καινοτομία: An Old Word for a New World, or,
The De-Contestation of a Political and
Contested Concept;

Wherein It Is Documented that Innovation Is a Political Concept
Which Has Been Contested for 2,500 years,
Together With an Explanation on
How and Why the Concept Got De-Contested
Over the Twentieth Century.

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Abstract

In the last sixty years, innovation has become the emblem of the modern society, a panacea for resolving many problems and a catchword. However, for over 2,500 years, innovation was essentially negative. The innovator was a heretic, a revolutionary, a cheater. How did a concept that had been pejorative for so long come to be a term of honour and a central category of Western thought?

This paper discusses the representations and uses of innovation over time and their development according to four historical "moments": innovation as political, innovation as polemical, innovation as instrumental and innovation as theoretical. The main thesis of the paper is that innovation is a political, and essentially a contested, concept. It got de-contested in the twentieth century, by those who had previously made it into a contested concept, governments.

Innovation means a bad change, presenting to the mind, besides the idea of a change, the proposition, either that change in general is a bad thing, or at least that the sort of change in question is a bad change (…). [But] to say all new things are bad is as much as to say all things are bad, or, at any event, at their commencement: for of all the old things ever seen or heard of, there is not one that was not once new. Whatever is now established was once innovation (…). The idea of *novelty* was the only idea originally attached to the term innovation, and the only one which is directly expressed in the etymology (Jeremy Bentham, *The Book of Fallacies*, 1824).

Introduction [1]

Over the last sixty years, innovation has become the emblem of the modern society, a panacea for resolving many problems and a catchword. The quest for innovation is so strong that some who made no use of the concept until recently have discovered its "political" value and begun using it. Biologists now speak about animal innovation (Reader and Laland, 2003). Others go so far as to suggest that drugs like Ritalin and Adderall, used to treat psychiatric and neurological conditions, should be prescribed to the healthy as a "cognitive enhancement technology" to improve the innovative abilities of our species (Greely et al., 2008). Still others began talking of social innovation (Mulgan, 2007) – a not-so-new concept, however, since it already existed in the nineteenth century.

How did we get there? As a matter of fact, innovation has not always been highly valued. For over 2,500 years innovation was essentially seen as negative. The innovator was a heretic, a revolutionary, a cheater. Certainly, over this period, "every single day brings something new, but [until the seventeenth century] the new is not fundamentally different from what has already happened", as Reinhart Koselleck put it (Koselleck, 2002a: 161; Koselleck, 2002b: 111-12), and authorities were prone to controlling and limiting innovation. It was only in the mid-nineteenth century and above all in the twentieth century that the representations of innovation changed. How did a concept that had been seen as pejorative for so long come to be a term of honour and a central category of Western thought?

Since 1978, Quentin Skinner has regularly posited that words are markers of our social understanding of the world, and that the emergence of new words is a marker of changes in society's values (Skinner, 1978; 1988). Such is the case with innovation. The concept and its use is witness to social values of different epochs. While innovation was

forbidden in the past, it is now a matter of pride. The intellectual history of innovation is the history of the representations and uses of innovation over time.

This paper is a synthesis of (preliminary) results from a research project in progress on the intellectual history of innovation. This project documents the representations and uses of innovation and their development from the Renaissance to the twentieth century and covers religion, politics, history, science and economics. The first part of this paper discusses the origins and emergence of the word innovation and the representations of the concept over time. The second part looks at the work of 'de-contestation' of the concept conducted by governments and seconded by social scientists over the twentieth century. The third part offers a framework for interpreting the historical uses of the concept according to four "moments": innovation as political, innovation as polemical, innovation as instrumental and innovation as theoretical.

The Concept and its Meaning(s)

Innovation as concept goes back to Greek and Roman antiquity. Novelty was relatively routine and accepted at the time, such as science and in fields that "give pleasure", what we now call "the arts". However, this was not the case with innovation. The concept was pejorative. It owes its existence to a metaphorical use of a Greek term (καινοτομία) whose meaning was "making new cuttings". Such was the meaning of the term in Xenophon's *Ways and Means* (opening new galleries in mines), a work on 'political economy' (qualified as minor by today's philosophers). In the political writings on change and stability of constitutions, innovation came to mean **introducing change** into the established order (Plato, *Republic*; *Laws*; Aristotle, *Politics*; and Polybius, *Histories*). In order to properly appreciate this meaning it has to be kept in mind that innovation is distinct from novelty. Novation and innovation refer to introducing or bringing in some new thing that changes customs and the order of things in a non-trivial manner. [2]

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[2] Dictionaries of the Seventeenth Century emphasized the non-triviality of innovation. For example, Richelet (1680) talks of introducing change "in the State", and Furetière (1690) of introducing change in a thing established "for a long time".

Thus understood, innovation was forbidden. In *The Laws*, Plato has only one good word for innovation: changes such as accidents, calamities, diseases and wars "forces us to make a great many innovations" (*The Laws*, IV, 709). [3] In *The Republic*, he accepts only one change in political regimes and constitutions: that in which philosophers become Kings. To Plato, "modifications and innovations outside the tradition framework" are "prohibited" (*The Laws*, II, 656c). Similarly, in his *Politics* Aristotle rejects innovation in modes of government: "The whole set up of the constitution [is] altered and it [pass] into the hands of the power-group that had started the process of innovation" (*Politics*, V, vii, 1307a).

Certainly, to Aristotle there may be need for improvement in society: "A case could be made out in favour of change. At any rate if we look at the other sciences, it has definitely been beneficial – witness the changes in traditional methods of medicine and physical training, and generally in every skill and faculty" (*Politics*, II, viii, 1268b). However, "there is a difference between altering a craft and altering a law (…). [It] takes a long time [for a law] to become effective. Hence easy change from established laws to new laws means weakening the power of the law" (*Politics*, II, viii, 1269a).

There are many such uses of the idea of innovation among Roman writers too. When Seneca (*Naturales Quaestiones*, II, 7, 1) and Lucretia (*De Natura Rerum*, II, 1020-40) discuss "novelty", they both deal with how and why it is feared everywhere. Poets (Horace, Virgil), moralists (Juvenal, Seneca, Cicero, Tacitus) and historians (Sallust) developed thinking on innovation as evil and forbidden: "let no innovation be established contrary to precedents" (*ne quid novi fiat contra exempla atque institute moiorum*), stated Cicero in his oratio *De Imperio CN. Pompei*. The views of these writers have been influential on Western political thought. As Quentin Skinner has argued, Roman thought was adopted extensively during the Renaissance (Skinner, 1978).

Such a representation of innovation remained for centuries. As an anonymous author still put it in 1817: innovation is "a change in the long-established order of things by the

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[3] Every citations used in this paper have been checked with the Greek original.

introduction of novelty, however trifling or inconsequential that innovation may at first appear" (Anonymous, 1817: 15-16). The last part of the definition is important. Minor innovations are as bad as major innovations since they may grow imperceptibly and little by little degenerate into "ruin, troubles and discontent in the State" (Burton, 1637: 95). "I never can be sure what will come next", claimed James Boswell, a Scottish lawyer, in 1785 (Boswell, 1785: 30). This was an argument first used in Aristotle's gradualism of change and widely repeated from the time of the Reformation onward. "It often happens that a considerable change in a country's customs takes place imperceptibly, each little change slipping by unnoticed" (*Politics*, V, iii, 1303a). It is "essential in particular to guard against the insignificant breach. Illegality creeps in unobserved; it is like small items of expenditure which when oft repeated make away with a man's possession. The spending goes unnoticed because the money is not spent once at all, and this is just what leads the mind astray (…). One precaution to be taken, then, is in regard to the beginning" (*Politics*, V, viii, 1307b).

It is through politics and religion (intimately linked to politics for centuries) that the concept innovation entered common discourse. [4] This occurred slowly from the 1400s onward and reached a climax in the 1630s in England, leading to the first controversy on innovation, between Charles I, his protégé William Laud, Archbishop of Canterbury, and puritans like Henry Burton and William Prynne (Godin, 2011b). Burton accused the bishops of "innovating" in matter of Church discipline and doctrine, and urged people "not to meddle with those that are given to change", an expression form Salomon's proverbs that, in the decades following Burton's use of it, would be widely repeated. In seventeenth Century England, documents by the hundreds made use of innovation to discuss religion, using the word as such. Over a hundred of these documents made use of innovation in their title, a way (or strategy) to emphasize a polemical idea and get a hearing. [5]

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[4] A third route was history – of both religion and politics.
[5] At the time, titles were quite long and included what we now call an abstract.

During the Renaissance, the concept of innovation shared a place with heresy in religious discourses, particularly after the Reformation. It was precisely during the Reformation that the fate of the concept was determined for the centuries to follow. In 1548, Edward VI, King of England, issued a declaration *Against Those That Doeth Innouate*. A century later, Charles I, while explaining to his opponents why he had dissolved the Parliament, protested against parliamentarians' innovations and proclaimed that he had never innovated himself. Even a King did not innovate.

In the seventeenth and eighteenth centuries, everyone was accused of innovating and everyone denied he was innovating. Against accusations of innovation, people reply to the accuser: "YOU are the innovator" (Heylin, 1637: 38; Skinner, 1767: 5). Two polemical uses of innovation were dominant (see Appendix for the vocabulary used at the time). [6] One was naming or labelling someone pejoratively as an 'innovator'. The other was using the term to support an argument against change: making use of analogies with history or other countries where innovation have led to 'disasters', or pointing to morality, namely the evil character of an innovator or the undesirable effects of innovation.

