. (2009) 'Providers rule the roost', *The Australian Financial Review*, 3 August.

Marginson, S. (2007) 'The global positioning of Australian higher education: Where to from here?' The University of Melbourne Faculty of Education Dean's Lecture series, 16 October. http://www.cshe.unimelb.edu.au/people/staff_pages/Marginson/MarginsonDeansLecture161007.pdf Accessed August 10, 2009.

Marginson, S. & Rhoades, G. (2002) 'Beyond national states, markets, and systems of higher education' *Higher Education* 43, 281-309.

Murphy, P. (2009 forthcoming) 'The Limits of Soft Power' in D. Black, S. Epstein, A. Tokita (Eds) *Complicated Currents: Media Production, the Korean Wave, and Soft Power in East* Asia (Melbourne: Monash E-Press).

Murphy, P. (2009) 'The power and the imagination: the enigmatic state in Shakespeare's English history plays' *Revue Internationale de Philosophie* 63:1, 41-64.

Murphy, P. (2006) 'American Civilization', *Thesis Eleven: Critical Theory and Historical Sociology* 81, 64-92.

Murphy, P. (2001) *Civic Justice*. Amherst, NY: Humanity Books.

Machlup, F. (1973 [1962]) *The Production and Distribution of Knowledge in the United States*. Princeton: Princeton University Press.

McLuhan, M. (1936) 'G.K. Chesterton: A Practical Mystic', *Dalhousie Review* 15:4.

Murray, C. (2003) *Human Accomplishment*. New York: HarperCollins.

Parsons, T. (1970) *The Social System*. London: Routledge & Kegan Paul.

Rothman, S., Lichter, S.R. and Nevitte, N. (2005) 'Politics and Professional Advancement Among College Faculty', *The Forum: A Journal of Applied Research in Contemporary Politics*, 3:1, Article 2. http://www.bepress.com/forum/vol3/iss1/art2/ Accessed August 10, 2009.

Sachs, J. (2005) *The End of Poverty: Economic Possibilities for Our Time*. New York: Penguin.

Schumacher, E.F. (1973) *Small is beautiful: a study of economics as if people mattered*. London: Blond and Briggs.

Schumpeter, J. (2008) *The Theory of Economic Development*. New Brunswick, NJ: Transaction.

Scruton, R. (2007) *Modern Culture*. London: Continuum.

Shepherd, G. and Shepherd, G. (1994) 'War and Dissent: The Political Values of the American Professoriate', *The Journal of Higher Education* 65:5, 587-614.

Silverberg, G. and Verspagen, B. (2003) 'Breaking the waves: a Poisson regression approach to Schumpeterian clustering of basic innovations', *Cambridge Journal of Economics*. 27:5, 671-693.

Simonton, D.K. (1984) *Genius, Creativity and Leadership*. Cambridge, MA: Harvard University Press.

Smart, J. (2005) 'Measuring Innovation in an Accelerating World: Review of "A Possible Declining Trend for Worldwide Innovation"' (Acceleration Studies Foundation. http://www.accelerating.org/articles/huebnerinnovation.html Accessed August 10, 2009.

Smith, A. (1970 [1776]) *The Wealth of Nations*. A. Skinner (ed.) Harmondsworth: Penguin.

Solow, R.M. (1956) 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics* February, vol. 70, 65-94.

Suedfeld, P., Tetlock, P. and Streufert, S. (1992) 'Conceptual/integrative complexity' in C.P. Smith (Ed.), *Motivation and Personality: Handbook of thematic content analysis.* Cambridge: Cambridge University Press.

Suedfeld, S. and Tetlock, P. (1977) 'Integrative complexity of communications in international crises', *Journal of conflict resolution*, 21, 169-184;

Tetlock, P. (1998) 'Close-call counterfactuals and belief-system defenses: I was not almost wrong but I was almost right', *Journal of Personality & Social Psychology*, 75, 639-652.

