



Canadian Federation for the  
**Humanities and Social Sciences**

Fédération canadienne  
des **sciences humaines**

**Submission to the Expert Panel, Review of Federal Support to  
Research and Development**

**February 18, 2011**

## Acknowledgements

The opinions expressed in this paper are those of the Federation and not necessarily those of the members of its Blue Ribbon Panel. The Federation wishes to thank the members of its Blue Ribbon Panel who gave much time and energy to developing this submission:

Martha Crago (Vice President, Research, Dalhousie University)

G. Bruce Doern (Professor, School of Public Policy and Administration, Carleton University)

Budd Hall (Secretary, Global Alliance on Community-Engaged Research, University of Victoria)

Jack Mintz (Palmer Chair in Public Policy, Faculty of Law, University of Calgary)

Anne Motte (Executive Director, Canadian Economics Association)

Douglas Peers (Associate Vice-President Graduate, York University)

Peter Phillips (Professor and Head of Political Studies, Professor of Public Policy in the Johnson Shoyama Graduate School of Public Policy, University of Saskatchewan)

David Phipps (Director, Research Services & Knowledge Exchange, York University)

David Wolfe (Professor, Political Science, University of Toronto Mississauga)

## About the Canadian Federation for the Humanities and Social Sciences

Representing more than 50,000 researchers in 72 scholarly associations, 75 universities and colleges, and 6 affiliates, the Canadian Federation for the Humanities and Social Sciences is the national voice for the university research and learning community in these disciplines.

For information, please contact 613.238.6112 ext. 318 or visit [www.fedcan.ca](http://www.fedcan.ca)

**February 2011**

## Summary

Canada's level of business research and development spending is comparatively low despite significant investments in public research and development. Canada must do better in igniting innovation and increasing the return on our public investments. To achieve this goal, we must view innovation as a people-centered dynamic process.

Going beyond the latest technological advances and scientific discoveries, R&D must include important explorations around human systems. Foundational research in support of science and technology requires attention to the ways that we learn about innovation, change and the application of new knowledge – the work done by Canada's social science and humanities researchers. Innovation and industry will flourish when we better understand the impact of R&D and new technologies on citizens, their employers, communities, governments, and the environment. In short, people matter.

Cultivating a people-centered view of R&D and innovation will require much closer collaboration between social science and humanities researchers, the business community and the public and voluntary sectors. To enhance and encourage this process, the Canadian Federation for the Humanities and Social Sciences makes the following recommendations:

1. Expand the current definition of "research and development" used in setting policies, priorities and funding opportunities to recognize its broad reality.
2. Significantly increase the funding for the National Research Council's Industrial Research Assistance Program or similar programs to further support industry links with leading social science and humanities research.
3. Enhance opportunities for the next generation of research talent to connect with industry, to apply research knowledge and to gain workplace skills.
4. Sponsor independent research about the "public good" effectiveness of the current expenditure mix between tax credits and programs.

## Canadian Federation for the Humanities and Social Sciences: Submission to the Expert Panel, Review of Federal Support to R&D<sup>i</sup>

As the Expert Panel for the Review of Federal Support to Research and Development recognized in their consultation paper, Canada's level of business R&D spending is comparatively low despite significant investments in public research and development.<sup>1</sup> Canada must do better. Previous reports from the Council of Canadian Academies and the Competition Policy Review Panel have echoed this call, exposing the need to revisit Canada's policies and funding strategies to spark innovations and increase the return on our public investments.<sup>2</sup> To achieve this goal, we must view innovation as a people-centered dynamic process. This review offers an important opportunity to provide the federal government with guidance to improve its R&D strategy and Canada's performance.

### 1. A broader view of innovation and R&D

According to the Organisation for Economic Co-Operation and Development, research and development "is a term covering three activities: basic research, applied research, and experimental development."<sup>3</sup> Yet the reality of R&D is much broader: it is an integrated, non-linear process, with knowledge, experimentation, trial and error eventually contributing to innovation and prosperity. The narrower OECD definition, upon which many Canadian policies have been built, unnecessarily restricts our flexibility around an R&D funding framework that could more effectively lead to innovation and greater prosperity.<sup>4</sup>

*"Our public innovation strategies need to become more sophisticated and balanced. We need to recognize that supporting science for new inventions is not enough; we need to create an environment where business people draw on new science and many other disciplines to innovate, creating new products, services, and processes."*

(Institute for Competitiveness and Prosperity – Report on Canada 2010)

Going beyond the latest technological advances and scientific discoveries, R&D must include important explorations around human systems. Foundational research in support of science, technology, engineering and mathematics requires attention to human ingenuity and the ways we learn about innovation, change and the application of new knowledge – the work done by Canada's social science and humanities researchers. Innovation and industry will flourish when we better understand the "multiplier" impact of R&D and new technologies on citizens, their employers, communities, governments, and their environment. In short, people matter.