Then the concept came to be equated with political revolutions and revolutionaries (Godin, 2011c). The model was, of course, the English political revolution of 1649. After 1789, the emblematic example of violent political revolution was the French revolution, as discussed by philosophers from Johann Heinrich Tieftrunk in Germany (*On the Influence of Enlightenment on Revolutions*, 1794) to Edmund Burke in England (*Reflections on the Revolution in France*, 1790). To many, the democrat or republican is simply a revolutionary innovator who proceeds by "violent methods" (Berkeley, 1785: 6). As William Prynne put it in several pamphlets published between 1658 and 1660, "Innovating frantick Republicans" use "Matchavilian Policie, Engines, or Instruments" to subvert violently the monarchy and erect a "Utopian Republick". The conclusion was direct: (every) innovation is necessarily sudden and violent. It is no surprise, then, that

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[6] The list was constructed from thousands of occurrences of the term (and its conjugations) – most of them pejorative, except for a few – in hundreds of documents from seventeenth-century England.

the term innovation was rarely used by early republican theorists and writers like James Harrington, Marchamont Nedham, John Milton and Algernon Sidney to make a case for the commonwealth in seventeenth-century England. As used (very occasionally) by these authors, it was in the then-traditional pejorative sense, and more often that not in historical writings or passages or while discussing religious issues – as would also be the case among philosophers of the Enlightenment and political writers in the eighteenth century. One has to look to other kinds of literature, like anonymous pamphlets, to study innovation in the political thought of the period.

Next, it would be social reformers' turn to be accused of being innovators. In 1858, William Lucas Sargant published a study against those "infected with socialist doctrines" or "social innovators" as he called them – the French St. Simon, Fourier and Proudhon, and the political economists including Adam Smith – to whom welfare is the solution to social problems rather than work: "by bettering artificially the condition of the poor, [these authors] encourage[s] an undue increase in numbers" of the "most numerous, and least fortunate, classes of society" (Sargant, 1858: iii; v). Educational reformers would get no better treatment in the eighteenth century, their "extremes" being labeled "innovations" (Winslow, 1835).

The loading of innovation with pejorative meaning was sufficiently dominant for the concept not to be used for many centuries, except in the hands of critics or those who wanted to deny that they innovated. Such was the case in science, where the concept kept its political and religious sense for awhile. Certainly natural philosophers and scientists of the seventeenth and eighteenth centuries developed a "new philosophy" and a "new method", experimental in nature, and this novelty was widely displayed in titles (see Thorndike, 1957). But the scientist claims that he does not innovate. The scientist keeps to the current values of society, "not meddling with Divinity, Metaphysics, Moralls, Politiks, Grammar, Rhetoric, or Logic" as the *motto* of the Royal Society suggested

(Hunter, 1995). [7] Such was Francis Bacon's view: the *Novum Organum* (1627) discussed "novelty" in scientific method openly, but the *Essays* held a different perspective on "innovation". Similarly, the one and only place where Thomas Sprat used the term innovation in his *History of the Royal Society* is to defend new experiments against political, social or religious changes: "after all the *Innovation*, of which they [new Experiments] can be suspected, we find nothing will be indanger'd, but only the *Physics* of *Antiquity*" (Sprat, 1667: 328).

Certainly again, from the Renaissance to the nineteenth century, the new, the strange and the curious was everywhere and was valued to many extents in different *milieus* (Thorpe, 1937; Daston and Park, 1995) – such was also the case during the Middle-Ages (Smalley, 1975; Pleij, 2007). [8] However, this was not the case with innovation, to the point that another vocabulary developed that hides innovative aims. "Renovation yes, but no innovation" is a recurring opposition of the time. "Reformation" and "renovation" improve on things imperfect, but slightly and slowly. On the opposite side, innovation changes the existing state of affairs completely and suddenly and "turns things upside down".

Such a situation would persist until the mid-nineteenth century – and later: in the twentieth century, the sociologist R. Merton had suggested a definition of innovation as

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[7] As d'Alembert put it in the French *Encyclopédie* of 1751: "Notre nation, singulièrement avide de nouveautés dans les matières de goût, est au contraire en matière de Science très attachée aux opinions anciennes".

[8] In travels and explorations, in science experiments conducted in the marketplace, in fine arts, in novels, in news and in rhetoric. At Courts novelty is praised too: kings founded scientific academies, scientists conducted their science under the patronage of princes (Long, 2003) and dedicated their scientific discoveries to them (Biagioli, 1993), cabinets of curiosities, precursors to museums, were set up (Daston and Park, 1995). Then with the increasing value of commerce, business and invention, or material culture and the commercial society, novelty was praised as source of employment (Thirsk, 1979) and new commodities such as luxuries (Berg, 1999). Rhetoric is an interesting case for, as in other matters, novelty is both negative (rhetoricians must accommodate the unfamiliar or unpopular proposition to the values of the audience) and positive (in order to guarantee the attentiveness of his audience, he must demonstrate that the matters which he is about to discuss are important (*magna*), novel (*nova*) or incredible) (Skinner, 1996; Force, 2005). A similar 'ambivalence' exists at Court. As E. Shils once put it: "Rulers, despite their insistence on the traditional legitimacy of their authority, were constantly being forced to depart from tradition" (Shils, 1981: 28).

anti-social behavior. [9] Gradually, innovation gained new meanings. Innovation came to be used positively to talk about **novelty of any kind** and its 'productive' effects, rather than about changes in established customs. To this end, one more pejorative connotation had to be abandoned: that of novelty. To some, man's invention is accepted (when limited to specific domains), but to others novelty is fancy, curiosity, contemplation, subtlety, private opinion and fashion. Innovation came to refer to 'inventing' (in the sense of 'creativity') something new. However, this is not enough to characterize innovation – and distinguish it from invention. Innovation also carried the idea of 'introducing' a 'useful' thing to the world. The history of innovation as a category in Western thought is the development of these two ideas, as discussed in the rest of this paper.

Origin and Diffusion

We saw above that the Greeks had a specific word (of metaphoric origin) for innovation. Among the ancient Romans writers, one finds only a couple of occurrences of *innovatione* and *innovare*, whose meaning is renewing (a return to the past) not innovating. *Renovare* (also in the sense of renewing) was more widespread. Precursors to or synonyms of innovation in ancient Rome are *novitas* (novelty) and r*es nova* (or *nova res*) which stand for innovation as a substantive, and *novare* for the action of innovating. Declinations for these words are as numerous as those for the Greek καινοτομία.

The word innovation came into use in the late thirteenth-early fourteenth century. It is a combination of *in* (into) and *novare*: introducing novelty. Early uses of the word exist from the fifteenth and sixteenth century in political matters – Machiavelli; Kings' calendar rolls, letters, and laws both in England (Richard II, Henry VIII) and France (François 1st). However, the word was used only occasionally prior to the Reformation. Then Catholics began to argue that Henry VIII, Edward VI and Elizabeth had innovated. English puritans adopted the same argument beginning in the mid-sixteenth century. As a matter of fact, the word became so 'popular' that one may observe a 'linguistic inflation'

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[9] To Merton, innovation is one of four modes of adaptation of individuals to society. It is a deviant form of behavior, "a departure from institutional norms" (Merton, 1938: 144), "the use of institutionally proscribed means" (Merton, 1938: 141).

among English writers, who often translated Ancient and Italian authors in their own words. [10] For example, while F. Guicciardini's *History of Italy* (1568) contains only one occurrence of *innouare*, one finds dozens of occurrences in English translations, like that of Geffray Fenton published in 1579.

The Word: Its Origin

	France [11]	England [12]	Italy [13]
Innovation	1297	1297	1364
Innovate	1315	1322	XIVth [14]
Innovator	1500	1529	1527

As an indicator of the diffusion of the word, let us draw a statistics from old dictionaries. While the word innovation appeared very rarely in dictionaries of the seventeenth century (in England, 9 out of 323 dictionaries), by the eighteenth century nearly half the dictionaries published in English and French provided a definition of innovation (786 out of 1850). In these dictionaries, innovation means both introducing or bringing novelty and/or changing customs. As examples:

> *Dictionnaire de l'Académie française*, 1694.
>
> Innovation: introduction de quelque nouveauté dans une coustume, dans un usage desja receu.
> Innover: introduire quelque nouveauté dans une coustume, dans un usage desja receu.
> Innovateur. [15]

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[10] A similar inflation existed for other terms, like 'revolution'. See Goulemot (1968).

[11] O. Bloch and W. Wartung (1968), *Dictionaire étymologique de la langue française*, Fifth edition.

[12] *The Oxford English Dictionary* (1989), Oxford: Clarendon Press.

[13] M. Cortelazzo (1979), *Dizionario etimilogico della lingua italiana*, Bologna: Zanichelli; C. Battisti (1952), *Dizionario Etimologico Italiano*.

[14] *Innovellare* (Thirteenth Century).

[15] Innovateur appeared in the sixth edition only (1835): celui qui innove, qui fait des innovations. However, the 1694 edition includes novateur (novator), defined : as celuy qui introduit quelque nouveauté, quelque dogme contraire aux sentiments & à la pratique de l'Église. At the time, novator is used mainly in latin, France and Scotland.

Samuel Johnson, *A Dictionary of the English Language*, 1755.

Innovation: change by the introduction of novelty.
Innovate: to bring in something not known before; to change by introducing novelties.
Innovator: an introductory of novelties; one that makes changes by introducing novelties.

The two meanings of innovation (changing customs and introducing novelty) are present in earlier and later dictionaries too. However, context determines uses, and such was the case during the innovation controversy in mid-seventeenth century England. In a context where references to antiquity or authority reigned, innovation was seen as a change in customs and thus pejorative. It was used in this sense by authorities in the sixteenth and seventeenth centuries in argument against the innovators. To others, namely the innovators who had to minimize the scope of their innovation in the face of criticisms, innovation meant renewing: a non-radical change, a return to the past. At the opposite or end of the spectrum of meanings, when the context is that of a disposition of people toward progress and the future, as during the modern era, innovation is seen as introducing novelty into the world for its "productive" (fruitful, beneficial) effects.

One meaning of innovation is absent from the above dictionaries. In both dictionaries, innovation is defined as an action: introducing something new. However, innovation was also, since Antiquity, used as a substantive: a novelty (new ideas, behaviors and objects). One had to wait the nineteenth century for such a meaning in dictionaires, as in the *Dictionnaire de la langue française* from Émile Littré (1872-77): innovation is defined as both "action d'innover" and "résultat de cette action".

