

ECSECC Working Paper Series

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Challenge of the crisis

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1 Financial economy, real economy – and innovation

Today's crisis is not just a crisis in the financial part of the world economy. In the West, many dubious innovations have occurred in the financial sector in recent years. Yet that fact in itself reflects the way in which, since the early 1970s, the location of innovation has moved away from the productive base of Western economies toward the financial sector. Indeed even to say that innovation has shifted toward banks and insurance companies and away from manufacturing, extractive industries, agriculture, construction and transport – even to say this would not be quite right. Manufacturing companies themselves have moved, relentlessly, into financial affairs. Many of the problems at General Motors and General Electric stem from these companies' involvement in financial matters – to be precise, pensions (GM) and property loans and credit card debt (GE Capital).¹

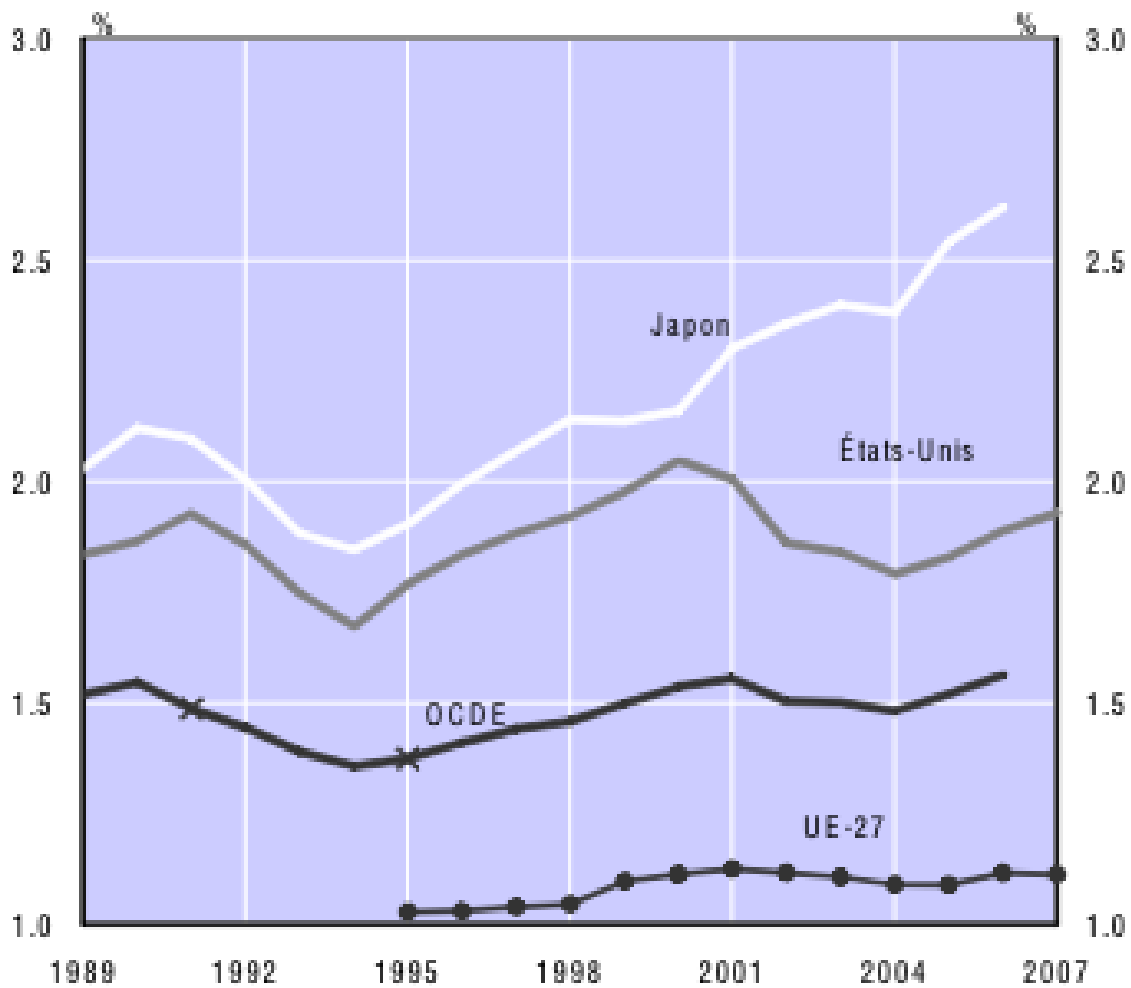
It is the same with domestic appliance and consumer electronics companies, who make much of their money from charging you and me vast sums to guarantee that a repairman will come when their machines break down. And it is the same with retailers, who run or – now more than ever – want to run banks and mortgage companies.

The financialisation of the world economy, then, goes further than many people believe. When demonstrators in London protested the G20 summit in the spring of 2009, not the least of their many errors was to target 'greedy' bankers for their sins. In fact, today's crisis in finance has more structural roots than our old biblical friend, greed. Many lament the fact that, until very recently, the best and the brightest coming out of Western universities preferred a career in finance, or in one of the big audit firms, or in the media – and not a career in something more worthwhile, something more relevant to the creation of real wealth. But *why* has this state of affairs emerge? *Why* have Western graduates in mathematics or science or engineering wanted to join Wall Street, or the City of London? The answer is that there is less to capture the imagination in sectors of the economy that genuinely enrich society. Salaries are lower there. Prestige is lower there. Above all, investment in new products and services is lower there.

Is this indictment too damning? Not really. If we look at the picture for Research and Development (R&D) in the OECD area, two trends are immediately apparent. First, business expenditure on R&D as a percentage of GDP has risen only in Japan in the past 20 years, in the US and the EU, it has been stagnant.

