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### *The Making of Science, Technology and Innovation Policy: Conceptual Frameworks as Narratives, 1945-2005.* By Benoît Godin. (Montreal: Centre—Urbanisation Culture Société de l'Institut national de la recherche scientifique, 2009. 212 p., tab., notes)

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## ***Book Reviews / Comptes rendus***

### **General / Général**

***The Making of Science, Technology and Innovation Policy: Conceptual Frameworks as Narratives, 1945-2005.*** By **Benoît Godin**. (Montreal: Centre—Urbanisation Culture Société de l'Institut national de la recherche scientifique, 2009. 212 p., tab., notes).

In this book Benoît Godin successfully presents the reader with a historically informed examination of our present science policy, showing how society has dealt with the acquisition of knowledge and the subsequent development of technology over time. In modernity, the emergence of new technology is the result of industrialization and capitalism. This process taking place in post-modernity includes individuals, government, business organizations and legislation all trying to capture an economically viable product that is necessary to compete in globalization. The current climate shows that early adopters of new technologies derive the most economic gain. According to Godin, policy making in scientific endeavours is a conceptual construction of problems that are developed into frameworks that provide a structure for action.

In the book's introduction, Godin discusses how the "making" of science consists of a series of processes and collaborative efforts but is organized by conceptual frameworks and their narratives. Godin illustrates this by presenting a model of how science emerges in parallel with technology and becomes an economic benefit globally. He divides this framework into three generations. The first generation includes: Cultural lags and linear models of innovation. The Second Generation includes Accounting, Economic Growth and Industrial competitiveness. Finally, the third generation discusses National Innovation systems; Knowledge based Economies and Information societies. In addition, Godin's presentation of these concepts tells its own story: embedded in the list of generations is a slow but sure progression of the growing importance of the development of new scientific data and its application both economically and internationally. Godin elaborates on this timeline to show not only the multi-disciplinary nature of decision making within science studies but the power of the narrative to transform both old and new decisions into priorities and realities. Godin cleverly applies sociological analysis to the making of science policy to explain that the development of narratives play a role in *all phenomenon*. In his introduction, Godin uses E. Goffman's theory of Frame analysis to illustrate his main thesis that frameworks "organize socioeconomic situations," in

this case specifically the economics of science policy. Citing Goffman, Godin notes that frameworks (or frames) are principles of organization “which govern the subjective meaning we assign to social events,” principles that transform fragmentary information into a structured and meaningful whole” (p.2). Goffman’s theory is used to show that frameworks in science play the role of constructing and defining situations while suggesting solutions and persuading society that science is economically viable.

Godin frequently cites the example of the Organization for Economic and Co-Operation Development (OECD), weaving references to the OECD throughout the book to demonstrate how collecting and interpreting statistics play a role in the framework narrative of science. Godin examines how science policy does not lack for measurement, in that OECD measures data and positions it in an international narrative again making it relevant and viable.

Godin writes that “A narrative on science, technology and innovation starts with suggesting that something is happening in the economy, that an important change is underway” (p.15). With regard to the concept of knowledge as a product and the notion of the new economy, Godin demonstrates the utility of developing narratives to promote and eventually *sell* scientific ideas and technological developments. He discusses the concept of knowledge as a product for consumption by tying together an argument that frameworks and narratives can become financially viable if they are measured and attached to policy. Godin also points out that Fritz Machlup’s study, *The Production and Distribution of Knowledge in the United States*, brought the concept of knowledge into science policies and science studies. His conceptualization of knowledge was synthesized from three intellectual trends of the time: 1) “disintellectualizing” and “subjectivizing” knowledge (ordinary knowledge), 2) looking at knowledge as a communication process (production and distribution), and 3) measuring its contribution to the economy (in terms of accounting) (p.290). Using this example, Godin successfully explains that within this framework or narrative, the concept of knowledge is redefined, repositioned, and further made to be primarily valuable and secondarily (or eventually) accessible to everyone.

Historically and more so currently, funding for research that benefits both society at large and the economy is the incentive behind public investment in science and technology. The notion of a “new economy” describes the transition from an industrial/manufacturing base to new technology as the core of economic growth. Godin illustrates this by pointing out that the terms “new economy” and “economic growth” were used as a part of a narrative developed by the OECD. In chapter four he discusses the great debate over the appropriate ways to measure the

contribution of science and technology to overall economic benefit. Economists from OECD eventually succeeded in getting their views accepted by the majority. Godin points out that “Over time, the economists won. The strategy developed at the OECD to integrate productivity into its statistics and reports was threefold. First, digest all available academic work in order to imitate its methodology. Second, internationalize the (academic and national) statistics to make a convincing case for its member countries. Third, organize the narrative into a policy-oriented framework, using buzzwords” (p.292). The new plan included solutions for old problems such as consistency in terms of methodology and statistics that could be interpreted differently in different locals, to promote buy in from international member companies. The development of such buzz words as “new economy” and “economic growth” organized the other strategies in a manner that allowed maximal participation and also persuade both people and businesses that in order to be viable they would need to participate in this venture. Again this is the result of developing a convincing narrative.

In *The Making of Science*, Godin discusses the emergence of technology and the impact on science policy. The book illustrates how discourse emerged about phenomenon in society, eventually becoming reality through the power of the narrative. In addition, his examination reveals that there is no central organism that influences the end result. He uses examples of collaborative efforts to show that academics, government and international organization, specifically the OECD, are influential in the development of these narratives. Benoit Godin successfully illustrates the power of conceptual frameworks as narratives in science studies; his approach allows the reader to compare this to frameworks that explain the influence of narrative in decision making in other areas of policy making and in society in general.

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***Inventing Canada. Early Victorian Science and the Idea of a Transcontinental Nation.* By Suzanne Zeller.** (Montreal and Kingston: McGill-Queen’s University Press, 2009. Xxi +356 p., ill., notes, notes on sources, index. ISBN 078-0-7735-3561-0).

The history of Canadian science as a reasonably professional research field is scarcely thirty years old, but if we could speak of a “classic” work in our field, Suzanne Zeller’s *Inventing Canada* would surely qualify. First published by the University of Toronto Press in 1987, it has now