Innovation as novelty of any kind (rather than change in customs) is the meaning through which innovation turned positive, and this occurred after the French Revolution (Godin, 2011d). As a matter of fact, France is one of the countries where innovation started being used with a positive connotation in the everyday discourse. It had nothing to do with technology and the commercialization of technology – not yet –, as economists and many of us understand it today – the 'projector' was badly perceived over the eighteenth and early nineteenth century. Innovation came to be used rather to talk about a new era.

Yet, like the English theorists of the Commonwealth in the seventeenth Century, the French 'revolutionaries' made rare use, if ever, of the word innovation to discuss their innovation (the Revolution). It comes rather from post-revolutionary France and the nineteenth century. People become conscious or aware of radical changes everywhere: in politics (political revolution), economics (industrial revolution), science (scientific revolution) and society (Marx and the coming social revolution). [16] Many writers, from the anonymous to the most famous, made use of innovation to name or talk about a new era and the productive effects of innovations. To a certain extent, such use was the case in the past too – and I emphasize this for all that follows in the following pages –, but for different reason: the "age of innovation" and the "spirit of innovation" were pejorative expressions (see appendix). Now, this age is one of praise.

Between approximately 1750 and 1850 there occurred, as Koselleck suggested, a "shift in the conception of time and a reorientation towards the future" (*Sattelzeit*), "against which structural changes are perceived, evaluated and acted upon" (Koselleck, 1977; Richter, 1995: 35-38). Innovation is part of this shift. Innovation began to be discussed in positive terms in every domain as a rupture, a break with the past, using the vocabulary of revolution (Godin, 2011c; 2011d). As a matter of fact, revolution is no longer negative (Reichardt, 1997) – at least in many *milieus*. As Diderot put it in the French *Encyclopédie* (1751), "Les révolutions sont nécessaires, il y en a toujours eu, et il y en aura toujours".

Together with politics, three early uses of the word deserve mention because it is through these that innovation got a positive or sympatic hearing – although negative uses continue to exist too. One is history (of both religion and politics). Writers started discussing past experiences of changes and revolutions as innovation, made analogies with their own age and pointed to the beneficial consequences. The second use is law. The Revolution needed new instruments to become reality. Changes in law and legislation came to be named and discussed in terms of innovation. [17] The third influential use of the word is

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[16] On 'political revolution', see: Arendt, 1963; Koselleck, 1969; Dunn, 1989; Reichardt, 1997. On 'industrial revolution', see: Hardy, 2006. On 'scientific revolution', see: Cohen, 1985.

[17] In Seventeenth-Century England, history and law, together with religion, were also the sources used by writers for developing arguments against innovation.

science, and it is here that one finds titles with innovation in it – rather than isolated occurrences of the term as in history and law. While the authors who contributed articles to the French *Encyclopédie* of 1751 conveyed a pejorative meaning of innovation and novators ("la secte des novateurs") – a meaning widely shared in Eighteenth century France –, a French inventor published a *Dictionnaire chronologique et raisonné* in seventeen volumes from 1822 to 1824 (Touchard-Lafosse, 1822-24) – falsely attributed to a *Société de gens de letters* – followed by a Belgian dictionary in 1836 (Delepierre, 1836), both featuring innovation in their titles.

It would be erroneous to think that the use of innovation in science is intimitaely linked to or emerged because of a discourse on progress or the modern age. For example, despite a vocabulary on novelty and modernity, innovation had no place during the early Ancients-Moderns quarrel (Fontenelle, Perrault, Wotton, Temple, Benjamin), with few exceptions (like Malebranche, *De la recherche de la vérité*). Neither was progress talked of in terms of innovation among philosophers and scientists of the eighteenth century. Certainly a disposition toward progress contributed to experiencing novelty consciously, from the Enlightenment onward, and may have contributed to the changing values concerning innovation. Yet, more often than not, innovation appeared timidly alongside other terms, when it did, with no discussion. [18] Novelty was a far more widespread term.

Things would change some decades later. By the middle of the nineteenth century and the early twentieth century, the use of the concept exploded and permeated the scientific literature, above all in medicine, chemistry, engineering and instrumentation. One thing is certain: as titles of the time attest, to the scientists "innovation" was novelty in *methods* – not technology (Godin, 2011d). This explains why innovation got into the practical arts and learning, namely those fields most in need of improvement according to the

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[18] What about literary criticism that praised novelty from the eighteenth century? Remember the distinction noted above between novelty and innovation. Novelty as creativity and originality was valued among the Romantics and may have contributed to the rise of innovation in later representations, but innovation was not part of the vocabulary of literary criticism.

scientists: innovation as the introduction of the scientific method in useful knowledge. [19] Ironically, most of the titles came not from science but from the useful arts. This representation occurred gradually over the nineteenth century, first in France. Germany would follow, while England would keep to the subversive use of innovation for a while, and scientists there made no use of the term until much later.

Why a new term in the vocabulary? If one keeps in mind the revolutionary connotation of the word innovation up to then it may have been used to emphasize the profound (revolutionary) character of changes and nolveties of the time. To the scientists, innovation is the introduction of something absolutely new (the science's method), that has never existed before and which was unique for its effects or "fruits", to use Francis Bacon's word. Innovation as 'revolutionary novelty' is central to understanding the conceptual developments in the century that followed: innovation became a metaconcept which condensed into a word a new experience of novelty. Novelties are now experienced as radical or 'revolutionary' and permanent changes, they encompass more and more spheres of society and are considered useful. One needs a 'new' term: novelties become innovations. In turn, innovation becomes a catchword, as the expressions of the time attest ("itch of innovation", "plague of innovation", etc).

This is the context in which innovation is introduced as a term in the French dictionary mentioned above. Touchard-Lafosse discussed the progress made since the French revolution of 1789 and the *supériorité* and *suprémacie* of France versus England. How did France get there? "Une impulsion quelconque était attendue; elle fut donnée…Nous avons nommé la révolution" (p. 26). Touchard-Lafrosse uses the term innovation widely, covering scientific and learning *methods* as well as industrial *methods* of production or processes − metals, agriculture, lighting and textiles. According to the author, these

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[19] Innovation as 'scientific method' applied to the practical arts is exactly Francis Bacon's vision of science. However, Bacon has never used the term in this sense. To him, innovation had the then-established meaning: introducing change in the established order (religion and politics).

industrial innovations – due to the scientific method – brought nothing less than "grandes et salutaires révolutions dans l'économie" (p. 31). [20]

Development of the Concept

Innovation, like invention, carries connotations of ingenuity and creativity, but it was not discussed in these terms among philosophers, natural scientists and engineers. [21] One has to look elsewhere for systematic discussions of innovation. It is in the writings of social scientists that, from the beginning of the twentieth century, innovation came to be explicitly theorized as **creativity**. Innovation was no longer understood merely as change, but as deliberate work of man's imagination – a direct import from Romanticism (and its 'theories' on genius and the productive or creative imagination) (Engells, 1981) and the late nineteenth century theories of invention. Someone was said to be innovative to the extent that he 'generates' (invents) new ideas or new things – a synonym for inventiveness. This remains a common meaning of innovation. As a matter of fact, the two terms (invention and innovation) are often used interchangeably or one as a subclass of the other (e.g.: technological invention as one type of innovation).

Creativity places the emphasis on originality: inventing something entirely new or doing something differently. This is the meaning through which innovation came into widespread use over the twentieth century in science and industry (technology), but also in law, linguistics, arts, literature and music. The mid-twentieth century ideas concerning research or research and development (R&D) reinforced this meaning. Researchers were studied as the ideal type of creative individuals (together with artists) and research, defined as "creative" as opposed to routine work (as in the early editions of the OECD methodological manual, known as Frascati manual), was posited as the source of (technological) innovation.

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[20] The Belgian archivist Delepierre covered industry too in his *Aperçu* of 1836, but he used innovation only twice, as applied to painting and music.
[21] The idea of creativity is reserved to God and its "creative power" – although there existed some uses of the latter expression in the seventeenth Century as regards King's power and man's imaginative faculty.

Among theorists of innovation, originality is discussed in two ways. First, like invention, innovation as creativity and originality is discussed in terms of "combination", from the first theorist Gabriel Tarde onward: combining previous ideas or things into new ones. [22] Combination is a psychological category whose genealogy comes from the Scots' empirical associationism and was thereafter used in the philosophical and the literary criticism literature on imagination (Romanticism). To many writers of the twentieth century, the combination of existing ideas or things in order to produce new ones defines what innovation is. Early 'psychological' theories of innovation came from the economic historian Abbott P. Usher (1929) and anthropologist Homer G. Barnett (1953). In the hands of some economists, like Schumpeter, the entrepreneur (who combines the productive factors), became the creative innovator *par excellence* (Schumpeter, 1934; 1939).

Second, the most original innovations, in the sense of those having the greatest effect on society, were described, introducing the vocabulary of revolution into the analyses. As a matter of fact, revolutionary and widespread changes have characterized the meaning of innovation in the very first theories of innovation, as it did for the early uses of the term among French writers in the early nineteenth century. That people experience change everywhere finds expression in the first theory of innovation, that of the French sociologist Tarde, to whom innovation covers social organization, politics, law, culture, religion, language, industry and arts (Tarde, 1890). Anthropologists of the early twentieth century had a similar and large meaning of innovation. That changes are discontinuous and revolutionary also finds expression in the economist J. A. Schumpeter's concept of economic change or development through ("combination" or) innovation as "revolutionary change" (Schumpeter, 1934: 62-64; 1939: 226) and "creative destruction" (Schumpeter, 1942).

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[22] One of the firsts to put it as such is most probably the French Victor Egger in a thesis on descriptive psychology published in 1881. Egger has distinguished imagination from memory on the basis of innovation. Imagination "innovates" by combining existing elements (coming from memory) into a new way (Egger, 1881: 191-95).