Tetlock, P. E. (1986) 'Integrative complexity of policy reasoning' in S. Kraus & R. Perloff (Eds.), *Mass media and political thought*. Beverly Hills: Sage.

Tetlock, P.E., Bernzweig, J., and Gallant, J. L. (1985) 'Supreme Court decision making: Cognitive style as a predictor of ideological consistency of voting', *Journal of Personality and Social Psychology: Personality Processes and Individual Differences*, 48, 1227-1239.

Tetlock, P.E. (1984) ‘Cognitive style and political belief systems in the British House of Commons’, *Journal of Personality and Social Psychology: Personality Processes and Individual Differences*, 46, 365-375.

Theall, D. F. (2006) *The Virtual Marshall McLuhan*. Montreal: McGill-Queen’s University Press.

Tierney, J. (2004) ‘Republicans Outnumbered In Academia, Studies Find’, *New York Times*, 18 November, 23.

Uren, D. & Hohenboken, A. (2009) ‘Business is booming among cafe society’, *The Australian*, August 07.

Waugh, E. (2000) *Scoop: a novel about journalists* Introduction by Christopher Hitchens. London: Penguin.

Weber, M. (1946) ‘Science as a Vocation’ in H.H. Gerth and C. Wright Mills eds, *From Max Weber: Essays in Sociology*. New York: Oxford University Press, 129-156.

Notes

[1] Schumpeter (2008), 63.

[2] Most of the language of economic equilibrium derives from aesthetics. The case of dynamic equilibrium is no exception. The term was coined by the American artist mathematician, Jay Hambridge (1867–1924). See Hambridge's *The Elements of Dynamic Symmetry* (1967). The paintings by Paul Klee or the architecture of Ludwig Wittgenstein and Frank Lloyd Wright are aesthetic examples of dynamic equilibrium.

[3] From 1997 onwards, Spain invested heavily in 'green jobs'. Each job cost the equivalent of $US800,000 representing the effective loss of 2.2 jobs in other areas of the economy (Alvarez, 2009).

[4] Schumacher (1973).

[5] The following, reported by the *South China Morning Post*, is a classic example of the triumph of green rhetoric over intellectual substance. 'A beaming Tony Blair posed for television cameras holding a sleek, shiny solar panel as smiling officials and film star Jet Li looked on. They announced an ambitious plan to bring modern, clean power to the world's poor. In the next five years, the programme would bring solar -powered street lamps to 1,000 villages in China, India and Africa, where people are so poor they still do not generate any of the greenhouse gases blamed for global warming. The plan was announced at a factory in Guizhou in southwestern China—one of its poorest provinces. But would Blair, the former British prime minister, and Li have been smiling if they had known a factory must burn more than 40kg of coal to produce the panel—one metre by 1.5 metres—they were holding? Forty kilograms might not sound much. But even the country's least efficient coal-fired power plant would generate 130 kilowatt-hours of electricity burning that amount—enough power to keep a 22 watt LED light bulb beaming 12 hours a day for 30 years. A solar panel is designed to last just 20 years. Jian Shuisheng, a professor of optical technology at Beijing Jiaotong University, estimates it takes 10kg of polysilicon to produce a solar panel with a capacity of one kilowatt—just enough to generate the energy to keep a fridge cool for a day. To make that much polysilicon on the mainland would require the burning of more than two tonnes of coal. That amount of coal could generate enough electricity to keep the fridge running for two decades.' Stephen Chen (2009.

[6] Jacobs (1986 [1984], 1969), Florida (2002).

[7] On 'glonacal' structures, see Marginson and Rhoades (2002).

[8] Marginson (2007) notes that 'In 2005 the industry generated $11.3 billion in fees and other spending by students, with more than $4 billion in fees, two thirds in higher education.12 Australia commanded 6 per cent of the world market in foreign students. Education is our third or fourth largest export sector, after iron ore and coal and on par with tourism.'

