

**The Disappearance of Statistics  
on Basic Research in Canada: A Note**

Benoît Godin

3465, rue Durocher  
Montréal (QUE)  
Canada H2X 2C6

**Project on the History and Sociology of S&T Statistics**

**Paper No. 6**

**2001**

**Previous papers in the series:**

1. B. Godin, *Outlines for a History of Science Measurement*.
2. B. Godin, *The Measure of Science and the Construction of a Statistical Territory: The Case of the National Capital Region (NCR)*.
3. B. Godin, *Measuring Science: Is There Basic Research Without Statistics?*
4. B. Godin, *Neglected Scientific Activities: The (Non) Measurement of Related Scientific Activities*.
5. H. Stead, *The Development of S&T Statistics in Canada: An Informal Account*.

## **The Disappearance of Statistics on Basic Research in Canada: A Note**

I have shown elsewhere how the concept of basic research played a central yet criticized role in the history of science and technology measurement. <sup>1</sup> One of the consequences of dissatisfaction with the concept has been an increasing number of countries that refuse to collect information on specific types of research (basic, applied, development). This note is an illustration of the disappearance of statistics on basic research in Canada.

### **Pure, Fundamental and Basic Research**

The National Research Council (NRC) of Canada carried out the first survey of Canadian R&D in Canada in 1917. Apart from personal comments and brief official minutes, <sup>2</sup> all data and information concerning the survey <sup>3</sup> have been lost. The survey is worth mentioning, however, if only as a reminder that the concepts of *pure and applied* research were once defined in reference to the content of research, to the object of inquiry (i.e. abstract versus applied physics), rather than in reference to the motives of the researcher, as is currently the case.

What is usually considered as the first official R&D survey in Canada, however, was the one conducted by the Department of Reconstruction and Supply on government R&D in 1947. <sup>4</sup> “Pure or fundamental” research was identified as one of three types of research (the other two were “background” and “applied or practical”). <sup>5</sup> But there existed no breakdown in the data existed because no detailed numbers were collected.

---

<sup>1</sup> B. Godin (2000), *Measuring Science: Is There Basic Research Without Statistics?*, OST, Montreal.

<sup>2</sup> J.P. Hull and P.C. Enros, *Demythologizing Canadian Science and Technology: The History of Industrial R&D*, in P.K. Kresl (ed.), *Topics on Canadian Business*, vol. X (3), Association for Canadian Studies, 1988, pp. 1-21.

<sup>3</sup> Advisory Council for Scientific and Industrial Research, *Annual Report*, 1918, pp. 20-28; M. Thistle, *The Inner Ring: The Inner Ring: The Early History of the National Research Council of Canada*, Toronto: University of Toronto Press, pp. 159-160.

<sup>4</sup> In the present paper, year of survey corresponds to the date of publication.

<sup>5</sup> Department of Reconstruction and Supply (1947), *Research and Scientific Activity: Canadian Federal Expenditures 1938-1946*, Government of Canada: Ottawa, p. 12.

This was followed by a series of industrial R&D surveys, initiated in 1956 and conducted by the Dominion Bureau of Statistics in cooperation, for the first four surveys, with the NRC. <sup>6</sup> “Pure or basic” research was identified as a type of research to be included in R&D, but, again, no breakdowns were tabulated. <sup>7</sup> In fact, there has never been an industrial survey in Canada presenting data on pure research. <sup>8</sup>

The regular series of surveys on government R&D began in 1960. The first two (1960 and 1962) said nothing about pure research. <sup>9</sup> Then, in 1965, the Dominion Bureau of Statistics introduced the concept of basic research, accompanied by a specific breakdown in line with the recommendation of the then recently published OECD Frascati Manual (1963). But the concept’s limitations were immediately noted: <sup>10</sup>

There are a number of problems associated with such a classification. One problem is caused by the variety of definitions which people normally use – definitions which they may continue to use, perhaps unconsciously, when completing a questionnaire. Even supposing that it were possible to clearly distinguish between the types of research or development, it should be realized that the progress of one project may take it through all three types at least at once. A programme of R&D could contain a number of such projects, thus making the analysis quite complicated.