Typologies were consequently developed for classifying innovations as "revolutionary" *versus* incremental. Revolutionary innovations got the attention of most theorists, and gave rise to hierarchies of innovations with hyperbolic terms (major *versus* minor innovations; great, important, fundamental, basic and radical innovations *versus* supplemental, incremental). Consequently, theoretical controversies ensued among historians, anthropologists and sociologists. To some, innovation (or rather of the invention behind an innovation) is evolutionary, not revolutionary in character. The irony is that to 'evolutionists', the innovations responsible for advancement of society or economic growth were revolutionary. [23] To sociologist S.C. Gilfillan, the development of inventions is evolutionary (the combination of many small contributions) but it is "revolutionary" inventions (with an "s") that change civilization (Gilfillan, 1935). Similarly, Schumpeter has contrasted evolutionism (concerned with continuous change and equilibrium) to the "discontinuity" and "revolutionary" character of innovations (Schumpeter, 1934: 62f).

Innovation as creativity was only one of the new meanings attached to the term. Innovation also had to be distinguished from invention. Over the twentieth century, innovation took on a more specialized meaning related to the *use* of new ideas, things or behaviours, whatever their source. Already during the previous century, innovation in scientific methods carried the connotation of utility. The inventor and the inventor-entrepreneur (projector) had the idea (or rhetoric) of introducing something useful into the economy too – but without using the vocabulary of innovation. Today social scientists place explicit emphasis on **utility** or **usefulness**. Innovation is theorized in terms of "introducing" or "adopting" some novelty into practice (into groups, cultures, firms or governments). [24] This is the second modern meaning of innovation: the use of new methods or ways of doing things, as scientists had suggested in the previous century. This is the meaning used in the literature of the second half of the twentieth century in sociology, management, politics and neo-classical economics – in the latter case, it

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[23] "Evolution through revolution", as the anthropologist A. Goldenweiser once put it (Goldenseiser, 1925: 228, footnote).
[24] Sociologists usually talk of "adoption" (and "diffusion") while economists talk of "introduction" or "implementation".

explains innovation as the introduction of new (methods or) processes in industrial production (Godin, 2010a).

In the last sixty years or so, theorists have developed two variants of this meaning. One is innovation as a **commercialized** invention. This meaning refers mainly to technological inventions, and has become the dominant understanding: bringing (selling) technological inventions to the market (Godin, 2010b). While until then innovation has been understood as action (doing something differently, using new methods, processes or practices) it is here limited to a thing: a commercialized product. [25] To economic historian W. Rupert Maclaurin, the first to put it explicitly as such, "When an invention is introduced commercially as a new or improved product or process, it becomes an innovation" (Maclaurin, 1953: 105).

Limiting innovation to technology is, to some theorists like anthropologist Barnett, a 'restricted' meaning of innovation (Barnett, 1953: 8). In fact, except for a few authors like Tarde and a few disciplines like anthropology, such a restricted meaning is spontaneous among theorists. Certainly, some have regularly talked of social invention or innovation (W.F. Ogburn, S. Kuznets), but in the end they chose to concentrate on the study of technological innovation.

The other variant of innovation as introducing something useful is innovation as a **process** over time, from the generation of an idea to "appliedness", from invention to diffusion. While innovation as a thing is discussed in the plural form and gave rise to countless exercises in counting the number of innovations in an industry or a country, here innovation is discussed in the singular. As the panel on technological innovation from the US Department of Commerce put it in 1967: innovation is a "process by which an invention or idea is translated into the economy" (US Department of Commerce, 1967: 2). Innovation as process emerged as a solution to the early twentieth century controversy as to whether invention or diffusion comes first in explaining the development of societies or cultures (Godin, 2011a). It gave rise to many sequential theories or "models"

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[25] A similar shift as that of the term 'technology', from a technique to a thing. See Schatzberg (2006).

of innovation and, after World War II, to the highly influential but controversial "linear model of innovation" (Godin, 2006; 2008a; 2010c).

Three Meanings of Innovation

> Substantive: novelties (new ideas, behaviors, objects)
> Action: introducing (or bringing in) something new
> Process: from invention to diffusion (commercialization)

It is during these conceptual developments of the twentieth century that innovation was viewed as opposed to two earlier concepts: invention and imitation (Godin, 2008b). In Renaissance writings, innovation was often equated with invention [26] – in a pejorative sense: innovation was seen as man's invention or fancy. To Peter Heylin, who was one of the High Commission's examiners at the censure of the English minister and puritan Henry Burton (a zealous opponent of ecclesiastical innovations), "the opinion of some private man proves not in my poore Logick an Innovation (…). To make an innovation (…), there must be an unanimous and general concurrence of minds and men, to let on foot the new and desert the old; not the particular fancie of one private man (Heylin, 1637: 124).

Over the twentieth century, innovation came to be distinguished from (and opposed to) invention in the sense that innovation is useful invention put into practice. Innovation is now discussed in terms of translation or "**application**". Economic thought is responsible for the distinct meanings of invention and innovation – although the opposition is quite old and took many forms over time: scholastics/humanism, speculation/operation, discovery/invention, basic/applied science. With innovation, the opposition coalesced and crystallized into a single word. To Josiah Stamp, invention "has too mechanical a connotation" (Stamp, 1937: 5); "mechanical and scientific discovery, even in practical form, is not economic wealth until man has learnt to enjoy it in an economic sense" (Stamp, 1929: 120). To Schumpeter, "innovation is possible without anything we should

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[26] A concept whose history remains to be written.

identify as invention and invention does not necessarily induce innovation". Invention is an act of intellectual creativity and "is without importance to economic analysis" (Schumpeter, 1939: 84-85), while innovation is an economic decision: a firm applying or adopting an invention.

Innovation also came to be understood as opposed to another concept: imitation. Like invention, imitation defined innovation for awhile. During the Reformation, when people denied that they were innovating, they were simply pretending that they were going back to original and purer times. They were imitating the past, which time or people had corrupted. If by chance or as a last recourse people admitted innovating, the innovation was claimed to be imitation. Christopher Dow, an English divine involved in the controversy against Henry Burton in 1637, put it as follows, "I cannot but wonder with what face he can accuse any of these things of novelty, when there is not one of the things he names which hath not been used in the primitive and purest ages of the Church" (Dow, 1637: 114).

Then, as mentioned above, originality (rather than imitation) – which also defines invention – came to be the criterion or yardstick for innovation. In the twentieth-century literature on innovation, originality refers to being *first* in doing something differently. [27] However, being first is difficult to assess: it is relative and subjective. A man can be an innovator compared to his own past behaviour or versus his own group, and yet not be an innovator 'internationally' (or across time). He simply imitates what already exists elsewhere. It is innovation to him subjectively, but not objectively. To many, innovation is objective innovation only. The rest is imitation. As the economist Theodore Levitt from Harvard Business School put it, "Strictly speaking, innovation occurs only when something is entirely new, having never been done before" (Levitt, 1966: 63). Innovation as the introduction or use of something which already exists, as it was previously understood in the social sciences, is imitation. Similarly, to economist Jacob Schmookler, "the first enterprise to make a given technical change is an *innovator*. Its action is
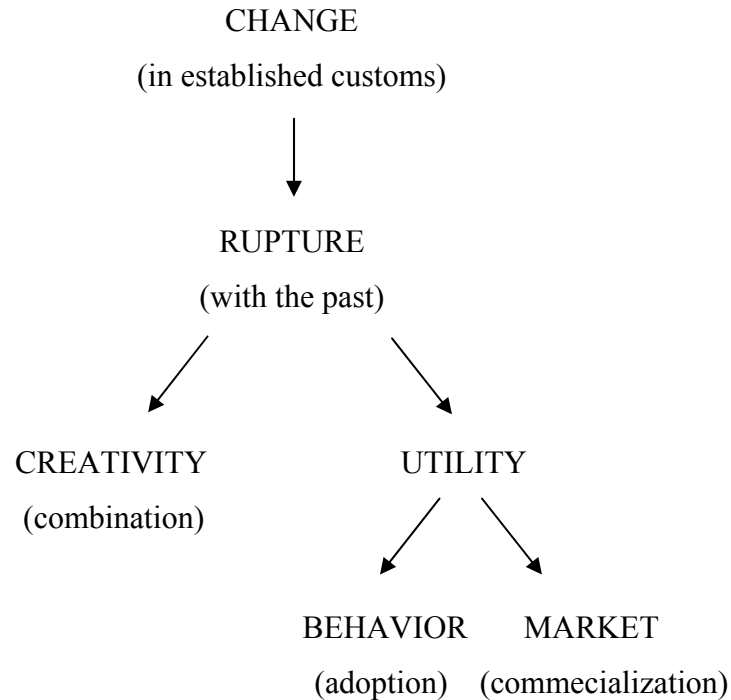
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[27] The idea of (and expression) "first introducing" some change or novelty already existed in the seventeenth century. However, it was not a question of identifying historical origins or originality but a moral one: accusing the person who is responsible for (guilty of) a bad change.

innovation. Another enterprise making the same technical change later is presumably an *imitator*, and its action, *imitation* (Schmookler, 1966: 2). One of the first to express the idea in this way was F. Redlich in 1951 in an essay on Schumpeter's categories. To Redlich, a genuine (primary) innovation (as opposed to imitation) is "whenever a thing has been brought into existence which (…) has not yet taken form" (Redlich, 1951: 285). In the following decades, many economists adhered to such a representation. For example, when discussing firms' strategies, C. Freeman minimized and contrasted "the traditional strategy [use of invention as] essentially non-innovative, or insofar as it is innovative it is *restricted* [my italics] to the adoption of process innovations, generated elsewhere but available equally to all firms in the industry" (Freeman, 1974: 257). To Freeman, innovation "excludes simple imitation or 'adoption' by imitators".