[9] The number of resident foreign students in Australia doubled in the five years from 2004 to 2008 (Colebatch & Lahey, 2009).

[10] Like all industries, the education export industry had its problems, notable in 2009 with various scandals connected to sub-standard supplies, quality control, security of consumers, and so on. See Marginson (2009).

[11] On the role of cities in the history of creation, see Peter Hall (1998).

[12] On the adversary culture of mid and late twentieth-century cultural elites, see the critical assessment of Daniel Bell (1996 [1976]) and Robert Hughes (1994).

[13] Schumpeter (2008), 64.

[14] See Machlup (1973 [1962]) and Solow (1956).

[15] Sachs (2005), 58, 259.

[16] On the role of knowledge as factor in modern developmental philosophies of history, see Heller (1982), chapter 15.

[17] Smith (1970 [1776]), 483, 502, 506-520.

[18] Schumpeter (2008), 88.

[19] Schumpeter (2008), 86.

[20] Schumpeter (2008), 93-94.

[21] Waugh, *Scoop: a novel about journalists* (2000); Bellow, *The Adventures of Augie March* (2001); Burke, *On Symbols and Society* (1989), 261-267; Heller (2005); Hitchens, 'Scoop' and 'The Adventures of Augie March' in *Love, Poverty, and* War (2004); Berger, *Redeeming* Laughter (1997). G.K. Chesterton's body of work in both fiction and non-fiction is peppered with the comic structure of paradox. Marshall McLuhan was inspired to write by his early encounter with Chesterton. McLuhan published an article on him ('G.K. Chesterton: A Practical Mystic') in the *Dalhousie Review* 15:4, 1936. McLuhan's student, Hugh Kenner, contributed an excellent introduction to Chesterton, *Paradox in Chesterton* (1947). McLuhan built his understanding of communication on brilliant paradoxes like

'the medium is the message', 'the typographical essay', 'knowing is making', 'the mechanical bride' and the 'global village'. He also observed that the good humour needed to enter into fun and games is the mark of sanity and reason. McLuhan was the classic joker intellectual. A conservative Catholic, he was sceptical of moralists and moralism. He combined a love of satire with a joker's intellectual tool kit. He explored paradox by rummaging through mysticism, Pythagoreanism, hermeticism, Modernism, Cynicism, Stoicism, New Criticism, and the heterodox orthodoxy of Gilbert Chesterton's Catholicism (Theall, 2006). McLuhan had a deeply satirical and paradoxical cast of mind. In his view, good communication was a kind of appositional poetics. This was a view shared by many of McLuhan's peers—ranging from the New Critics William Wimsatt and Cleanth Brooks through to Kenneth Burke. This was a tradition of thought enchanted by what McLuhan's Cambridge teacher William Empson once—delightfully—described as 'knotted duality'. It is a state, Empson explained, 'where those who have been wedded in the argument are bedded together in the phrase'. This is a state that, long ago, was recognized by the ancient Stoics. It is the state of antilogy, and its model is the *dissoi logi* or the double argument of the speaker who combines two opposing arguments into a single argument. McLuhan reduced such arguments to brilliant catchphrases. In a larger sense, McLuhan and his kindred spirits exemplify the flourishing of a strand of culture in North America that has its roots in the Renaissance and the Elizabethan world picture. Kenneth Burke (1989) called this cultural current *the comic corrective*. It is fascinated by phrases or scenes that have an agonistic logic. These phrases and scenes anchor sense in the non-sense of self-contradictory mottos.

[22] 'The whole modern world has divided itself into Conservatives and Progressives. The business of Progressives is to go on making mistakes. The business of Conservatives is to prevent mistakes from being corrected. Even when the revolutionist might himself repent of his revolution, the traditionalist is already defending it as part of his tradition. Thus we have two great types—the advanced person who rushes us into ruin, and the retrospective person who admires the ruins. He admires them especially by moonlight, not to say moonshine. Each new blunder of the progressive or prig becomes instantly a legend of immemorial antiquity for the snob. This is called the balance, or mutual check, in our Constitution.' G.K. Chesterton, 'Column' *Illustrated London News*, 19th April, 1924.