¹ On the centrality of GE Capital to the travails of GE, see 'General Electric: Losing its magic touch', *The Economist*, 19 March 2009, http://www.economist.com/displayStory.cfm?story_id=13326788

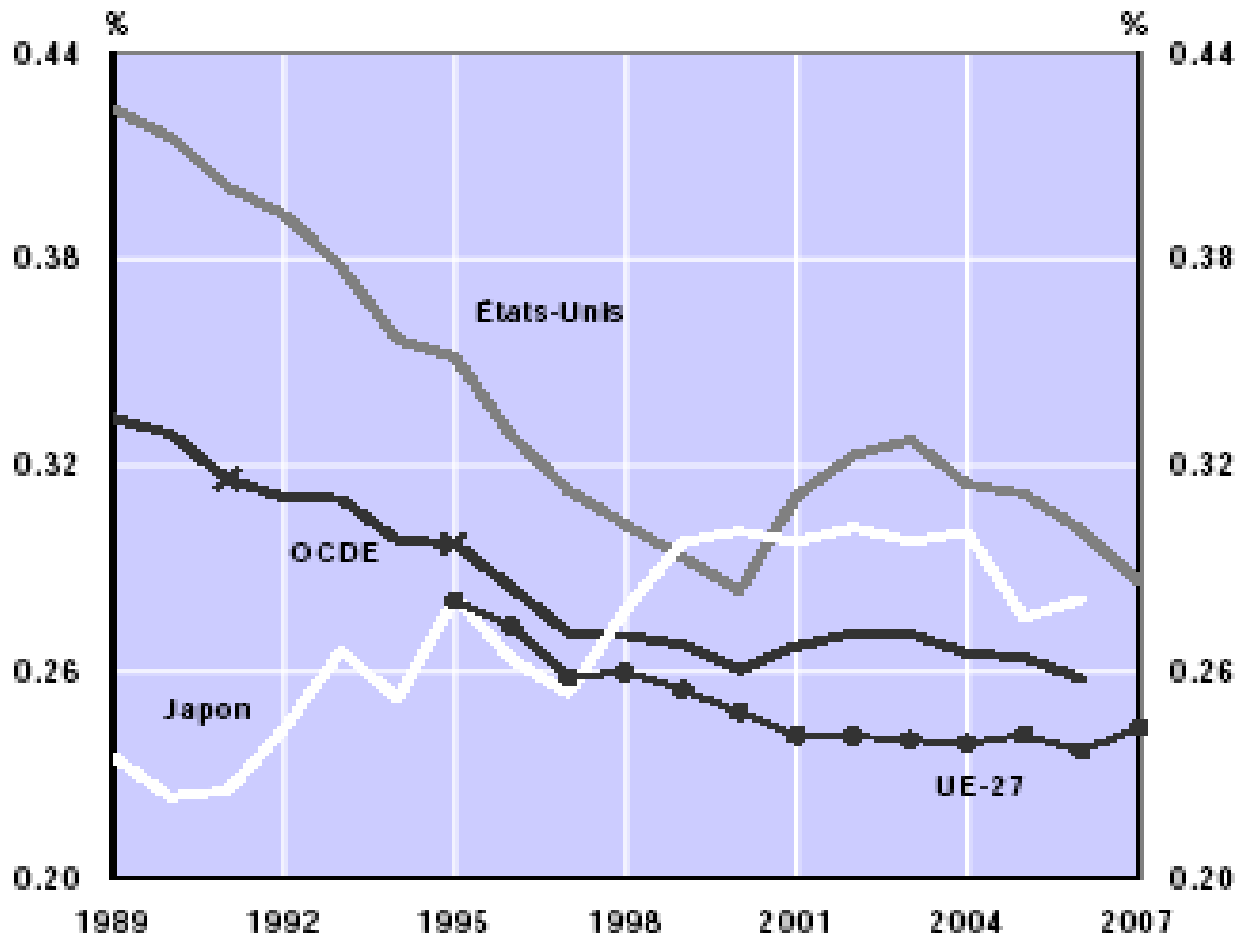
Business expenditure on R&D as a percentage of GDP, Japan, the US, OECD area and EU 27, 1989-2007²



Second, government expenditure on R&D as a percentage of GDP has – again, with the exception of Japan – been in steep decline.

² See OECD, *Main Science & Technology Indicators*, December 2008, p4, on <http://www.oecd.org/dataoecd/9/44/41850733.pdf>

Government expenditure on R&D as a percentage of GDP, Japan, the US, OECD area and EU 27, 1989-2007³



These charts show that the financial crisis has its roots in the real economy.

We can take another example – that of energy. Looking at firms that are active in the UK, we find a striking picture:

³ Ibid.

Energy firms active in the UK: research intensity, 2007/8 ⁴

Firm	R&D, £m	R&D as % of sales
British Energy	15	0.5
E.ON	8	0.1
British Nuclear Fuels	7	0.8
Scottish & Southern	3.7	<0.1
Scottish Power	1	<0.1
BP	284	0.2
Royal Dutch Shell	603	0.3
British Gas	8	0.1
National Grid	13	0.1
Pelamis Wave Power	3	>999
Renewable Energy	1	22.8

Of course, energy is just one sector, and Britain's economy has already undergone more than a century of decline. Yet it is chastening to find that multinational giants such as BP and Shell spend such a tiny proportion of their sales revenue on R&D – at a time when the energy sector is so prominent in worldwide discussions on climate change.

Of course, too, spending money on R&D does not guarantee economic success – the example of the Japanese economy confirms this. But *without* spending enough money on R&D, there can be no forward movement in society.

For ECSECC, all this should underline the significance of preparing skills in science, technology, R&D and innovation. Evidently not all of the existing and future workforce of the Eastern Cape can be involved in these activities. But to neglect them would be to repeat the mistakes of the West. The Chinese and Indians, as well as the Vietnamese and the Brazilians, take these activities seriously. So should the Eastern Cape.