The representation has not gone unchallenged. In a study conducted for the Science and Industry Committee of the British Association for the Advancement of Science in the late 1950s, C.F. Carter and B.R. Williams suggested that a firm "may be highly progressive [innovative] without showing much trace of originality [research]. It may simply copy what is done elsewhere (…). It is nonsense to identify progressiveness with inventiveness" (Carter and Williams, 1958: 108). This was also Schumpeter's understanding: an innovation "need not necessarily have occurred in the industry under observation, which may only be applying, or benefiting from, an innovation that has occurred in another" (Schumpeter, 1939: 89, footnote 1).

The conceptual difficulties of the distinction between innovation and imitation led many economists to abandon the category 'innovation' in *lieu et place* of "technological change" (Godin, 2010a), while other researchers and statisticians created classifications in order to measure levels or degrees of innovation or innovativeness (Rogers, 1962): a first chronologically or internationally (objective), and a first compared to or within one's neighbours, group or culture (subjective). As for imitation, the concept gave rise to "diffusion" studies (Tarde, 1890; Rogers, 1962; Mansfield, 1968) – with imitation used as term for a while, instead of diffusion – and to the study of lags between innovators and followers or imitators (often termed laggers).

Representations of Innovation

Over the Centuries

CHANGE

(in established customs)

$\downarrow$

RUPTURE

(with the past)

CREATIVITY   UTILITY

(combination)

BEHAVIOR   MARKET

(adoption)   (commecialization)

Overall, innovation has become a basic concept in Koselleck's sense (Koselleck, 1996: 64). It crystallizes into a single word a whole semantic field or cluster of other concepts and ideas: change, novelty, invention, creativity, originality, usefulness. However, one would have difficulty finding in the intellectual history tradition an answer to the question: What was the context out of which a radical change in the meaning of innovation came about, a change that culminated in the modern cult of innovation? For example, the main researchers like Quentin Skinner and Reinhart Koselleck, although concerned with different aspects of 'novelty', like progress, modernity, crisis and revolution (particularly the analysis of *neuzeit* in Koselleck, 1977: 236 and after), had forgotten a central political concept in their analyses – innovation. [28] Equally mute are the

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[28] Nevertheless, many historians have discussed conceptual change in politics as "innovation", like coining a new term or changing the meaning of a word (e.g. Pocock, 1985; Farr, 1988; Ball et al., 1989), and the originators of the innovations as "innovators" or "innovative ideologists" (Q. Skinner, 2002a; 2002b).

Dictionary of the History of Ideas (Wiener, 1968-74; Horowitz, 2004) and the Cambridge University Press series *Ideas in Context*. Innovation is also missing in sociologist Raymond Williams' *Keywords* (Williams, 1976) and philosopher Charles Taylor's *Modern Social Imaginaries* (Taylor, 2004). And in history, economics and public policy, researchers study technological innovation with little if any interest in the concept and its representations.

Certainly one finds here and there among historians a mention that innovation had at one time been a negative (Panofsky, 1960; Burke, 1972; Whitney, 1986; Milton, 1995; Zaret, 2000; Scott, 2000; 2004). But there are very few studies of the phenomenon (a notable exception is Larocque and Lessay, 2002), and the few that exist are concerned with technological innovations (Clark, 1987; Marx, 1994; Bérenger, 2003; Mohebbi, 2003) and the "luddites" (Binfield, 2004). For example, one finds nothing in the literature on the "projectors" (the untrusted entrepreneurs-innovators of the seventeenth and eighteenth centuries) (Yamamoto, 2009). One has to look elsewhere and to other concepts (like progress, modernity, revolution, social change) for studies on the representations of 'innovation' over time. [29]

De-Contestation and Legitimization

The twentieth century has made of innovation an ideology, or a de-contested category: innovation has acquired a dominant and (almost exclusively) positive connotation. De-contestation is a process of naturalization of contingent concepts, practices and representations into ideologies (Norval, 2000; Freeden, 1996). As collective belief systems, ideologies de-contest political concepts by converting the variety of opinions into a monolithic certainty. They naturalize what is contingent and provide a particular organization of society, a non-historical, given and natural articulation, an imaginary. Innovation as ideology precisely serves this function. Innovation has become a non-

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Equally, historians have regularly stressed that people have innovated during every period of history, and many have studied the 17-19th centuries and technology particularly.

[29] One author who deals with a long-term perspective on innovation is Garçon (2003), but in a paper of the essay type.

controversial practice, an institutionalized signifier and an ordering and structuralizing principle of thought and action.

It is here that those who had made innovation a contested concept in the past (governments) de-contested the concept and made innovation a tool of public policy. In this task, governments have been supported by theoreticians. This section argues that governments themselves, together with social scientists as consultants, have acted as "innovative ideologists". They have brought forth a new vision of innovation (technological innovation) in response to a specific context (competitiveness) and in reaction to previous thoughts (on invention), and have thus acted as advocates of innovation and sellers of expectations or promises. Following Quentin Skinner, I call these innovators "innovative ideologists" (Skinner, 2002a: chapter 8-10; 2002b, chapter 4; Godin, 2010b).

In order to legitimize innovation for policy purposes, government needed arguments or conceptual frameworks. It was here that theoreticians entered the scene. The work of legitimization was conducted with the aid of social sciewntists who developed theoretical thoughts on technological innovation and the *factors* that firms and governments may influence or control in order to get more out of material or technological invention. Acting as consultants to the governments and international organizations, the social scientists acted as advocates (because sympathizers and beneficiaries) of innovation (whose source is said to be knowledge) – as much as 'scholars'.

To governments and international organizations, innovation is technological innovation and is a tool of policy, a tool in the service of industry. The rationale is essentially economic: competitiveness between industries and between countries. As the OECD put it in 1966, in one of the first official titles of the twentieth century on innovation: "The competitive position of the firm now depends (...) on the speed at which it can introduce new technically superior products" (OECD, 1966: 7). "The health of the Western European countries very much depends on their international competitiveness. Such competitiveness increasingly requires a relative technical advance in certain science-

intensive industries" (OECD, 1966: 12). Hence the need for policies to "stimulate technological innovation".

The official representation of innovation also carried a second component: commercialized innovation. Governments have been among the firsts to promote systematically a definition of innovation as commercialized technological innovation, because of its relevance to policy issues (competitiveness and productivity). Until then, most economists, for example, had been working with the idea of "technological change" as the introduction of new inventions in industrial production, not their commercialization (Godin, 2010a). Certainly, as discussed above, there were other definitions of innovation *per se* emerging in sociology, management and political science. However, there was no accepted and standardized definition. Nonetheless, the OECD and governments selected one of these definitions (commercialization) with no hesitation. In the following decades, innovation as the commercialization of technological inventions became the dominant representation of innovation.

Most of the literature refers to Schumpeter as the father of "innovation studies". I have shown elsewhere that Schumpeter, although an original author among economists, is a symbolic father whose place in the literature is often to legitimize an evolutionary framework (Godin, 2010b). Economists have made Schumpeter into a pope. In this section, I suggest that the roots of "innovation studies" must be searched elsewhere as well as in Schumpeter – the American sociologist William F. Ogburn, the economic historian W. Rupert Maclaurin and the evolutionary economist Christopher Freeman – and these authors produced their theories in co-production with governments. [30] The first two are forgotten today and deserve no recognition in the study of innovation, not even footnotes, while the third constructed a whole policy-oriented tradition, very influential in Europe but absent in the United States. These authors' ideas owe a great deal to governments' interests and to issues of public policy.

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[30] The three authors are discussed at length in Godin, 2008a, 2010b and 2010c. Two influential contributions are missing from the present analysis: that from the agricultural sociologists, which culminated in E. M. Rogers' classic (five editions between 1962 and 1983), and that of the British researchers C. F. Carter and B. R. Williams, who preceded Freeman on the study of industrial innovation. These authors produced their theories in co-production with governments too. I plan to write a paper on these authors in the near future.

My argument is not that social scientists have been responsible, in a deterministic sense, for the valuing of technological innovation, nor for its role in governments' discourses. From the mid-nineteenth century onward, "technology" (or "machines") has been discussed in every kind of literature and everyday discourses, including popularization. Technology is said to be the main factor responsible for the "industrial revolution", civilization and modernization, then economic progress. From the early twentieth century, it is posited to be what comes out of (systematic and organized) research, [31] and here natural scientists (through the US National Research Council, among others) have been influential. However, it was Ogburn, Maclaurin and Freeman, as social researchers, who contributed the theoretical thoughts that made innovation technological, and that served governments' ambitions and policies. They contributed to bringing technology's connotations – industrial and material – to innovation. They helped to coalesce and crystallize the then-prevalent discourses on technology into a vision of innovation as technological.

A sociologist at the University of Chicago for most of his career, Ogburn (1886-1959) held influential positions in both academia and government. He was also, together with S. C. Gilfillan, the first academic to devote extensive study to technological innovation. From the late 1910s onward, and particularly after *Social Change in Respect to Culture and Original Nature*, published in 1922, he produced dozens of papers and books for forty years. Ogburn was interested in the study of what he called the effects of technology on society. To this end, he developed the first theoretical framework on innovation: cultural lags. There is, claimed Ogburn, maladjustment or lag between technology and society, due to attitudes and diverse kinds of resistance of people to technology, and the task of the social engineer is to reduce this lag. Ogburn did not use the word innovation, but his studies were concerned precisely with what came to be called innovation among sociologists: the adoption and use of technological invention. With his framework on lags, Ogburn offered the first linear or sequential model of innovation. He suggested

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[31] Among the social sciences and humanities, anthropologists and historians are certainly pioneers in the systematic study of technology and social issues. On historians, see Molella (1988) and Marx (2010). On the meaning of technology over time, see among others the July 2006 issue of *Technology and Culture*, particularly the papers from R. Oldenziel and E. Schatzberg.

many forms of this model which can be summarized as: idea → concrete design → diffusion.