[23] As the English philosopher Roger Scruton notes, so many of the great modernist artists of the twentieth century (Stravinksy, Moore, Matisse, and so on) were traditionalists. What makes something original, he suggests, is not defiance of the past or a rude assault on settled expectations, but the element of surprise that a given work invests the forms and repertoire of tradition. Scruton (2007), 45, 82-83.

[24] http://www.measuringworth.org/usgdp/index.php

[25] The key figures were Paul Baran (UCLA Masters in Engineering graduate and RAND corporation employee), J.C.R. Licklider (MIT Professor and Head of the Information Processing Techniques Office at ARPA), Douglas Engelbart (University of California PhD graduate and Stanford University), Theodore (Ted) Nelson (Masters in Sociology, Harvard University), Wes Clark and Larry Roberts (MIT PhD in Electrical Engineering [Clark & Roberts] and chief scientist in the ARPA Information Processing Techniques Office [Clark]), Ray Tomlinson (MIT Masters of Science graduate and employee of the technology company of Bolt Beranek and Newman), Vinton Cerf and Robert Kahn (Stanford University mathematics graduate [Cerf] and ARPANET administrator and MIT graduate (Kahn), Bill Gates and Paul Allen (Harvard University drop outs), Randy Suess and Ward Christensen (Chicago computer hobbyists; IBM employee [Christensen]), Tom Truscott and Jim Ellis (Duke University graduate students), Tim Berners-Lee (Oxford University graduate and CERN, Switzerland, employee), Marc Andreessen and Eric Bina (University of Illinois undergraduate [Andreessen] and programmer [Bina]), Brian Pinkerton (University of Washington graduate student, later PhD in Computer Science), Larry Page and Sergey Brin Stanford University Master of Science [Page] and PhD [Brin]).

[26] Bell (1999 [1973]), 245.

[27] The Association of American Colleges and Universities.

[28] http://www.carnegiefoundation.org/ The difference between an American research university with very high research activity (A) and a regular doctoral-granting university that carries out research (B) is indicated by the following 2009 Carnegie figures based on 2002-2004 data. The mean number of humanities doctorates for A is 45, the mean number of social science doctorates in 38. In comparison, the mean number of humanities doctorates for B is 9 and the mean number of social science doctorates is 10.

[29] MIT, California, Stanford, Harvard, California Institute of Technology, Chicago, Washington, Yale, Johns Hopkins, Columbia, Duke, Michigan, North Carolina, Northwestern, New York

University, Boston, University of Pennsylvania, Washington University St. Louis, Emory, Vanderbilt. This list is based on data from the 2008 Leiden University index of world research universities

[30] The figures cited are drawn from Jonathan Huebner (2005: 984–985) and John Smart (2005).

[31] Copyright registrations today cover a remarkable spectrum of creative works including non-dramatic literary works, works of the performing arts, musical works, dramatic works, choreography and pantomimes, motion pictures and filmstrips, works of the visual arts, including two-dimensional works of fine and graphic art, sculptural works, technical drawings and models, photographs, cartographic works, commercial prints and labels, works of applied arts, and sound recordings.

[32] The figures cited are from the U.S. Copyright Office and the U.S. Census Bureau, Current Population Reports. See also M. Boldrin and D.K. Levine (2008), 100.

[33] Categories added to the US schedule of copyright protected works: Motion pictures (1912), Recording and performance of non-dramatic literary works (1953), Computer programs (1980), Semi-conductor chips (1984), Architectural works (1990), Vessel hulls (1998).

[34] Boldrin & Levine (2008), chapter 5.

[35] Murray (2003), chapter 14.