The problem was mentioned again in the next two surveys (1967 and 1969), along with an added shortcoming: “distinguishing between “oriented” basic research and applied research is especially difficult”. <sup>11</sup> The concept of oriented research was new, but no definition or discussion was offered. In brief, the spirit of the text was that some basic research is oriented toward practical problems and is not, therefore, solely curiosity-driven only. Some basic research could be classified as applied research.

---

<sup>6</sup> *Industrial R&D Expenditures in Canada 1955*, Dominion Bureau of Statistics, 1956.

<sup>7</sup> Beginning in 1963, the survey dropped the term “pure or basic” and left only a definition of what constituted pure research.

<sup>8</sup> Although some breakdowns appeared in OECD publications. See, for example: OECD (1968), *A Study of Resources Devoted to R&D in OECD Member Countries in 1963/64*, Volume 2, Paris.

<sup>9</sup> *Federal Government Expenditures on Scientific Activities, Fiscal Year 1958-1959*, Dominion Bureau of Statistics, Ottawa, October 1960; *Federal Government Expenditures on Scientific Activities, Fiscal Year 1960-1961*, Dominion Bureau of Statistics, Ottawa, October 1962.

<sup>10</sup> *Federal Government Expenditures on Scientific Activities, Fiscal Year 1962-1963*, Dominion Bureau of Statistics, May 1965, p. 13.

<sup>11</sup> *Federal Government Expenditures on Scientific Activities, Fiscal Year 1964-1965*, Dominion Bureau of Statistics, February 1967, p. 15.

## A Very Short History

The decline of the category of basic research began with the 1970s' surveys on government R&D. The one published in 1972 limited the breakdown of research by types to intramural research only: <sup>12</sup>

Statistics in this area are now collected only for intramural expenditures on R&D; the experiment with the same breakdown for extramural expenditures produced less satisfactory results and has, therefore, been dropped from the survey. In any case, it seems more reasonable to secure these estimates when surveying the institutions carrying out the actual work.

Then in 1977, the definition and the breakdown disappeared completely. <sup>13</sup> For ten years, no data were available on basic research or on anything that would allow someone to estimate how much was invested in specific types of research.

One had to wait until 1987 when Statistics Canada introduced in its survey a breakdown of research by fields of application, among which was the contested category "general advancement of knowledge". <sup>14</sup> Contested, firstly, because it was a residual category: the OECD defined it as including "all R&D which contributes to the general advancement of knowledge and which cannot be attributed to a specific objective". <sup>15</sup> Contested secondly, because it indiscriminately included all grants from funding councils, whether basic, oriented or applied.

The category did not last very long in Canada. A few years later, the classification by fields of application was abandoned. Data were broken down by departments and agencies only. <sup>16</sup> To estimate basic research, one could only hypothesize, quite erroneously, that it amounted to the money supplied by funding councils.

---

<sup>12</sup> *Federal Government Expenditures on Science, 1970-1972*, Statistics Canada, 13-202, January 1972, p. 27.

<sup>13</sup> *Federal Government Activities in the Natural Sciences, 1975-1977*, Statistics Canada, 13-202, January 1977.

<sup>14</sup> *Federal Scientific Activities, 1986-87*, Statistics Canada, 88-204, June 1987.

<sup>15</sup> OECD, *The Measurement of Scientific and Technical Activities: Proposed Standard Practice for Surveys of R&D* (Frascati Manual), Paris, 1981: 117.

<sup>16</sup> *Federal Scientific Activities, 1989-90*, Statistics Canada, 88-204, January 1990.

## Conclusion

Canada began measuring basic (and applied) research on a regular basis in 1965, following the lead of the OECD Frascati Manual published two years before. Although the concept of basic (or pure) research did exist in previous surveys, it had only served to define what to include in measurement and had not appeared in any breakdown of data. After the OECD's recommendation to collect and tabulate data on types of research, Canada gathered data on basic research for eleven years (1965-1976), then stopped.

Some statistics users do not share Statistics Canada's view of the concept of basic research however. The House of Commons Standing Committee on Industry, for example, recently asked Statistics Canada to recommence producing separate data on basic and applied research.<sup>17</sup> It nevertheless remains to be seen how statisticians will deal, in the near future, with the needs of the users of statistics and their own convictions.

---

<sup>17</sup> House of Commons Standing Committee on Industry, *Research Funding: Strengthening the Sources of Innovation*, Ottawa, 1999, recommendation no. 9.