Ogburn put his ideas into practice on several occasions. In turn, these occasions suggested new ideas to him. Ogburn served as director of research to the President's Research Committee on Social Trends established by President Herbert Hoover in 1929. The committee produced two thick volumes of qualitative and quantitative analyses (1933) whose basic argument was the application of knowledge to social action. The committee also made a recommendation for a National Advisory Council, which was in fact set up in 1933 (National Planning Board), then transformed into a National Resources Committee (1934) – with Ogburn as member of the Science committee and of the Subcommittee on research – then into a National Resources Planning Board (1939-1943). These organizations produced major reports, among them *Research: a National Resource* (1938) – the first survey of research in government – and the first exercise in technological forecasting entitled *Technological Trends* (1937) – with Ogburn as director of research. *Technological Trends* continued to make recommendations on strengthening the institutions for national planning and making them permanent.

These recommendations had few impacts on the organization of government in Ogburn's time. [32] However, Ogburn's writings have had other influential impacts. He paved the way for the study of technological innovation among sociologists. The study of effects of technology on society developed (B.J. Stern, H. Hart, F.R. Allen, S.M. Rosen and L. Rosen, UNESCO), as well as that of invention (Science-Technology-Studies) and diffusion (E.M. Rogers). He worked inside committees and produced reports aimed at convincing policy-makers to devote attention to technological innovation, and he offered a conceptual framework to this end. Finally, he launched the idea of forecasting studies. During all these efforts, Ogburn was an ardent advocate of "objectivism", empiricism and statistics (Bannister, 1987).

The economic historian Maclaurin (1907-1959) added the economic dimension to Ogburn's study of technological innovation. A professor at MIT, Maclaurin produced one

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[32] On the limited impacts of the recommendations, see Lyons (1969: 75, 77, 97).

of the first titles on innovation in the twentieth century: *Invention and Innovation in the Radio Industry* (1949). Maclaurin developed the first program of study on innovation in a Schumpeterian tradition, studying the factors responsible for what he called (in his early works) technological change and the process of technological innovation from invention to commercialization. Among economists, Maclaurin is the real "father" of technological innovation studies, not Schumpeter. The latter is rather a theorist on economic change. It is Maclaurin who produced the influential theory or linear "model" of (technological) innovation that served as a conceptual as well as policy framework for decades. It is he who produced a definition of innovation as commercialization.

Like Ogburn, Maclaurin's ideas were influenced by policy considerations, and have in turn influenced policy. Maclaurin acted as secretary to the committee on Science and Public Welfare, one of the four committees that assisted Vannevar Bush in the preparation of *Science: The Endless Frontier* (1945), which urged the government to fund basic research as the source of progress. The linear model of innovation is often attributed to this document. However, I have shown elsewhere that the model owes nothing to Bush (Godin, 2006). Bush is a symbolic father among researchers in innovation studies, as Schumpeter is. Certainly, Maclaurin may have been influenced by Bush, but little in Bush's writings approaches such a model except the rudiments of it, despite the fact that it was Bush who got public recognition and later got central place in citations.

Like Ogburn again, Maclaurin – as economic historian and qualitative economist – was soon forgotten, although his thoughts remain very influential in obliterated form. Feeling a lack of recognition, he committed suicide. In fact, by the late 1950s, quantitative economics was getting pre-eminence in economic theory. The study of innovation in the United States turned into econometrics (Godin, 2010a). It is in Europe that a different tradition emerged.

It was left to a British economist to add a third dimension to the study of innovation. From the early 1960s onward, Freeman (1921-2010) acted as consultant to many organizations: the British government, the OECD and UNESCO, among others. It was in

co-production with these organizations that he invented a new academic specialty or tradition called "innovation studies" today. The tradition concentrates on studying innovation as marketed or commercialized innovation. Again, the source of the idea owes a lot to governments' interests. In the late 1950s, a whole discourse developed in Europe about 'lags' and 'gaps' in science and technology between Europe and the United States. To governments and international organizations like the OECD, technological innovation became a means to economic growth, productivity and market share, or competitiveness. The then-fashionable model nation was (and still is) the United States. Adopting American technology and producing more innovative products would improve firms' productivity and open new markets to Europeans.

The European discourses on lags and gaps got into technological innovation studies early on. To a certain extent, the Science Policy Research Unit (SPRU), founded by Freeman in 1966, is a 'spin-off' from the OECD. Freeman had acted as consultant to the OECD from the early 1960s onward: he wrote the first edition of the Frascati manual (1962), a methodological manual devoted to measuring R&D, then co-produced a policy paper for the first ministerial conference on science (1963) and a methodological study on measuring science (1965). Thereafter, Freeman remained a consultant to the organization (as well as to UNESCO) and participated as expert in many committees responsible for OECD policy reports.

Freeman's work is the study of factors leading to the production and commercialization of technological innovation among firms. [33] This work built on public policy concerns. In fact the OECD, together with some national public organizations, among them English ones, is responsible for one of the first full-length discussions of technological innovation – as commercialized innovation. Between the early 1960s and 1974, namely between the creation of the OECD and Freeman's book *The Economics of Industrial Innovation*, the representation of technological innovation as commercialized innovation 'matured', and governments were a major contributor to the diffusion of this representation. Among the

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[33] The analysis of factors leading to technological innovation was pioneered by W. Rupert Maclaurin in the 1940s ("technological change"), as mentioned above, and C. F. Carter and B. R. Williams in the late 1950s (industrial "application or use" of science and technology).

titles published on technological innovation before Freeman, those from public organizations (like the UK Advisory Council on Science and Technology, the US Department of Commerce and the OECD) are all concerned with technological innovation as commercialized innovation. These reports contributed to crystallizing a representation on which Freeman theorized.

Freeman developed a synthesis of previous findings and introduced a national framework. Until then, innovation was discussed in separate or disciplinary terms (sociology concentrating on individuals and social groups, economics and management focusing on firms). Following governments' discussions of innovation, Freeman introduced a national perspective: technological innovation is good not only for individuals and groups as sociologists study, or firms as management analyse, but source of economic growth for a nation as a whole; there is a need for policy to support the innovators and numbers to measure the national performances and "national systems of innovation". Certainly, Freeman's perspective remains selective. His synthesis is biased toward certain findings (minimizing innovation as imitation or adoption) and emblematic authors like Schumpeter (for reasons of legitimacy), his representation of innovation is "restricted" to technological innovation and is firm-centered, and over time the tradition on "innovation studies" has had little concern with social issues. Nevertheless, the attention devoted to policy gave innovation a national perspective and, consequently, got a government hearing.

From an academic perspective, the specialty gave rise to a tradition, in the sense that the specialty developed in opposition to previous thoughts on technological innovation among economists (technological change), and became a school of thought. Freeman (and his followers at SPRU) invented a whole tradition concerned with technological innovation among firms and its commercialization and how government policies influence (or should influence) these factors. Since the 1970s, many researchers active in this tradition have acted as consultants to European and international organizations, promoting a new generations of conceptual frameworks on technological innovation that rapidly became buzzwords – the Knowledge-Based Economy (Dominique Foray);

National Innovation System (Bengt-Åke Lundvall) – and that have become concepts central to policy-making or rhetoric (Godin, 2009).

Ogburn, Maclaurin and Freeman are three influential authors on innovation. What needs emphasis for an intellectual history of innovation is the fact that all three were concerned with technological innovation (as opposed to invention *per se* and innovation generally defined). The three contributed to bringing technological innovation into government thinking (Ogburn), then the economic dimension of technological innovation (Maclaurin), then the study of commercialization through a whole theoretical tradition whose findings have been used in technological innovation policies (Freeman). What also deserves emphasis is that the above authors produced their work in co-production with governments and have been influenced in turn by governments. If technological innovation owes its study to academics, the study of innovation as commercialized innovation had the way paved by governments and international organizations' goals. The legitimization and hegemony of representations of innovation as technological and commercialized innovation owes its existence to the efforts of governments working hand in hand with theoreticians. [34]

The Uses of Innovation: Four Moments

Innovation is a concept we use unconsciously, often without knowing precisely its richness. Innovation does not exist in itself. It is constructed through the eyes and through discourse (Papon, 2004). This construction is the result of the contributions of many individuals over many centuries. Forbidden in the past, innovation has become an ideal everyone believes in. Today, everyone display his innovative performance.

From the Renaissance onward, innovation has been part of everyday discourse. Innovation haunts people. Over time, a term used only occasionally became a subject of regular thinking in:

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[34] There were in fact two legitimizations. One is due to governments, whose policies were developed with the expertise of academics, as discussed here. The other is that of academics, particularly evolutionary economists, and the legitimization of their representation using Schumpeter as authority.

- Learned discourses, popular prose and Princes' injunctions: official documents and "laws", proceedings of Church Assemblies, philosophical and political essays, political and religious pamphlets, sermons, advice books for princes, civility and manners books, plays and poetry. From the sixteenth to the nineteenth century, these documents carried a negative representation of innovation.

- Theories, public policies and statistics. This literature emerged during the twentieth century. The theories produced are psychological, social and economic, and carry a positive representation of innovation.

In the past, a person scarcely ever defined himself as innovator. No innovator thought of naming himself an innovator. [35] Innovation gradually gained acceptance within a new social and political context. The uses of innovation developed according to four historical "moments":

1. Innovation as a **political** and essentially a contested concept. Before the twentieth century, innovation had nothing to do with creativity and originality on the one hand and utility on the other. Innovating was seen as introducing change into the established order, and was explicitly forbidden by law.

2. Beginning in the seventeenth century, innovation turned into a **polemical** concept. It was used in pamphlets, tracts and other documents aimed at opposing innovators of any kind, first of all in politics and religion, but also in law, science and education. The term was a weapon against change, reformers and deviants. It was essentially negative.

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[35] Diderot is certainly one of the very few writers who, before the twentieth century, has qualified his ideas (on public instruction) as having "[les] avantages démontrés d'une innovation nécessaire" (*De l'éducation publique*, in *Collection complète des oeuvres philosophiques, littéraires et dramatiques*, Tome I, 1762: 109).