We have entered an age where diverse types of research, knowledge and skills can inform each other and expand the knowledge commons. Indeed, the strict delineation between disciplines is becoming a thing of the past. Health research spans medicine, sociology and technical innovation, as researchers have gained confidence in and recognize the significant, wide-ranging impacts of interdisciplinary work.<sup>5</sup>

The Expert Panel implicitly recognizes that the social sciences and humanities can directly contribute to innovation, presenting a people-centred model that portrays the complex interplay of creativity, technology and society.<sup>6</sup> Indeed, the very definition of innovation highlighted in the Expert Panel's consultation paper focuses on several human-related aspects: innovation is *"the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations."*<sup>7</sup> This

<sup>i</sup> In response to the Expert Panel's Consultation Paper, this submission addresses consultation questions 1, 2, 5, 7, 8, 9, 12, 13, and 15. See Appendix A for the questions in their entirety.

definition highlights the inextricable links between innovation and knowledge about people, their workplaces, and the context in which new ideas, products and services are introduced.<sup>8</sup>

By embracing a broader definition of R&D, Canada would create important opportunities for innovation, especially in an economy dominated by the service sector (68%). Future social and economic progress will emerge as stakeholders realize the importance of integrated knowledge and the insights gained from exploring the human dimensions of our challenges. Indeed, international examples show that focusing on these areas of research can lead to higher return on R&D investment.<sup>9</sup> Further studies have also shown that incremental innovations around goods, services and organizational structures “across an entire economy [account] for much of the productivity growth and dynamism in capitalist societies.”<sup>10</sup>

The current primary focus on the traditional science and technology disciplines for R&D funding and initiatives has created barriers for R&D around human systems and improving organizational and interpersonal management. Economists, political scientists, sociologists among others can provide important input into product design, tax and regulatory regimes, consumer habits and industrial psychology. Policy and funding barriers can also inhibit business-university partnerships and limit regional economic development, as identified in the OECD’s 2007 study, *Higher Education and Regions*.<sup>11</sup> To be at the forefront of future innovations, Canada needs to break down these barriers – and we need government leadership across sectors to do so.

## **2. Where do we stand, and what are our international competitors doing?**

### **2.1 Upfront support for partnerships and networks**

Presently, the balance of funding around business research and development is weighted towards science, technology, engineering and mathematics. The innovations and outcomes from these disciplines have clearly produced financial benefits for businesses, and for the Canadian economy. At the same time there has been little recognition of the contributions of other disciplines, as evidenced by the significantly fewer programs that provide incentives for industry to connect with the social sciences and humanities – which represent over half of Canada’s researchers and students. We need to leverage this untapped Canadian resource to better understand and grasp the opportunities of an increasingly globalized and digital knowledge-based economy.<sup>12</sup>

Canada does have a record of supporting innovative networks between a diversity of industries and researchers. Programs such as the Networks of Centres of Excellence have led to creative national partnerships between university and industry research teams, around focus areas that include knowledge mobilization and the commercialization of research. As well, the interdisciplinary partnerships pioneered by the ResearchImpact project,<sup>13</sup> launched in 2006 out of York University and the University of Victoria and supported in part by the Social Sciences and Humanities Research Council (SSHRC), have connected producers and users of research across Canada. For example, York University recently provided interns and evidence to Nottawasaga Futures, an economic development agency in Simcoe County who used the information to launch the Green Economy Transition Centre that now provides services to support the greening of South Simcoe industry. Now at six universities across Canada, ResearchImpact’s expansion into industry partnerships exposes the existing capacity and desire for partnerships between businesses and social science and humanities researchers.