⁴ Department for Innovation, Universities and Skills/Department for Business, Enterprise & Regulatory Reform, *The 2008 R&D Scoreboard*, 26 January 2009, on http://www.dius.gov.uk/innovation/statistics_and_analysis/randd_scoreboard

2 A crisis of categories

The challenge of the crisis, then, is not simply financial, but one of innovation. Now: fundamental to the process of innovation, and to the progress of science and technology, is a critical attitude to previous thinking – critical not for the sake of being cussed, but critical in the sense of always questioning one's premises, and practically testing one's theories in the light of evidence that might falsify them.

In this light, South Africa, and the Eastern Cape, have plenty of interrogation to do around those categories of thinking that have come to dominate economic discourse in the past 20 years. In the case of the RSA, there is a great prevalence of marshy, eclectic categories that owe much to academic or vulgar versions of Marxism (for example, the Cambridge labour markets school), Democratic Party economics (one thinks of Paul Rohmer's theories of endogenous growth), structuralism, postmodernism and environmentalism. That has left the country, in the eyes of this observer, with unfocused theories that cannot provide a coherent way forward for the black masses. We could take many examples of trendy categories that people accept uncritically. Instead, let's have a look at six around, which today's economic crisis should prompt some searching questions.

2.1 Knowledge economy

Perhaps the most serious error is, as we have argued, to be complacent about the state of R&D and innovation in the world economy today. This complacency is well captured by the doctrine that South Africa, like other 'post-industrial' societies, is in fact a *knowledge economy*.⁵

Obviously the idea that the economy is powered by knowledge, rather than exploitation or the production of profit, flatters teachers, lecturers and those in the skills business. However, today's crisis ought to suggest that the powerhouses of the West, at least, have been living in an ignorance economy more than a knowledge economy. Who in the US knew anything about the adjective 'sub-prime' until a couple of years ago – and how many really know now what a collateralised debt obligation is? Who knew anything about Bernie Madoff or Sir Allen Stanford, until their frauds were discovered? What did Angela Merkel in Germany know about the crisis, until it overtook her rather suddenly from behind? Indeed, the whole purpose of US Treasury Secretary Timothy Geithner's 'stress tests' has been to bet that lack of knowledge about the location, nature and size of toxic assets among US banks is actually a bigger problem than those toxic assets themselves.⁶

⁵ For all the fashionable talk of knowledge economy, it's notable that the category was in fact pioneered more than 40 years ago. See Fritz Machlup, *The Production and Distribution of Knowledge in the United States*, Princeton University Press, 1962.

⁶ The financial situation in Europe is, typically, more a testimony to ignorance than in America. As the *Financial Times* has written of Geithner, 'irrespective of whether he has measured bad loans at American banks correctly, who knows what is sitting in European banks now?'. See the perceptive article by Gillian Tett, 'US belatedly learns to listen to the lesson from Japan', *Financial Times*, 9 May 2009.

We now know more than we used to know – not just about financial shenanigans, but also about climate change and medicine. But we don't know nearly as much as we need to know. It is true that knowledge is important to the accumulation of capital – indeed back in 1916 the Russian revolutionary Vladimir Lenin wrote that one of the particular features of the rise of monopolies was that 'the process of technical invention and improvement becomes socialised'.⁷ Yet knowledge is only one aspect of an economy like that of the RSA. The RSA is not a knowledge economy any more than it is an Internet economy, an economy dominated by white-run media companies, or a commodities economy. To isolate any of these features of the RSA, or to add them up, is simply impressionism.

To gain and apply knowledge requires long hours at a keyboard, in a classroom, in a laboratory or in the field. In all the homilies about the importance of skills, it's as well to remember these things. We have argued that innovation and R&D should be a priority for the Eastern Cape. But these things don't grow on trees. They are hard work, and demand a conscious struggle. Literacy, numeracy, and familiarity with the basic concepts of physics, chemistry and biology are not steps that can be passed over. In this sense, the ANC's 52nd national conference was right to resolve that mathematics, science and IT 'must be promoted and supported, including through Saturday tutorial programmes' as well as bursaries for teachers in these areas.⁸

2.2 Tacit knowledge

The disdain that modern capitalist thinking has for the precision of mathematics and science is revealed in glib chatter about a second category: tacit knowledge. As is the case with all hip categories, this one does capture an aspect of reality – otherwise it would not have arisen in the first place. It is true that, say, a milkman, can judge roughly how much milk he has sold by a quick glance at the back of his milk float, and that he will only later resort to the formal knowledge available from working an electronic calculator or something like it. It is also true that the milkman's apprentice will pick up this kind of knowledge on the job, and not through rote learning, textbooks and the like. But the popularity of tacit knowledge among Western economists and educators has origins in the crisis of innovation in the real economy. Why know the value of pi to two or more decimal places, or the first, say, 12 elements of the periodic table, if to become a Wall Street 'master of the universe', or – until recently – a CEO who is idolised, is simply a seat-of-the-pants, a 'right brain' matter of intuition: in other words, a matter of tacit knowledge?⁹

⁷ See Vladimir Ilyich Lenin, *Imperialism, the Highest Stage of Capitalism – a popular outline*, 1916, on <http://www.marxists.org/archive/lenin/works/1916/imp-hsc/ch01.htm>

⁸ 'Social Transformation', Resolution 47, ANC's 52nd national conference, 16-20 September 2007, Polokwane, on <http://www.anc.org.za/ancdocs/history/conf/conference52/index.html>

⁹ The evidence for the simplistic division of the brain into 'left = creative, right = stodgy' is weak. See Doreen Kimura, *Sex and cognition* (1999), The Massachusetts University Press, 2000, treated in James Woudhuysen, 'Computer games and sex difference', paper to the second Women in games conference, Abertay University, April 2006, on <http://www.woudhuysen.com/documents/ComputerGamesSexDifference.pdf>

The vogue for tacit knowledge really took off with two Japanese management writers, who published a book that tackled the subject in 1995.¹⁰ To their credit, Ikujiro Nonaka and Hirotaka Takeuchi at least recognised that the knowledge contained in organisations depends on the conversion of tacit knowledge to explicit knowledge, as well as the conversion of explicit knowledge to the tacit sort. But in their urge to see organisations as organisms, not machines, Nonaka and Takeuchi suggested that subjective and intuitive beliefs, ideals, values and emotions were the *primary* knowledge invested in companies.