3. From the nineteenth century, innovation turned into a positive category. Already in the nineteenth century, the concept had gradually acquired a positive value. It is tempting to think that technology is responsible for this change in attitudes. Yet, before the "industrial revolution" inventors had not yet become heroes (Macleod, 2007), and the inventor-entrepreneur or projector was no more trusted than he was before (and did not use the vocabulary of innovation). Certainly, there were some early tentative rehabilitations of the projectors (Defoe, 1702; Bentham, 1787; 1793-95), but it would only be a century later that social researchers would succeed and make of innovation a technological affair. Innovation became an **instrumental** category in the second half of the Twentieth Century. Governments became convinced that technology is a source of economic progress. Innovation therefore acquired a dominant representation as technological innovation. Statistics have played a central role: statistics gave identity and objectivity to what had been a subjective concept. In fact, over the last fifty years, discussions of innovation have been intimately linked to measurement issues.

4. Innovation turned into a **theoretical** category in the footsteps of governments' thoughts and policy issues. Social researchers, above all economists, developed theories in order to understand and explain (revolutionary) changes through innovation and how governments may help. By 1960-70 the literature had exploded, giving rise to regularly-updated bibliographies (Rogers, 1967), reviews (Kelly and Kranzberg, 1974; Radnor *et al.*, 1977), handbooks (Dodgson and Rothwell, 1994; Stoneman, 1995; Shavinina, 2003; Fagerberg *et al.*, 2005) and research centers.

To these developments, one could add a fifth moment. From the 1980s onward innovation became an end in itself: anything goes in the name of innovation; everyone should innovate. Innovation has become a slogan. To paraphrase Koselleck on revolution, innovation "is a widely used forceful expression whose lack of conceptual clarity is so marked that it can be defined as slogan" (Koselleck, 1969: 43). Discourses on innovation have become **performative**: they produce innovation in the sense that they encourage

people to innovate and then reward them. Discourses on innovation create the world of innovation.

The history of innovation as a category is not a linear one (and the above moments are additive rather than substitutive). Firstly, over a span of 2,500 years, innovation has remained a political concept: first as forbidden, then as a polemical discursive tool, then as an instrument of policy. Secondly, there existed positive uses of innovation before the twentieth century, though they were few. Such is the case in the ancient literature on history (Livy) or Machiavelli in the early sixteenth century (Pocock, 1975): if the goal is useful (sometimes giving a voice to the people, at other times increasing the Prince's power) innovation is seen as praiseworthy. [36] Livy gave an interesting discussion on innovation in Book IV of his *History of Rome*. Discussing a law on the intermarriage of patricians and plebeians, he asked: "Ought no innovation be adopted?" (*Nullane res nova institui debet*?) just because it had never been done before. No. To Livy, the citizen had supreme authority and was "permitted, if it so desire, to enact a law" – an argument (people are free to adopt new laws) offered long before Azo and Bertolius in the thirteenth century, despite Q. Skinner's story (Skinner, 1978).

The story is also not linear in two other senses. One finds (some) "theoretical" thoughts before the twentieth century: Machiavelli and Francis Bacon discussed resistance to innovation and suggested (different) "strategies" to deal with the resistances. [37] To Machiavelli, the Prince should innovate early and fast (in order to make people forget), while to Bacon one should innovate slowly, as time does, and not meddle with politics. Second, the evolution of representations was slow. In the twentieth century, many social scientists began using innovation in their own field: in education, sociology, management or political science. However, neoclassical economists remained reluctant to talk of innovation, except during a brief interlude on "induced innovation" in the early 1960s. They invented another concept in place of innovation, that of "technological change". That the concept innovation has become theoretical has thus not solved many problems.

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[36] Innovation is essential to the greatness of empires: Kings are founders and builders of cities, and thus need to create new institutions.

[37] In ancient Rome, Lucretius offered some brief thoughts on resistance to novelty in *Rerum Natura*.

"What is innovation?" has remained a controversial question. In the last decade, official statisticians have decided not to use the term in questionnaires on innovation, following a suggestion first made in 1963 by the consultant Arthur D. Little.

Finally, innovation as a "fact" has remained a contested phenomenon over its whole history. Innovation and its value have varied according to people, fields and contexts: literary writers offered resistance to innovation in the name of nostalgia for past ages while others argued that changes threatened morality. Inventors-entrepreneurs or projectors in the eighteenth century were not trusted, luddites in the nineteenth century opposed the introduction of machines in the factory, and people resisted technological innovation in the twentieth century (Stern, 1937). Over the whole period considered in this paper, there was always an essential ambivalence toward innovation. Novelty was to a certain extent accepted, while innovation was not. However, overall, the twentieth century has developed representations of innovation completely different from the previous representations, in reaction perhaps to 2,500 years of "intellectual terrorism". Innovation is positive when it served a good cause, namely when it is useful. As an anonymous author put it in 1789: "On ne doit jamais craindre d'innover, quand le bien public est le résultat de l'innovation" (Anonymous, 1789).

Conclusion

From antiquity onward, change (corruption, degeneration) was everywhere and was discussed by almost every writer, either in order to stabilize it or to bring about a complete revolution. Had change not been a focus of people's attention, there would have been no talk of innovation. "Were not that DESIRE OF NOVELTY and SPIRIT OF CHANGING in the world, fewer INNOVATIONS would perplex mankind, and fewer misfortunes distress them", suggested a writer in 1794 in an attempt at regulating the choice of words in familiar conversation (Piozzi, 1794: (313). In turn, the concept of innovation itself has changed considerably over time. If I may paraphrase Koselleck on revolution again, innovation "possesses such [innovative] power that it is constantly extending itself" (Koselleck, 1969: 44). In recent decades innovation gave rise to neologisms like "innovativeness", "innovational" and "innovativity", an inflationary

usage that every one of us can observe in the media, but which is present also in the scientific literature. Innovation has turned into a catchword or buzzword, with a legitimizing function.

It is only in the last century that innovation has become a widely accepted concept. Innovation got a sympathic hearing when people started experiencing changes everywhere, above all 'revolutionary' changes, and worked deliberately to make still more changes. No one individual has been responsible for the new representation. The economist Schumpeter is often credited for having discussed innovation early on, but he was not alone. It is only in retrospect that Schumpeter has become a spiritual and symbolic father. In fact, Schumpeter's first edition of *Theory of Economic Development* (1911) does not use the word innovation once. The revised edition of 1926 introduced the term with a broad and general meaning (novelty, newness), but as a subsidiary concept only. The main concept is that of combination. It is only with *Business Cycle* (1939) that the concept got a (brief) discussion, with four different meanings. If I was pushed to identify one single source of the new representation of innovation, I would answer that there is not one person, but two "institutional" contributors or groups that made innovation a positive over the twentieth century: governments and (evolutionary) economists.

The intellectual history of innovation is a history which remains to be written, and of which this paper is only a part. I will conclude by summing up what has been discussed in this paper, highlighting the main hypotheses – still in need of more validation.

What is Innovation?

-   Innovation is a **political** category. It was first discussed in political thought (and religion, the two being interwoven for many centuries), then forbidden (Kings' declarations and proclamations) and regulated by law (patents, copyrights) (Macleod, 1988), then theorized about in terms of policy issues.

- Innovation is a **contested** category. Early on, it had been politically and religiously loaded and carried a negative connotation. Innovation was evil and subversive – and the term was more often than not used together with other words like fancy, superstition, corruption, danger, violence, faction, rebellion, and dozens of negative epithets – and innovators were pejoratively called "novellers", "novellists" and the like. Such a representation of innovation gave way to another vocabulary that talked about innovation in a positive sense (reformation, renovation; today we talk of modernization). When the term innovation was used, it was by opponents and critics against transgressors and deviants from norms, customs and traditions. Later, namely when innovation gained a more positive value, resistance continued. Some preferred not to use the term (Ogburn) or developed other terms in its place (neo-classical economists).

- Innovation is **change**: introducing change into established practices, then change as novelty in the sense of creativity and originality. The use of innovation together with change and alteration in the same linguistic expression is witness to this meaning. In the twentieth century, innovation as change continued, as reflected in concepts like culture change, social change and "technological change".

Development of the representations

- Innovation slowly turned **positive** from the mid-nineteenth century onward, and became a term of honour over the twentieth century. Through the centuries, innovation started off being a matter of fear, then became a matter of routine and satire, then became a cult. This happened first in post-revolutionary France (England lived for a while with subversive thoughts about innovation). From being a political (prohibition), then social (deviance) category, innovation became a historical category, theorized in term of rupture with tradition or traditional ways of doing things. Usefulness as opposed to mere invention, doing as opposed to thinking, were what drove the transformation of innovation's representations.

- Beginning in the 1960s, innovation became **legitimized** by governments, working in co-production with social scientists as consultants, particularly (non-

mainstream) economists. The legitimization arose due to the role of technological innovation in industrial progress and the competition between countries.

- From the 1970s onward, innovation as **technological (and commercialized) innovation** became dominant in discourses, helped by statistics that crystallized this representation. Such a representation rapidly became spontaneous. Many use innovation without the determinative "technological" when talking of technological innovation, either deliberately, or more often, unconsciously. Few writers discuss what innovation is, but they make use of a disciplinary or "restricted" definition from the start (technological innovation) and make a pope of their preferred author (Schumpeter). We have come a long way from the seventeenth century, when innovation appeared in dictionaries of "hard" and "difficult" words (Phillips, 1658; Blount, 1661; Coles, 1677). To some, this has led to a loss of the variety and richness of the term, which many are currently trying to recover (social innovation is an example) – for reasons having to do to with "getting a share of the attention" devoted to technological innovation as much as for purely intellectual reasons – and may de-stabilize (who knows?) the dominant representation.