Existing partnership models could be expanded to increase links between social scientists, humanists and industry. The National Research Council’s Industrial Research Assistance Program (IRAP) has

successfully linked business with leading researchers. Small and medium enterprises with clear ideas on specific R&D and innovation projects can apply for funding. If successful, they receive guidance from one of IRAP's Industrial Technology Advisors – 75% of whom have graduate or doctorate degrees. As a widely respected program, increased funding for IRAP and increased access to social sciences and humanities researchers could improve knowledge sharing and dissemination.

International models have also emerged to measure the integration of research, universities, business, governments and community. PASCAL International Observatory,<sup>14</sup> a knowledge mobilization organization that connects policy makers, researchers and practitioners, has developed the PASCAL Universities Regional Engagement (PURE) tool in response to the OECD's *Higher Education and Regions* report, which focused on the importance of universities in regional economic development.<sup>15</sup> PURE fosters consultative relationships, comparing various innovative initiatives while identifying barriers and analyzing regional economic trends. A similar model, possibly using vouchers, could be adopted for Canada to measure local and national partnerships and ensure they have the broadest benefit possible.

## **2.2 Leveraging Canada's graduates**

Canada has a strong contingent of social science and humanities students and graduates whose knowledge of current research could be closely linked to industry. Canadian graduates have unique knowledge around how different cultures, language and history can inform both domestic and international business endeavours. In 2007, over 21,000 students graduated from a social science and humanities Masters program, and over 1700 graduated with a PhD from these disciplines.<sup>16</sup> Statistics show that 46% of psychology and social science PhD graduates and 23% of humanities PhD graduates pursue employment outside of education.<sup>17</sup> Both in terms of current students and recent graduates, there is an important opportunity to transfer knowledge from the formal degree process to applied work in the economy and society. Universities not only train future researchers, but also future research users. Teaching, especially when it involves engaged, active learning opportunities, represents an undervalued form of knowledge transfer.

The MITACS Accelerate internship program<sup>18</sup> has successfully linked over 1500 students with industry partners – however, the take-up rate of social science and humanities internships is much lower than in the science and technology disciplines. One contributing factor to this process could be a low appreciation, both within universities and business, of how social science and humanities students can contribute to industry. MITACS has demonstrated that it can be a matchmaker extraordinaire: this program should be scaled up, and its profile increased.<sup>19</sup>

Interdisciplinary programs also provide outlets for innovative entrepreneurial endeavours. At the University of Saskatchewan, both interdisciplinary MBA students and interdisciplinary Public Policy Masters students are given the tools to think outside the box, leading to creative business start-ups and valuable insights into policy conundrums. Such programs build on the unique skills of these disciplines, which can be utilized across sectors. With overwhelming numbers both entering the social science and humanities and graduating each year, there is room to encourage further student mobility between universities and industry.

Internationally, several countries have taken significant steps towards equipping graduate students with skills specifically applicable outside of academia. In the United Kingdom, the government has acted to ensure that funded research includes a skills development component. Research funded through the UK's Economic and Social Research Council must include a training component for students, including content-specific and research methods training.<sup>20</sup> As well, the Professional Science Master's program in

the United States includes an academic research component while also developing transferable workplace skills for graduates to apply to future work in industry, government or not-for-profit sectors.<sup>21</sup> Such programs could be adapted for the many Canadian social science and humanities students to ensure our graduates can effectively improve and transfer their skills and knowledge once they have entered the workforce.

### **2.3 Equipping universities to better connect with business, government and the voluntary sector**

Beyond researcher and student connections with business, universities can connect their innovative research with business at a different level. Canadian universities have developed technology transfer offices, which assist scholars in commercializing their work and making research available to industry and not-for-profits. Some of Canada's larger universities have been able to develop their technology transfer offices into larger resource centres. The University of Alberta, for example, partnered with the City of Edmonton to create TEC Edmonton, a not-for-profit that offers mentoring programs, assists with launching new ventures and patent processes, and develops collaborations with a variety of public and private sector participants.<sup>22</sup>

Some technology transfer offices are recognizing the role they can play in mobilizing knowledge outside of their traditional focus. Indeed, the University of British Columbia's University-Industry Liaison Office has identified knowledge mobilization as part of their core responsibilities.<sup>23</sup> The existing infrastructure found in the technology transfer offices could be expanded to broker relationships between industry and the social science and humanities disciplines, just as they currently broker relationships between science, technology and industry.