[36] Huebner (2005). Silverberg and Bart Verspagen (2003) offer a somewhat different medium-term picture but the same long-term conclusion. Their quadratic analysis show a higher level of innovation during 1850-1900 that levels off around 1930, or in the case of patents, 1920. Silverberg and Verspagen's general assessment is that the rate of basic innovation slowed down in the twentieth century after a period of relatively rapid increase in the later half of the nineteenth century. The author's caution about this analysis stemmed from the fact that the data they analysed extended only to the end of the 1970s.

[37] Murray (2003), 312-320.

[38] The history of U.S. copyright registration is graphically represented in the statistical chart in Boldrin and Levine (2008: 100). For U.S. patent registration, see Figure 3 in Jonathan Huebner (2005: 895). For graphic depictions of comparable trends across both the United States and Europe, as it affects major works and inventions, see the charts in Charles Murray (2003: 428, 437, 441).

[39] Ladd and Lipset (1975); Carnegie Foundation for the Advancement of Teaching (1989); Shepherd and Shepherd (1994); Hamilton and Hargens (1993); Tierney (2004); Rothman, Lichter and Nevitte (2005); Klein and Stern (2005).

[40] What about the case of the liberal *bête noire*, the George W. Bush administration? Patent registrations grew dramatically during the Bush years. Compared to the rate of 0.07 registrations per capita in 2004 and 0.09 in 1998, the rate in 2002 was 0.12 and in 2007 had risen to 0.15. The record in copyright registrations was less impressive, with a steady 0.18 registrations per 100 in the same years, compared with 0.20 and 0.21 in 1994 and 1998. Notably the latter figures lag well behind the rates of copyright registration achieved during the Reagan and George H.W. Bush years.

[41] Simonton (1984: 143-146).

[42] Suedfeld and Tetlock (1977: 169-184); Suedfeld, Tetlock, and Streufert (1992); Tetlock (1998: 639-652). The toleration supposed by integrative complexity is more closely aligned with creativity than measures of social toleration that Richard Florida uses in constructing his indexes of creative cities. Interesting as the latter are, they are not epiphenomena of the act of the creation in the same way that the capacity to integrate conflicting cognitive perspectives is.

[43] Murphy (2009 forthcoming).

[44] Simonton (1984: 144); Murphy (2001), chapters 1-3, 5-7.

[45] Murphy (2001), chapters 10 and 11; Murphy (2006: 64-92).

[46] Tetlock (1984: 365-375); Tetlock (1986), Tetlock, Bernzweig, and Gallant (1985: 1227-1239). Critics include Gruenfeld (1995: 5-20). Gruenfeld's key point is that high-low integrative complexity on the US Supreme Court aligns not with liberal-conservative divide but with whether the opinion writer is writing for a Court majority (higher complexity) or a Court minority (lower complexity).

[47] Graham, Haidt and Nosek (2009: 1029-1046). In the article 'What makes people vote republican?' (2008), Haidt reports that: 'In several large internet surveys, my collaborators Jesse Graham, Brian Nosek and I have found that people who call themselves strongly liberal endorse statements related to the harm/care and fairness/reciprocity foundations, and they largely reject statements related to ingroup/loyalty, authority/respect, and purity/sanctity. People who call themselves strongly conservative, in contrast, endorse statements related to all five foundations more or less equally.' See also Haidt (2009a) and Haidt and Graham (2009b).

[48] Talcott Parsons, *The Social System* (London: Routledge & Kegan Paul, 1970).

[49] Murphy (2009 forthcoming).

[50] Murphy (2009).

[51] 'White Rabbit' (Grace Slick), single by Jefferson Airplane from the album *Surrealistic Pillow* (RCA Victor, 1967).

[52] Carlsson, Acs, Audretsch and Braunerhjelm (2007).

[53] Lazarsfeld, Berelson and McPhee (1954). It was Edward Shils, Talcott Parson's collaborator at the University of Chicago, who suggested this line of inquiry to Lazarsfeld.

[54] Weber (1946).

[55] Davis (2007).