That was a mistake. A company's experimental results, patents, blueprints, articles of incorporation, accounts and databases are of critical importance to its success. Given today's financial and innovation crisis, now is a moment not for more tacit knowledge, but for more of the accurate, written-down sort. Indeed, it's a possibility that Japan's 'lost decade', in which nobody was sure about which debts were where and how much they amounted to, may have in part originated in what, for their part, Nonaka and Takeuchi argued was a distinctively Japanese approach to knowledge creation – namely, the primacy of tacit knowledge over explicit knowledge. In the UK, and particularly in secondary education, exaggerating the significance of informal, emotional, student-centred learning has also brought bitter fruits. Over 12 years of New Labour rule, has led to something approaching the collapse of a proper curriculum.

No doubt employees in the Eastern Cape need better life skills, interpersonal skills and better manners too. But good manners, like self-esteem, don't generally precede achievement and excellence in formal skills, but rather follow them as a by-product.

2.3 Network society and inter-firm cooperation

A mythical category closely connected to the idea of the knowledge economy is that of the network society. As early as 1984, in fact, a rewarding literature began showing that digitally driven visions say more about their authors than they do about reality or the future.¹¹ Yet that didn't stop the Spanish geographer Manuel Castells from creating a worldwide reputation for himself with his book *The Rise Of The Network Society*, published in 1997.¹² Even today, people still take Castells' mishmash of theories seriously.

Today's crisis should put an end to that. What has characterised the financial collapse is not a Castellsian 'space of flows', but rather the inability and unwillingness of banks to *continue* the flows of lending on which they have so long relied. That is why, in justifying state bailouts of banks (and the size of these bailouts compared with those provided to industry), commentators have so frequently resorted to the metaphor of capitalist *engines* being unable run without *oil*. Even without the forces of protectionism in trade becoming too strong, so far, financial networks have jammed. It

¹⁰ Ikujiro Nonaka and Hirotaka Takeuchi, *The knowledge-creating company*, Oxford University Press, 1995.

¹¹ See for example John David Bolter, *Turing's man: Western culture in the computer age*, Duckworth, 1984, cited in Woudhuysen, *Cult IT*, Institute of Contemporary Arts, 19 on <http://www.woudhuysen.com/documents/CultIT.pdf>

¹² Manuel Castells, *The rise of the network society*, Blackwell, 1997. For a critique, see Woudhuysen, *ibid*.

is also the nation state, more than international institutions, that has stepped in to free up these networks.

For firms in the Eastern Cape, real blockages in the world of finance have, no doubt, long been all too familiar. Given today's recessionary context, then, it would be very foolish indeed to imagine that the watchword in inter-firm relations will be cooperation, rather than competition. For all his faults, Harvard's Michael Porter at least focused minds on competition and some of the forces underlying it.¹³ Furthermore, at the end of the Cold War, his more youthful successors rightly understood that inter-firm cooperation is itself a form of competition.¹⁴

Karl Marx argued that competition was 'nothing other than the inner nature of capital, its essential character... as external necessity'.¹⁵ Lenin drew attention to cooperation, holding it to be a symptom of capitalist stagnation and decay. Cooperation may, then, provide a temporary stimulus to profits, but is more likely to reflect a decline in profitability.

It is tough, but it would be wise not to be starry-eyed about inter-firm cooperation. Certainly there is little that is equitable about the partnerships that exist, worldwide, between big firms and their smaller suppliers. Again Japan confirms the point: big firms are powerful, but, on prices, are able to squeeze their smaller suppliers like a vice. More recently, large UK firms – and, it should be added, Her Majesty's Government – have taken to demanding more and more politically correct and Green credentials from their smaller suppliers. The rhetoric of cooperation and partnership is there, but the truth is one of ruthless business practice.

The lesson for the Eastern Cape is that firms, like individuals, must look to their own resources if they are to develop the ingenuity that will carry them forward. Partnership with rivals or business-to-business customers is all very well; but it takes time, money and detailed legal agreements. It can be dull; it can be a displacement activity.

One gambit to avoid is involving SMEs in endless liaisons with each other. Government agencies in Britain love to organise such talking shops, so as to retain jobs in those agencies through the appearance of doing something. But if the British experience is anything to go by, the activity is fruitless.

Small firms certainly face problems in dealing with big ones – but the fact is that big ones are their main market, not other small ones. Small firms in the Eastern Cape would do better to set their sights on working with large local, national or multinational concerns – including Indian and Chinese giants – than with small ones within a small radius. Travel, and encounters with scale, broaden the mind, lift ambitions, deepen resolve – and raise the level of skills, through the process of learning by doing.

¹³ Michael Porter, *Competitive advantage: creating and sustaining superior performance*, Simon & Schuster, 1985.

¹⁴ See Gary Hamel, Yves Doz and CK Prahalad, 'Collaborate with your competitors – and win', *Harvard Business Review*, January–February 1989.

¹⁵ Karl Marx, *The Grundrisse*, Notebook IV, 'Circulation Process of Capital', mid-December 1857 – 22 January 1858, on <http://www.marxists.org/archive/marx/works/1857/grundrisse/ch08.htm#p413>. For Marx, capital 'exists and can only exist as many capitals, and its self-determination therefore appears as their reciprocal interaction with one another'. Ibid.

