

Evolution of Innovation Policy - the Barber Years

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John Barber as economist and evaluator

- Joined DTI on Monday May 14th 1984 on loan from HMT to be Senior Economic Adviser responsible for economic advice on Technology and Innovation Policy & Electronics & Software industries
- 1994 Assessment Unit responsible for evaluations of Technology and Innovation programmes becomes part of JB's responsibility as Technology Economics, Statistics & Evaluation Directorate (TESE) now Innovation Economics Statistics and Evaluation

Early days of Thatcherism

- Deep recession of 1980/81 caused new Government to fear that UK BERD would collapse
- Callaghan Government's Support for Innovation (SFI) initially left in place
 - All companies could receive grants of 25% of eligible costs of R&D projects
 - Targeted schemes for R&D & equipment acquisition eg Microelectronics Support Programme (MISP)
 - Microelectronics Applications Programme (MAP) supporting technology transfer & spread of best practice

Rise of collaborative research

- Joint Optoelectronics Scheme launched in 1982 followed by Alvey Programme for Advanced Information Technology from 1983
- Growth of EU programmes on ESPRIT model from 1984
- Based on misperceived view of underpinning reasons for Japan's success at that time in computer industry
- Role of Weinstock and GEC in persuading PM
- But rationale for collaboration stood on its own merits and presaged the Open innovation system

Evaluation of Alvey – an aside

- Evaluation concluded that the programme had succeeded in its structural objectives, mainly succeeded in its technical objectives and failed in its commercial/industrial objectives
- This was two years after end of Programme
- Just missed interesting diversification by Racal Electronics based on one of Alvey's 4 large scale demonstrator projects
- Recently Andrew Herbert, head of Microsoft research centre reported that software engineering and HCI work from Alvey was core of current leading edge research
- JB often raised issue of need for long term evaluations

Endless cycle of reviews begins

- 1984/85 Industrial Support Review
- JB identified five market failures
 - Risk aversion
 - Information about opportunities/technologies
 - Competition & market structure – barriers to entry
 - Externalities/appropriability
 - Dynamic aspects of innovation & economic change
 - maintaining a presence because of potential long term dynamic benefits
- To which add need for additionality, and net economic benefits exceeding opportunity costs and costs of displacement/distortions

Review outcome

- Increased emphasis on non-project support (eg awareness, advice)
- More selective use of single company projects
- Recommendation for pro-forma which emerged as ROAME system
- Bargain to keep Treasury out of detailed policy formulation (for a while...)
- Mid 80s annual budget meeting of senior officials agreed that emphasis to switch from single company to collaborative R&D and TT support

Lord Young brings solutions - 1987 White Paper

- Arrival of Lord Young & Kenneth Clarke
- Review of Business Support undertaken largely by Treasury and Cabinet Office
- White Paper – DTI The Department for Enterprise Cmd 278 1988
- Abolished SFI (despite favourable but suppressed evaluation!) and single company R&D support except for micro-firms (SMART)
- Aversion to “near market R&D”
- Main emphasis collaborative R&D and TT
 - LINK, Advanced Technology Programmes, EUREKA and General Industrial Collaborative Projects for low/medium tech SMEs

Presidential Government

- 1992 Michael Heseltine styles himself as President of the Board of Trade
- Geoffrey Robinson as Chief Adviser on S&T reviewed Technology and Innovation Support Schemes
- Concluded that many ATPs unlikely to offer VFM and shut them down

Privatisation of Labs

- Heseltine negative attitude to labs
- Broader sweep of NPM and privatisation led to:
 - Warren Springs Lab closed
- NEL “sold” in 1995 to Assessment Services Ltd – division of Siemens – paid £1.95m to take it plus £30m guarantee of work over 5 years
 - In 1996 under control of TÜV Product Service GmbH
- LGC sold to management led consortium
- NPL GoCo model with £1.5 million payment to SERCO and guaranteed 5 year contract

Realising Our Potential

- First erosion of market model in White Paper of May 1993 Cmd 2250
- Subsequent Competitiveness White Papers set out
 - raising awareness of the importance of innovation;
 - spreading best practice within firms;
 - facilitating co-operation between organisations at home and overseas;
 - establishing a framework of incentives for collaboration between academics, research facilities and companies;
 - securing access for UK companies to the widest possible range of world technologies and know-how;
 - ensuring that the Government's activities in science and technology contribute to national competitiveness;
 - encouraging a supply of people with the right skills; and
 - ensuring that regulation in the UK and in the EU does not inhibit innovation, and that the legislative framework is permissive rather than restrictive