### **2.4 Establishing effective incubators**

Beyond technology transfer offices, Canada also needs other ways to stimulate innovations: in Toronto, for example, the MaRS Discovery District has become a space where scientists, business and governments innovate under a private-public partnership.<sup>24</sup> Similar incubators around the globe involve universities, communities, businesses, non-profits and government – leading to creative policy solutions, economic development and partnerships that last beyond a unique project.<sup>25</sup> Effective incubators have proven that the barriers between research, community engagement and commercialization can be broken across disciplines and traditional sector boundaries. Applying this model to a people-centred vision of innovation would connect anthropologists, historians and public policy researchers with business people across sectors, inspiring creative solutions and well-informed results.<sup>26</sup>

### **2.5 Improving access to capital and finance**

Canada has a plethora of eager and emerging business people – including students and recent graduates – willing to engage in riskier endeavours, but they often lack access to capital and financing to support these projects and to create new jobs. More effective support in encouraging business start-ups and riskier investments would contribute to an overall readiness to advance diverse innovations and develop a Canadian culture willing to commit resources towards R&D in which the return on investment is unknown. In close collaboration with the provinces, the Federal Government could improve access to international and national venture capital for Canada's emerging business leaders. However, Canada should also absorb the lessons from the ongoing slump in venture capital markets in the US and the poor track record of venture capital in Canada, despite significant incentives from provincial and federal governments. Imagination, leadership and risk-taking will be required to solve this structural problem.

## Recommendations for Canada

Talented, skilled, creative people are at the heart of successful societies. Demand is growing across the private, public and not-for-profit sectors for highly qualified personnel who are creative, analytical and articulate, as well as sophisticated in their understanding of individuals, business, communities and societies. As such, the CFHSS makes the following recommendations:

### 1. Expanding “research and development”

**Recommendation #1: Expand the current definition of “research and development” used in setting policies, priorities and funding opportunities to recognize its broad reality.** Such a change to the definition of R&D would create incentives for businesses to pursue research around human systems, pre- and post-market analysis and much more. Applying this expanded definition to the SR&ED tax credit would require shifts at the bureaucratic level, as Revenue Canada assessors who evaluate the tax credit would need to rigorously assess the scientific and commercial potential of R&D proposals made under the expanded definition.

Alternatively, shifting funds from the SR&ED program and providing direct funding opportunities under this expanded definition would be an effective way to incentivize industry links with the full spectrum of Canadian researchers. The following two recommendations provide some examples.

### 2. Partnerships and networks

**Recommendation #2: Significantly increase the funding for IRAP or similar programs to further support industry links with leading social science and humanities research.** Developing capacity for long term collaboration and creating mentoring opportunities in the public, private and voluntary sectors would significantly enhance the capacity of the social sciences and humanities research community to mobilize knowledge to the benefit of Canadians. Existing opportunities such as IRAP or the NCE Industrial Research and Development Internships have proven how successful relationships between not-for-profits, business and academia can lead to innovative and creative results.

SSHRC’s partnership strategies provide another successful existing model that can bolster support for society-university partnerships. Their recent program architecture renewal has led to a surge of users and researchers expressing keen interest in the call for proposals. Nearly two thirds of the most recent Partnership Grants competition proposals include partners from the private and voluntary sectors, and proposals for the Partnership Development Grants involve domestic and international partners, ranging from large telecom companies and creative performance groups to organizations from around the world, including US, China, India, France and the UK. Further investments in these programs would foster a myriad of forms to connect university and college campuses and the broader society, for their mutual benefit.

### 3. Developing and mobilizing talent

**Recommendation #3: Enhance opportunities for the next generation of research talent to connect with industry, to apply research knowledge and to gain workplace skills.** Investing in the development, attraction and retention of the best research talent and providing them with opportunities to collaborate with the community is in line with the federal government’s existing efforts to create talent, knowledge and entrepreneurial advantages for Canada to compete in the knowledge economy. The pursuit of excellence is also compatible with a strong commitment to diversity and attracting cutting-edge researchers who reflect our nation’s changing demographics.



Building on the successes of the MITACS Accelerate program, the government can create more opportunities for students to connect their knowledge and skills outside of academia. Continued funding for the MITACS program would ensure that graduates can enter the workforce at a higher level, bringing workplace and research skills already acquired during their education.