2.4 Horizontal state coordination

A parallel utopia to that of inter-firm cooperation is the coordination of different organs of the state. To set this very desirable goal within a real context, a few remarks about the current crisis of the Western state.

Many people believe that there is a fundamental difference in the political economy of the state and that of the market. Yet the facts are that the public sector has long been smaller than the private one, and that its economic dynamics have long been limited by, and profoundly contoured, by the exigencies of profitability.

On the other hand, there is also something new. The absence of distinct, guiding ideology and political vision on the part of major political parties in the West has led to a corrosion of the old ethos of public service, and an atmosphere in which, at least at top levels, the rule is 'every man for himself', and every department for itself. That is why the whole problem of horizontal state coordination has emerged.

In the West, the state has for decades been subordinate to the market. However, in the past decade or more, the power of regulation has tended to make firms heavily subject to state *diktat*. Generally, in all the kerfuffle made about deregulation and the influence of neo-conservatives, commentators have tended to miss the growing reach of the state – not only in economics, but also in the corporate mentality. With the contemporary state, the problem isn't just that top officials seek bonuses in the way bankers do or promotion in the way that middle managers in multinationals do. It isn't just that top state officials come from, or seek, lucrative berths in the private sector. It isn't even that there is departmental empire building, merger and acquisition activity, and rebranding – all in a pale imitation of corporate expansion and manoeuvre.

Rather, the horizontal coordination of different state bodies is very often a non-starter because clear, inspiring objectives, able to cohere public servants' actions beyond departmental boundaries, are so often missing.

It was British prime minister, Tony Blair who, noticing that social problems – for example, ill health among families leading to unemployment – were 'joined up', argued that government needed to be 'joined up' in response. That sounded right; but Blair's Third Way between state and market failed to unify British mandarins. Instead, in a paradox, the studied, overly technical and managerial neutrality of Blair's politics led to a collapse of the professional neutrality of senior officials.

In the UK and elsewhere, a broad, magnanimous identification with the national interest has diminished. In its place, the higher echelons of the UK public sector are plagued by a departmental version of the Blair agenda: an endless series of 'eye-catching' initiatives, reorganisations, fierce inter-departmental turf wars (not just at budget rounds), and a situation in which traditional inefficiencies have begun to border on anarchy.

Horizontal coordination among state institutions is a good idea. But like political unity, it cannot be decreed; it has to be worked for. From the point of view of the Eastern Cape, a sharp sense of a very few priorities – not the lists of tens of priorities that dominate the discourse of the authorities in the RSA - should be striven for before time is spent building bridges between different arms of the state beginning with D.

One of the ways experts in development, education and training in the Eastern Cape can clarify objectives could be around whether or not to emphasise jobs that are labour-intensive. The ANC favours labour-intensive production methods and procurement policies as a means of absorbing the

unemployed, and puts a special emphasis on labour intensity in agriculture and infrastructure construction.¹⁶

But is this really the way forward? Labour intensity may make more jobs – but on today's world economy, these jobs are likely to prove make-work jobs, in which long hours, low pay and low technology lead to low expectations and poor prospects.

China has moved ahead of India through automation, not labour intensity. Germany leads Europe, and is a formidable force in exports, through its capital-intensive machine tools sector. France's EDF can export electricity to London and the South East of England through its heavy investment in high-tech nuclear power.

To debate and resolve this policy issue would do much to get officials in the Eastern Cape, in Blair's phrase, 'on the same page'. In our view, developing skills around automation – from moving more of public service delivery on to the Internet through to private, small-scale agriculture - would do much to help generate wealth, attract foreign investment, boost exports and, not least, motivate public service employees.

2.5 Intermediary agencies

Often neither fish nor fowl, many intermediary bodies say their role is to interface between public and private sectors in practical, honest, skilled and locally aware ways. In practice, however, their role is often to diffuse responsibility away from elected politicians and central government toward unelected gatekeepers and regulators who often – again! – spend time in disputes on who does what.

In Britain, at least, intermediary training bodies have come to believe that their role is to guide employers and employees through the labyrinth of... intermediary training bodies. That is why Sir Michael Rake, chairman of the Commission for Employment and Skills and of the major company British Telecom, this year protested that Britain's system for upgrading skills is akin to what he called 'treacle'. He wrote:

'There is no one I've met who doesn't think the current system isn't incredibly overcomplex. And it's just a fact... This [system] is ridiculous, both in cost of delivering, effectiveness of delivering and so on.'¹⁷

In fact, a clear distinction between state bodies and the private sector would make a refreshing change. People need to know what they are about, whether as state employees or as SME recipients of state services. The state should put money into innovative industry and service start-ups - and then stand back, refuse to micro-manage them, and let them find their way. This should be done not

¹⁶ 'Economic Transformation', paragraph 2.7; 'Rural development, land reform and agrarian change', paragraph 11; 'On water, forestry and sanitation', Resolution 102, ANC's 52nd national conference, op cit

¹⁷ Quoted in David Turner, 'BT chairman attacks "ridiculous" skills policy', *Financial Times*, 24 February 2009.

because of a belief in free markets (where are they, exactly?), but because of a desire to end obfuscation and put the accent on the genuine production of value.

2.6 Creative industries

Creative industries are typically labour-intensive, which should give us pause. In the context of the Eastern Cape, however, there can be no doubt that design, branding and marketing have a role to play in the local economy. Engineering design, in particular, needs scrupulous attention, being the hardest-edged of these activities. It is obviously of particular relevance to the Eastern Cape's automotive sector.