Labour Government from 1997

- Focus on commercial exploitation of scientific research
- After first Comprehensive Spending Review science support began steady rise but innovation remained marginalised
- R&D Tax Credit introduced first for SMEs and then more generally
 - Example of growing role of Treasury in directing innovation policy
 - Poor understanding of the behavioural effects on firms of different types of support
- Tendency to announce minor and repackaged initiatives for political effect led to confusing array of programmes, schemes and instruments

2001 onwards Reviews of DTI Business Support and Innovation

- Business Support Review
- Lambert Review
- Innovation Review

University-Industry Links

- Perennial policy theme subject of many reports
- For a while dominated by misperception of “Silicon Valley” effect
 - £68 million to MIT to “educate” Cambridge in university-industry relations
 - Formal government targets for science base defined in terms of “doubling number of university spin-offs”
- Now back-tracked from this extreme emphasis on commercialisation
- Present approach can be seen as grounded in systems failure rationale
- Lambert Review remains definitive on this topic
 - Noting deficiencies in industrial demand for university knowledge
 - Much stronger emphasis on networking and collaboration

Innovation Review

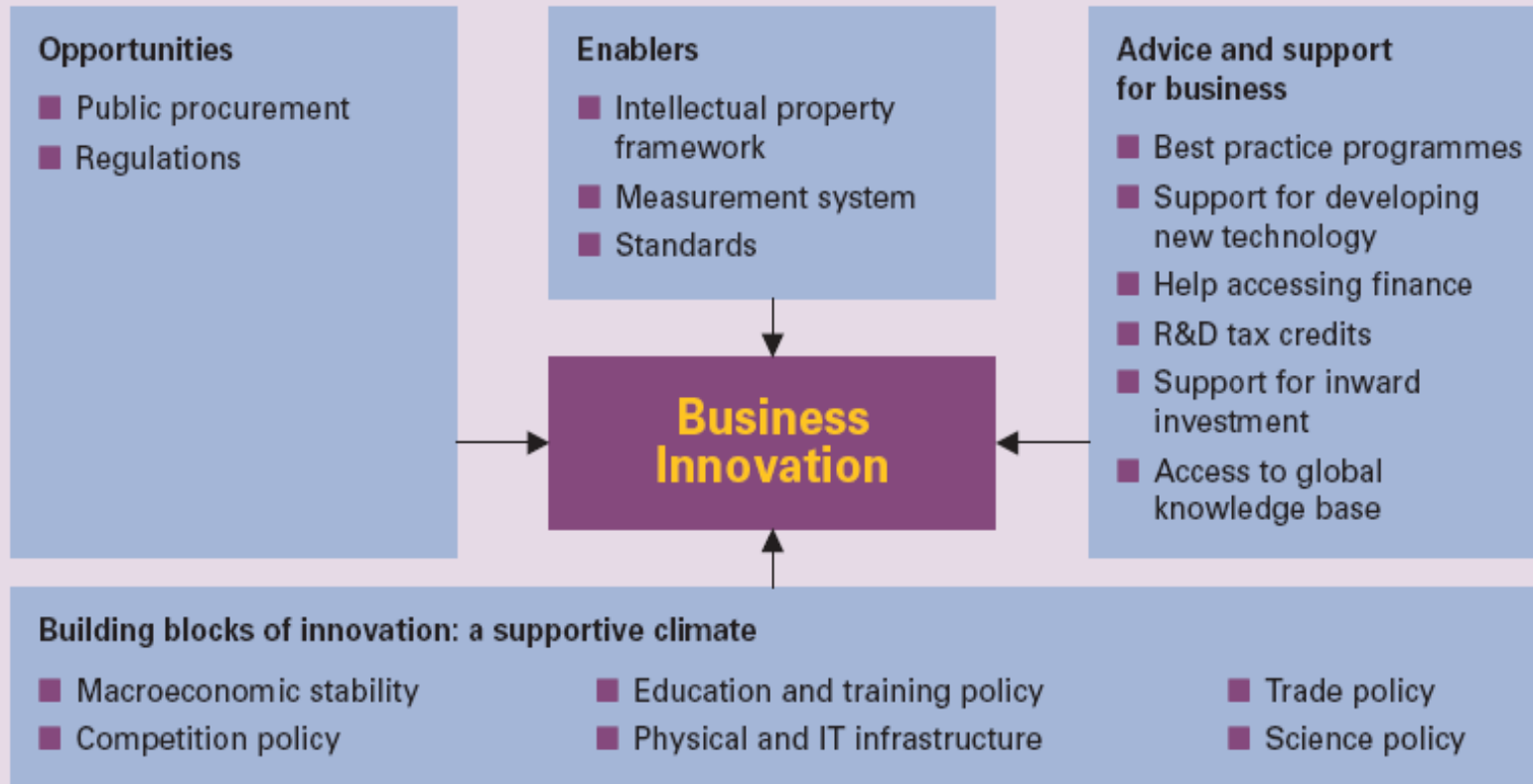
- In parallel with Lambert Review a fundamental review of innovation policy with JB in central advisory role
- Basic assumption “the innovation challenge”
- 2 drivers
 - Lagging international competition
 - global competition means that British businesses will need to compete upon the basis of unique value and that innovation – defined as the successful exploitation of new ideas – is central to meeting that challenge
 - Perception of deficiencies in UK innovation system
 - Seven critical factors identified
 - Analysis drawing on Academic Advisory Panel, Economic and Social Research Council and OECD