SSHRC should receive the necessary funding to develop a program similar to NSERC's successful Collaborative Research and Training Experience (CREATE) program, which provides students with professional training while promoting student mobility between university and industry and providing interdisciplinary research links.

A post-doctoral program specifically targeted towards enhancing knowledge transfer could also mobilize Canada's emerging talent. As a program involving part scholarship and part service, it would provide valuable workplace experience to the next generation of researchers, while also exposing industry to the latest research.

Countless possibilities for student and graduate mobilization programs exist, from co-op placements to internships to interdisciplinary programs. Canada must invest in the next generation of innovators and ensure that we remain internationally competitive, at the forefront of emerging research, development and innovation.

#### 4. Evaluating the "public good" effectiveness of SR&ED

**Recommendation #4: The panel should sponsor independent research about the "public good" effectiveness of the current expenditure mix between tax credits and programs.** Current research seems to indicate that SR&ED brings important benefits to Canada. However, are these benefits cost-effective? Do investments made through SR&ED yield the greatest possible impact? Complex assessment, reporting and auditing requirements (coupled with alleged abuses of the program) raise serious questions about implementation, regional variations and the cost-effectiveness of these investments to spur collaboration and real partnerships. We believe that the SR&ED program would benefit from greater and more rigorous analysis by the Expert Panel. Further, to fill the information gaps around the SR&ED, making SR&ED program files accessible to researchers would allow them to undertake more intensive and comparative analysis about the tax credit's effectiveness.

---

<sup>1</sup> *Review of Federal Support to Research and Development, Expert Panel Consultation Paper*, December 2010, pp 1.

<sup>2</sup> See Council for Canadian Academies. *Innovation and Business Strategy: Why Canada Falls Short*. Ottawa, 2009, and also Competition Policy Review Panel. *Compete to Win: Final Report*. Ottawa: Government of Canada, June 2008.

<sup>3</sup> Organization for Economic Co-operation and Development. *Frascati Manual: The measurement of scientific and technological activities*. Paris, 1993, Fifth Edition.

<sup>4</sup> *Report of the Technical Committee on Business Taxation*. Ottawa: Department of Finance Canada, December 1997. Sec. 5.12.

<sup>5</sup> For example, Genome Canada and the Canadian Institutes of Health Research are specifically mandated to support research in the social sciences and humanities.

<sup>6</sup> The Council of Canadian Academies' *Innovation and Business Strategy Report* also embraces a broader definition of innovation, as "an economic process rather than as a primarily science and engineering activity." (pp 3)

<sup>7</sup> See page 5 of the Expert Panel Consultation Paper.