At the same time, however, it's vital not be carried away with the idea of creative industries. Once more, the British example is one to avoid here.¹⁸ Over the past 12 years, the self-regard of many UK consultants in architecture, art, design, performing arts and film has been so great that the credit crunch has now resulted in an awful hangover. In UK design, for example, leading figures have now advised design students and graduates not to start their own businesses.¹⁹

Overestimating the power of design to bring benefits can only lead to downgrading the significance of technological advance. Yet a new doctrine in design – 'design thinking' – promises to do just that. 'Put simply', one advocate argues, design thinking is a 'discipline' that 'uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity'. Instead of being a 'late-stage add-on' in the manner of the design of old, design thinking means creating ideas, and in that sense is strategic, and 'leads to dramatic new forms of value'.²⁰

Perhaps. But for all the emphasis on thinking (as well as design for services rather than just for artifacts), designers often lack intellectual skills. In the UK, one of the strongest nations in design, the design community is, market research has shown, 'apathetic' about boosting its skills.²¹

More fundamentally, matching people's needs to feasible technologies represents a cramped view of innovation. Google, for instance, did not begin from people's need to search for information. Technologically, the algorithms it employs were feasible, but they also had to be specially developed. There was no guarantee that its business strategy was viable.

¹⁸ For a useful critique of the lionisation of UK creative industries, see James Heartfield, *The creativity gap*, Blueprint BroadSides Volume I Number I, 2005, available for £7.50 on <http://www.heartfield.org>

¹⁹ Angus Montgomery, 'Dawton and Fitch advise graduates against going into business on their own', *Design Week*, 14 May 2009, and Angus Montgomery, 'Design community "slow to boost its skills"', *Design Week*, 24 February 2009, on <http://www.designweek.co.uk/dawton-and-fitch-advise-graduates-against-going-into-business-on-their-own/3000564.article> and <http://www.designweek.co.uk/news/design-community-'slow-to-boost-its-skills'/1141384.article> (subscription required)

²⁰ Tim Brown, 'Design thinking', *Harvard Business Review*, June 2008, p86.

²¹ Angus Montgomery, 'Design community "slow to boost its skills"', *Design Week*, 24 February 2009, on <http://www.designweek.co.uk/news/design-community-'slow-to-boost-its-skills'/1141384.article> (subscription required)

In the RSA, privileging design at the expense of technology would be a big mistake.²² The RSA's Design Indaba annual conference and quarterly magazine represent creditable efforts; but they would be more creditable still if they treated design less as a craft-related activity that is estimable in its own right, and more as the useful adjunct of technological progress.

Still, hubristic attitudes have not been confined to design. In branding, financial markets have, until recently, made the mistake of thinking that brands are worth more than the consumers who buy them. Indeed, the 'brand bubble' has been part of a wider phenomenon: the intangible value of firms, which includes not just R&D but also its customer goodwill, customer lists, organisational models and 'human capital' has formed a larger and larger proportion of overall enterprise value.²³

Altogether, the category 'creative industries' begs two questions: just who is *not* creative – and how much genuine value does design create? For exponents of design thinking, it's probable that, say, chefs, or production engineers, are not creative; but in fact they are. For realists, the value added by the design of a new corporate identity, for example, is likely to be limited compared with the value added by new machinery or new IT. The latter items are more expensive than design – but for good reasons.

3 Recommendations

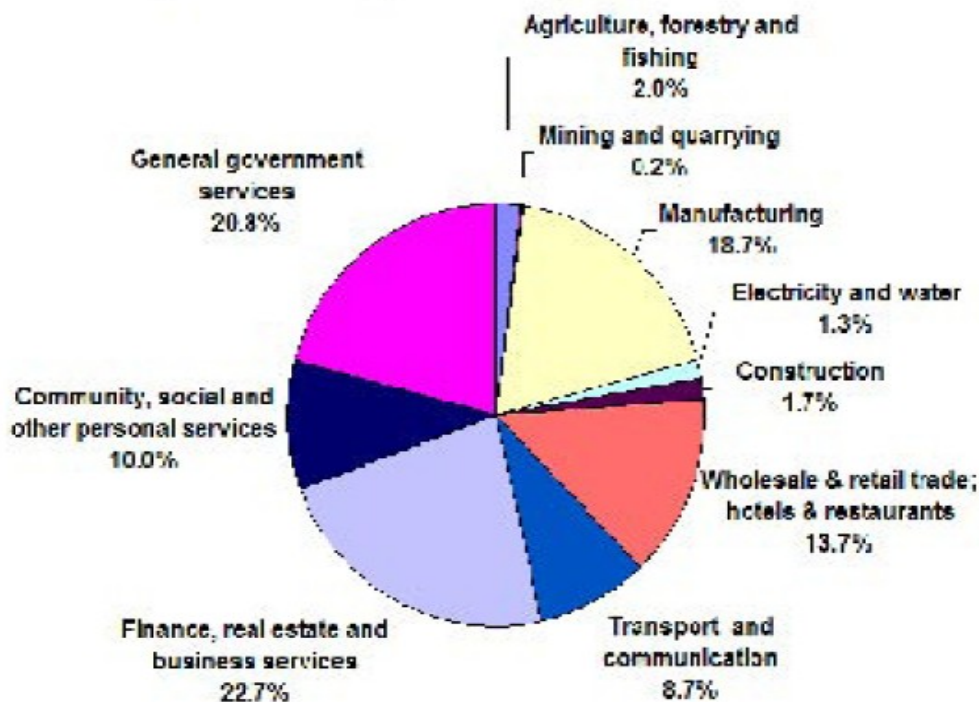
We have already touched on some of the different options open to the Eastern Cape if it carries through the critique of outdated categories that we have begun above. Here we want to pursue these options a little further.

One path certainly available to the Eastern Cape is to seek refuge in an employment strategy that, in effect, continues with more of the same. In practice that would mean continuing to look for posts in finance, real estate and business services, as well as general government services, and community, social and other personal services. The left hand side of the following chart shows the enormous weight of these sectors:

²² For more on this, see James Woudhuysen, 'Take design advantage', *Design Indaba*, 4th quarter 2005, on <http://www.designindabamag.com/2005/4th/advantage.htm>

²³ John Gerzema, *The brand bubble: the looming crisis in brand value and how to avoid it*, Jossey Bass, 2008, pp6, 9.