Seven critical factors

1. sources of new technological knowledge, including the Science Base and other firms with market links;
2. capacity to absorb and exploit new knowledge – a need for an improved cultural attitude to creativity in firms;
3. access to finance and other reasons for low spending on innovation;
4. competition and entrepreneurship, where weak competition policies reduce incentives to innovate,;
5. customers and suppliers, including using the purchasing power of the public sector;
6. the Regulatory environment, including awareness of intellectual property; and
7. networks and collaboration, especially those which are not driven by short-term issues.

Model of how government policies influence innovation

How Government policies influence innovation



Formal statement of rationale

- Identification of problem or opportunity that is being missed which is affecting national economic performance
- Some barrier or impediment that prevents the normal operation of market forces from achieving the desired outcome
- Design of a cost-effective policy instrument.

Underpinned by classic market failure arguments

- **Public goods**
 - For funding Science Base and National Measurement System
- **Externalities leading to underinvestment**
 - Moderated by level of competition in market, potential IPR protection, whether lead times, complementary skills and learning curves provide innovator with a strong market advantage and whether technology is relevant to many present or future users
- **Uncertainty**
 - Information asymmetry favouring short-termism

And overlay of system failure arguments

- Firms embedded in set of interconnected knowledge producing organisations (e.g. universities) and institutional arrangements
- Increasing specialisation and growing division of labour in production of knowledge can lead to differences in culture, use of language and objectives
- Increasingly costly to acquire knowledge outside immediate domain of competence and experience
- Networks of commercial relationships provide degree of co-ordination and access to knowledge sources but government intervention required if co-ordination failures prevent formation of such networks

Conclusions (1)

- New policy impetus has often come from perception of success factors elsewhere
 - In 1980s model was Japan and in late 1990s the USA
- Perception often flawed or incomplete resulting in partial policy transfer then retrenchment
- Second source of impetus has come from self-diagnosis of deficiencies
 - Remarkable continuity with industry-science relations the subject of a major report in almost every decade for a century
- Bottom line is that innovation policy remains a Cinderella area
- Budget was £409 million in 1985/86 – today's Technology Strategy £370m 2005-2008

Conclusions (2)

- Since 1980s the language of economic rationales has become increasingly a feature of reports and internal interchanges within government
 - Partly as response to ideological drive of previous Conservative government
 - Also reflection of growing influence of Treasury in micro-economic policy and in particular an interest in science and innovation as keys to productivity deficit
- Wrong to say that rationale drives policy and also wrong to assume the reverse
 - A complex interplay of refinement, constraint and extension...

Conclusions (3)

- A new deficiency has emerged in policy
- Unique role of John Barber in being able to draw together the historical analysis of evaluations, leading edge thinking on innovation and evaluation from academia, international trends from OECD and to translate this into a context that made sense in the economic discourse of the dialogue between DTI and the Treasury
- It will need the efforts of several people and John's continuing guidance to maintain this necessary set of linkages