- 
- <sup>8</sup> See Alice Lam's work on knowledge types and innovation systems. Lam, Alice and Bengt-Åke Lundvall, "The learning organization and national systems of competence building and innovation," found in Lorenz, Edward and Bengt-Åke Lundvall, eds. *How Europe's Economies Learn: Coordinating Competing Models*. Oxford: Oxford University Press, 2006. pp 109-139. For further references, see Mokyr, J. *The gifts of Athena: historical origins of the knowledge economy*, Princeton: Princeton University Press, 2002. See also Shapin, S., and S. Shaffer. *Leviathan and the air-pump: Hobbes, Boyle, and the experimental life*, Princeton University Press, 1985.
- <sup>9</sup> See Ruttan, V. *Social science knowledge and economic development: an institutional design perspective*. Ann Arbor: University of Michigan Press, 2003,
- <sup>10</sup> Toner, Phillip. *Workforce Skills and Innovation: An overview of major themes in the literature*. OECD, 2011. pp 8.
- <sup>11</sup> See OECD. *Higher Education and Regions: Globally Competitive, Locally Engaged*, 2007. The study identifies the essential role of university-business partnerships in bolstering the economy, specifically in regional economic development, but notes that "[m]ore active engagement is constrained by the orientation of public policy [and] inadequate funding and incentives" (Executive Summary, pp 13). These barriers, among others, prevent full and effective partnerships and limit the regional economic impact of universities.
- <sup>12</sup> Canadian Federation for the Humanities and Social Sciences. *Digital Economy Consultation: Creating Canada's Digital Society*. July 2010. Available: [www.fedcan.ca](http://www.fedcan.ca)
- <sup>13</sup> See <http://www.researchimpact.ca/home/>
- <sup>14</sup> See <http://pascalobservatory.org/>
- <sup>15</sup> See <http://pure.pascalobservatory.org/projects/current/pure>
- <sup>16</sup> See Canadian Association of University Teachers. *CAUT Almanac of Post-Secondary Education in Canada, 2010-2011*, Tables 3.19 and 3.20.
- <sup>17</sup> Desjardins, Louise and Darren King. *Expectations and Labour Market Outcomes of Doctoral Graduates from Canadian Universities*. Ottawa: Statistics Canada, 2011. pp 33. Available: <http://www.statcan.gc.ca/pub/81-595-m/81-595-m2011089-eng.pdf>
- <sup>18</sup> See [www.mitacs.ca](http://www.mitacs.ca)
- <sup>19</sup> For further information about the importance of investing in new opportunities for the next generation of Canadian talent, see the Canadian Federation of Humanities and Social Sciences Pre-Budget Submission, *From Invention to Innovation: Building a globally relevant and competitive knowledge society*, August 2010.
- <sup>20</sup> See Economic and Social Research Council, *Delivery Plan 2011-2015*, pp 10. Available: [http://www.esrc.ac.uk/images/ESRC%20Delivery%20Plan%202011-15\\_tcm8-13455.pdf](http://www.esrc.ac.uk/images/ESRC%20Delivery%20Plan%202011-15_tcm8-13455.pdf).
- <sup>21</sup> See [www.sciencemasters.com](http://www.sciencemasters.com)
- <sup>22</sup> See <http://www.tecedmonton.com/>
- <sup>23</sup> University-Industry Liaison Office. *Annual Report 2009/10*. University of British Columbia, 2010. [http://www.uilo.ubc.ca/shared/assets/uilo\\_ar\\_20109791.pdf](http://www.uilo.ubc.ca/shared/assets/uilo_ar_20109791.pdf)
- <sup>24</sup> See [www.marsdd.com](http://www.marsdd.com)
- <sup>25</sup> See, for example, the San Jose University's Incubator Without Walls project (<http://www.huduser.org/periodicals/cityscope/vol5num1/ch12.html>) and the Amity Innovation Incubator in India ([http://www.amity.edu/aii/amity\\_innovation\\_incubator.htm](http://www.amity.edu/aii/amity_innovation_incubator.htm)).
- <sup>26</sup> There has already been some effort to extend the concept of incubators to social innovation and social entrepreneurship initiatives. Two such examples include Ashoka Canada (<http://canada.ashoka.org/>) and the Young Social Entrepreneurs of Canada (<http://www.ysec.org/>).

---

## Appendix A: Expert Panel Consultation Questions addressed in the CFHSS's submission (as found in the Expert Panel Consultation Paper)

1. In addition to the R&D activity defined by the OECD, should government be funding other business activities related to the commercialization of R&D? If so, what and why?
2. Does Figure 2, the model of business innovation presented above, capture the key structural factors and inputs to innovation? If not, what is missing?
5. Regarding networks, collaborations and linkages, what are the main impediments to successful business-university or business-college partnerships? Does the postsecondary education system have the right capacity, approaches, and policies for effective partnerships with business?
7. Regarding talent, is Canada producing sufficient numbers of graduates with the right skills to drive business innovation and productivity growth? If not, what changes are needed? Where demand for advanced skills is low, what are the reasons and what changes, if any, are needed?
8. Can you describe whether and how your firm employs students currently enrolled in community colleges, polytechnics and universities, and what government measures could make it easier to work with students during their academic programs and to recruit them after their graduation?
9. With which federal programs supporting business or commercially oriented R&D in Canada do you have direct experience and knowledge? In your view: Which of these programs are working, and why? Which programs are not working, and why not?
12. How could the Government of Canada be more innovative and responsive to meet new needs or opportunities, and try alternative service delivery-approaches in its programs?
13. Are there any gaps in the Government of Canada's support to business and commercially-oriented R&D? Do firms performing R&D in other countries have an advantage over Canadian firms because of access to programs that are not available in Canada? What would be the principal features of new programming to fill these gaps?
15. Is there a difference between R&D and innovation? If yes, how are they different? Should government focus on R&D or Innovation? What should the balance be?