Eastern Cape GDP Composition by Economic Sector in 2006



The most striking thing about the chart above is how relatively weak genuinely value-creating sectors are. While some business services – for example, consultants in engineering and engineering design - are productive of value and surplus value, this is much less clear in the case of financial, real estate, community and general government services. The latter group is generally unproductive of value and surplus value, makes no direct contribution to the accumulation of capital, and is, rather, paid from revenues redistributed from the productive sector.

Should the Eastern Cape really take the line of least resistance and look for employment creation on the left of the chart? It isn't hard, after all, to get more people to clip more coupons, conduct more audits (including the green sort), print more floor plans, provide more counselling, or issue (or deny!) more government permits. It is much harder for the Eastern Cape to build, for example, better transport, electricity and water networks, which would make a big difference to workers' lives. But it is the harder course that the Eastern Cape should adopt.

3.1 Be ambitious in innovation and R&D

From nuclear waste to new media, mankind will grow new talents to solve problems through the right kind of innovation and R&D. The Eastern Cape cannot afford not to climb this mountain. To multiply laboratories, to conduct experiments and make prototypes that fail, to pursue curiosity without slavishly gearing research to government objectives, to identify inspiring goals for research

so as to motivate researchers – these things are certainly tough.²⁴ But very relevant here is the aphorism of Charles Proteus Steinmetz (1865-1923), Silesian socialist, hunchback, dwarf, and the inventor of alternating current:

‘No man really becomes a fool until he stops asking questions.’

In thinking about the way forward for the Eastern Cape in R&D, it’s worth recalling Steinmetz’s wider achievement: to invent disinterested industrial science.

Following Thomas Edison’s invention of the carbon-filament, high-vacuum incandescent lamp, the General Electric Company, founded in 1892, hit difficulties through its refusal to open a laboratory like that founded by Edison in Menlo Park, New Jersey, back in 1876. But in an epoch-making move, GE in 1900 accepted a proposal from Steinmetz, its brilliant chief consulting engineer: that it establish an electrochemical research lab near to but ‘entirely separate from’ its factory at Schenectady, NY. The main mission of the lab was to see off Westinghouse. Its subsidiary mission, however, was to perform pure science – and, in the process, attract top-class scientists. As Elihu Thomson, a founder of GE, put it, the lab was ‘for commercial applications of new principles, and even for the discovery of those principles’. For an industrial lab, this pursuit of basic research was a world first. Its novelty was reflected in two decisions made by Willis Whitney, its director. The first was to hold weekly colloquia on scientific discoveries and theory – meetings that were sometimes addressed by outside speakers. The second was immediately to publish insights that lacked commercial value.²⁵

When the Eastern Cape considers skills for laboratories like this, it should be realised that not everyone can be a South African Steinmetz. There is room for training lab technicians, cleaners, communications experts, and engineers capable of devising new jigs and tools. The fundamental thing is to keep an eye to the commercial, but not be fixated on it. Serendipity plays a big role in scientific breakthroughs, which should never be constrained by government requirements. India, we should not forget, has sent a satellite to explore the Moon.²⁶ China has begun to lead the world in energy technologies.²⁷ Therefore the Eastern Cape should set its sights high in innovation and the skills needed to make it happen.

²⁴ For a discussion of these points, see Anjana Ahuja, ‘In science, the bizarre is our insurance for the future’, *The Times*, 6 May 2009, on http://www.timesonline.co.uk/tol/comment/columnists/anjana_ahuja/article6229220.ece and the discussion by Rob Killick, ‘Innovation and inspiration’, UK after the recession, 6 May 2009, on <http://postrecession.wordpress.com/2009/05/06/innovation-and-inspiration>

²⁵ See George Wise, Willis R Whitney, *General Electric, and the origins of US industrial research*, Columbia University Press, 1985.

²⁶ ‘India launches first Moon mission’, *BBC News*, 22 October 2008, on <http://news.bbc.co.uk/2/hi/science/nature/7679818.stm>

²⁷ See Keith Bradsher, ‘China Outpaces U.S. in Cleaner Coal-Fired Plants’, *The New York Times*, 10 May 2009, on http://www.nytimes.com/2009/05/11/world/asia/11coal.html?_r=1&scp=1&sq=China%20Outpaces%20U.S.%20in%20Cleaner%20Coal-Fired%20Plants&st=cse, and James Woudhuysen and Joe Kaplinsky, *Energise! A future for energy innovation*, Beautiful Books, 2009.

3.2 Put the accent on formal knowledge more than the tacit sort

Perhaps our bias in favour of explicit knowledge sounds old-fashioned. Yet to do the things that the Eastern Cape requires, the precise formulations of science and technology, not the fluff of human resources departments, are what are needed.

One hears a lot about the merits of intuition nowadays, and, in a rhetoric that is deeply insulting to women, one also hears how their 'intuitive' skills should be more widely deployed in management. In fact what the Eastern Cape needs is more *formality* in its education, more careful documentation, clearer user interfaces in IT, and, to complement all this, a *counter-intuitive* approach to innovation, economic development and trend forecasting.

The great American saxophonist John Coltrane, it should not be forgotten, could break all the rules with his African, atonal music because he first had mastered conventional scales. To think 'outside the box', it is first necessary to master the art of thinking within the tight constraints of the box. There is room for improved tacit knowledge in the Eastern Cape, but its population cannot just skip over the stage of acquiring much more formal knowledge first.

3.3 Pay attention to patents

The crisis of ignorance in the famed knowledge economy and the continued prevalence of competition between firms are reflected in the importance of the international patent system. It's probable that the Eastern Cape should give more attention to this domain.

It's a fact of capitalist life that, in intellectual property matters, what preoccupies people is more the property than the intellectual. For every patent that is put to work in useful and accessible innovations, there are several others that are put in place to ward off competitors and so ensure that nothing practical happens. An army of lawyers also stands ready to defend patents, regardless of whether their potential is ever realised.

In analysing the competitiveness of different nations, Michael Porter emphasises patents too much. Yet it is necessary to agree neither with his one-sidedness on this question, nor with his outdated doctrine of regional and local 'clusters' of firms in the same industry, to accept that patents are one rather important index of innovatory capacity.²⁸ In 2006 in the US, for example, India's Infosys, based in Bangalore, filed a patent to allow mobile phones to capture, send and display holographic images.²⁹ A development such as this may not be one that the Eastern Cape can emulate very soon. But it can keep up with such events, monitor them, begin collaboration with Infosys around them, and so on.

²⁸ Much of Porter's perspective on these issues is to be found on http://www.isc.hbs.edu/econ-natlcomp_US_strategy.htm.

²⁹ See <http://patft.uspto.gov/netargi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetathtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=infosys&s2=holographic&OS=infosys+AND+holographic&RS=infosys+AND+holographic>

Einstein began professional life as an analyst of patents. The Eastern Cape needs more of such analysts.

3.4 Leadership is better than partnership

Historically, the Dutch have much to answer for in South Africa. Yet there is one Dutchman who, in terms of innovation, provides an inspiring example of leadership – one that the Eastern Cape should follow. During the Nazi occupation of the Netherlands in the Second World War, Dr Willem ‘Pim’ Kolff (1911-2009) didn’t just save 800 people from labour camps by hiding them and helping them fake symptoms of disease. From the parts of a downed Luftwaffe fighter aircraft, the radiator of an abandoned Ford car, orange juice tins, an enamel bathtub, a wooden drum and thin, artificial sausage skins, he built the world’s first kidney dialysis machine.

Of course, like Edison and many other great technologists, Kolff was excellent at partnering with his colleagues. When he led the team that implanted the world’s first artificial heart into a retired Utah dentist, he allowed the machine to be named the Jarvik-7, after Robert Jarvik, one of the students who had helped him perfect it.³⁰ Yet the fact remains that Kolff, a dyslexic, was a leader of men, not just a ‘team player’. He helped found Europe’s first blood bank straight after the Nazi invasion of his land. He built his artificial heart in the teeth of ethical opposition. He was a fierce critic of the regulators of the US Food and Drug Administration.

The Eastern Cape needs to encourage a similar spirit. Collaborating with people is nice, and can pay dividends. But standing up for progress, and fighting your corner in that cause, is nicer still.

3.5 Cull skills agencies

Our rather acerbic remarks about intermediary agencies should not be taken as a sweeping generalisation. Nevertheless, it’s probable that money could be saved, objectives clarified, and confusion avoided if a selective cull took place of some of the agencies charged with improving skills in the Eastern Cape.

‘The educator’, Marx once said, ‘must himself be educated’. To play an effective role on the ground and in relation to local conditions, skills agencies staff should be tested on their formal knowledge, not of education, but of science, technology, construction, agriculture – and of both local international developments in these fields. Parochialism is something that educationalists, and educators, suffer from the world over. Education and skills are too important for the Eastern Cape for it to allow anything less than an exacting approach to the people who are responsible for these

³⁰ See the inspiring obituary by Phil Davison, ‘Dutchman who turned Nazi debris into a dialysis machine’, *Financial Times*, 20 February 2009.

4 Conclusion: Aim High

The challenge of the crisis, we have argued, is an intellectual one, to do with the categories by which people apprehend the world. It is also a crisis of the real economy, and particularly of innovation and R&D.

The challenges for the Eastern Cape may look daunting. But the Eastern Cape does not have anything like Wall Street, or the European Commission, to impede it. Without confining itself to commodities, it can make much more of its natural resources and the space at its disposal. It can form intelligent partnerships – with new powers such as China, India, perhaps even Brazil or Vietnam.

Despite his faults, and the arms deals he sanctioned for the apartheid regime in South Africa, when John F Kennedy announced America's desire to go to the moon, his ambition was well placed. His sense of priorities, indeed, is worth quoting at length. Here is some of what he said in Houston, Texas, on 12 September 1962:

“We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organise and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too. ‘To be sure, all this costs us all a good deal of money. This year’s space budget is three times what it was in January 1961, and it is greater than the space budget of the previous eight years combined. That budget now stands at \$5,400 million a year – a staggering sum, though somewhat less than we pay for cigarettes and cigars every year. Space expenditures will soon rise some more, from 40 cents per person per week to more than 50 cents a week for every man, woman and child in the United States, for we have given this program a high national priority – even though I realise that this is in some measure an act of faith and vision, for we do not now know what benefits await us.”

“But if I were to say, my fellow citizens, that we shall send to the moon, 240,000 miles away from the control station in Houston, a giant rocket more than 300 feet tall, the length of this football field, made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, carrying all the equipment needed for propulsion, guidance, control, communications, food and survival, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere at speeds of over 25,000 miles per hour, causing heat about half that of the temperature of the sun – almost as hot as it is here today – and it is time for the Eastern Cape to adopt visions like this to pursue innovation for benefit but also for its own sake, to be bold, and to aim high.

³³ See Yuri Kegeyama, ‘Toyota banking on famed production ways in housing business’, *The Seattle Times*, 15 June 2006, on http://seattletimes.nwsources.com/html/business/technology/2003062192_toyotahousing15.html. See also James Woudhuysen and Ian Abley, *Homes 2016*, Blueprint BroadSides No 1, 2004 on <http://www.woudhuysen.com/documents/Homes2016.pdf>, and James Woudhuysen and Ian Abley, *Why is construction so backward?*, John Wiley, 2004.