Until the last century, innovation was not used to discuss novelty and the like, but used pejoratively. In this paper, we have asked why innovation came back into our everyday vocabulary with a positive meaning. We looked for an answer in the word innovation itself and have found that the issue, although not a purely linguistic one, needs to consider semantics seriously. Hans Blumenberg once suggested that the "basic embarassement of every theology" is "to speak about God constantly without having the right to permit itself to say anything about him" (Blumenberg, 1979). Such is the case with innovation. To paraphrase Koselleck (on deeds) once more (Koselleck, 1972): for centuries it was not innovation itself that shocked humanity, but the word describing it.

Sources (Before the Twentieth Century)

A Gentleman of Worcestershire (1817), *A Letter Addressed to the Gentlemen of Worcesterchire, on the Danger of Innovation to a Government*, Worcester: Holl and Sons.

Anonymous (1789), L'innovation utile, ou la nécessité de détruire les Parlements: Plan proposé au Roi, *La Gazette infernale*, Paris.

Bentham, J. (1787), *Defence of usury; shewing the impolicy of the present legal restaints [sic] on the terms of pecuniary bargains. To which is added, a letter to Adam Smith, Esq. L.L.D. on the discouragement of inventive industry*, Philadelphia: Printed for Mathew Carey, by Lang and Ustick.

Bentham, J. (1793-95), *A Manual of Political Economy* [1843], Available at http://oll.libertyfund.org/index.php?option=com_staticxt&staticfile=show.php%3Ftitle=1922&Itemid=27.

Bentham, J. (1824), *The Book of Fallacies*, London: John and H.L. Hunt.

Berkeley, G. (1785), *The Danger of Violent Innovations in the State*, Canterbury: Printed and Sold by Simmons and Kirkby.

Blount, T. (1661), *Glossographia or, A dictionary interpreting all such hard words of whatsoever language now used in our refined English tongue*, London: Tho. Newcombe.

Boswell, J. (1785), *A Letter to the People of Scotland on the Alarming Attempt to Infringe the Articles of the Union, and Introduce a Most Pernicious Innovation, by Diminishing the Number of the Lords of Session*, London: Printed for Charles Dilly.

Burton, H. (1637), *For God, and the King. The summe of two sermons preached on the fifth of November last in St. Matthewes Friday-streete. 1636. / By Henry Burton, minister of Gods word there and then* [Amsterdam: J. F. Stam].

Coles, E. (1677), *An English dictionary explaining the difficult terms that are used in divinity, husbandry, physics, philosophy, law, navigation, mathematicks, and other arts and sciences*, London: Peter Parker.

Defoe, D. (1702), *Essays upon several projects: or, effectual ways for advancing the interest of the nation. Wherein are plainly laid down. The Means by which the Subjects in general may be eased and enriched; the Poor relieved, and Trade encreased in the most material Branches of it, viz. in Constituting Seamen to theirs and the Nations Advantage for Encouragement of Merchants and Merchandizing; for Relief of the Poor of Friendly Societies; for discouraging Vice, and encouraging Vertue; the Usefulness; of Banks and Assurances; to prevent Bankrupts; with the surest way to recover bad Debts; and many other considerable things, profitable and conducing to the great Advantage of the Nation in general*, London: printed for Thomas Ballard, at the Rising Sun in Little Britain.

Delepierre, O. (1836), *Aperçu historique et raisonné des découvertes, inventions, innovations et perfectionnements en Belgique, dans les sciences, les arts, l'industrie, etc. depuis les Romains*, Bruges: Félix de Pachtere.

Dow, C. (1637), *Innovations unjustly charged upon the present church and state. Or An ansvver to the most materiall passages of a libellous pamphlet made by Mr. Henry Burton, and intituled An apologie of an appeale, &c. By Christopher Dow, B.D.*

London: Printed by M[iles] F[lesher] for John Clark, and are to be sold at his shop under S. Peters Church in Cornhill.

Egger, V. (1881), *La parole intérieure: essai de psychologie descriptive*, Thèse présentée à la Faculté des lettres de Paris, Paris : Germer Baillière.

Heylin, P. (1637), *A briefe and moderate answer, to the seditious and scandalous challenges of Henry Burton, late of Friday-Streete in the two sermons, by him preached on the fifth of November. 1636. and in the apologie prefixt before them. By Peter Heylyn*, London: Printed by Ric. Hodgkinsonne; and are to be sold by Daniel Frere, dwelling in little-Brittan, at the signe of the red-Bull.

Phillips, E. (1658), *The New World of English Words, or, A general dictionary containing the interpretations of such hard words as are derived from other languages ... together with all those terms that relate to the arts and sciences ...: to which are added the significations of proper names, mythology, and poetical fictions, historical relations, geographical descriptions of most countries and cities of the world ...* / collected and published by E. P., London: Printed by E. Tyler for Nath. Brooke.

Piozzi, H.L. (1794), *British Synonymy; or, A Attempt at regulating the Choice of Words in Familiar Conversation*, London: G.G. and J. Robinson, Paternoster Row.

Poyntz, R. (1661), *A VINDICATION OF MONARCHY AND the Giovernment Long Established in the Church and Kingdome of England, Against the pernicious Assertions and tumultuous Practices of the Innopvators during the last Parliament in the REIGN of CHARLES the I*, London: Roger Norton.

Sargant, W. L. (1858), *Social innovators and Their Schemes*, London: Smith, Elder and Co.

Skinner, J. (1767), *A Letter to Norman Sievwright in Vindication of the Episcopal Clergy of Scotland From his Charge of Innovations, in Politics and Religion*, Aberdeen: Printed by F. Douglas.

Sprat, T. (1667), *The History of the Royal-Society of London for the Improving of Natural Knowledge*, London: Printed by T. R. for J. Martyn, and J. Allestry.

Tarde, G. (1890), *Les lois de l'imitation*, Paris: Seuil, 2001.

Touchard-Lafosse, G. (1822-24), *Dictionnaire chronologique et raisonné des découvertes, inventions, innovations, perfectionnements, observations nouvelles et importations, en France, dans les sciences, la littérature, les arts, l'agriculture, le commerce et l'industriue, de 1789 à la fin de 1820,* Paris: Louis Colas.

Winslow, H. (1835), *The Dangerous Tendency to Innovations and Extremes in Education, Delivered Before the American Institute of Instruction*, Boston: Tuttle and Weeks.

References

Arendt, H. (1963), *On Revolution*, New York: Penguin Books.

Ball, T., J. Farr and R.L. Hanson (eds.) (1989), *Political innovation and Conceptual Change*, Cambridge: Cambridge University Press.

Bannister, R. C. (1987), *Sociology and Scientism: The American Quest for Objectivity, 1880-1940*, Chapel Hill: University of North Carolina Press.

Barnett, H. G. (1953), *Innovation: the Basis of Cultural Change*, New York: McGraw Hill.

Bérenger, A. (2006), Le statut de l'invention dans la Rome impériale: entre méfiance et valorisation, in M.-S. Carcy et al. (eds.), *Les archives de l'invention*, Toulouse: CNRS: 513-25.

Berg, M. (1999), New Commodities, Luxuries and their Consumers in Eighteenth-Century England, in M. Berg and H. Clifford (eds.), *Consumers and Luxury: Consumer Culture in Europe, 1650-1850*, Manchester: Manchester University Press, pp. 63-85.

Binfield, K. (ed.) (2004), *Writings of the Luddites*, Baltimore: Johns Hopkins University Press.

Biagioli, M. (1993), *Galileo Courtier: The Practice of Science in the Culture of Absaolutism*, Chicago: University of Chicago Press.

Blumenberg, H. (1979), Prospect for a Theory of Nonconceptuality, in H. Blumenberg, *Shipwreck with Spectator: Paradigm of a Metaphor for Existence*, Cambridge (Mass.): MIT Press [1997].

Burke, P. (1972), *Tradition and Innovation in Renaissance Italy: A Sociological Approach*, London: Fontana.

Carter, C. F., and B. R. Williams (1957), *Industry and Technical Progress: Factors Governing the Speed of Application of Science*, London: Oxford University Press.

Clarke, J. (1987), The American Image of Technology: From the Revolution to 1840, *American Quarterly*, 39 (3): 431-49.

Cohen, I.B. (1985), *Revolution in Science*, Cambridge (Mass.): Harvard University Press.

Daston, L., and K. Park (1998), *Wonders and the Order of Nature, 1150-1750*, New York: Zone Books.

Dodgson, M., and R. Rothwell (eds.) (1994), *The Handbook of Industrial Innovation*, Cheltenham: Edward Elgar.

Dunn, J. (1989), Revolution, in T. Ball, J. Farr and R.L. Hanson (eds.), *Political Innovation and Conceptual Change*, Cambridge: Cambridge University Press: 333-56.

Engell, J. (1981), *The Creative Imagination: Enlightenment to Romanticism*, Cambridge (Mass.): Harvard University Press.

Fagerberg, J., D. C. Mowery and R. R. Nelson (2005), *The Oxford Handbook of Innovation*, Oxford: Oxford University Press.

Farr, J. (1988), Conceptual Change and Constitutional Innovation, in T. Ball and J.G.A. Pocock (eds.), *Conceptual Change and the Constitution*, Lawrence (Kansas): University Press of Kansas: 13-34.

Force, P. (2005), Innovation as Spiritual Exercise: Montaigne and Pascal, *Journal of the History of Ideas*, 66 (1): 17-35.

Freeden, M. (1996), *Ideologies and Political Theory: A Conceptual Approach*, Oxford: Clarendon Press.

Freeman, C. (1974), *The Economics of Industrial Innovation*, Harmondsworth: Penguin Books.

Garçon, A.-F. (2003), Comment retracer historiquement les chemins de la novation, in L. Hilaire-Perez and A.-F. Garçon (eds.), *Les chemins de la nouveauté*, Paris: CTHS.

Gilfillan, S. C. (1935), *The Sociology of Invention*, Cambridge (Mass.): MIT Press.

Godin, B. (2006), The Linear Model of Innovation: the Historical Construction of an Analytical Framework, *Science, Technology and Human Values*, 31 (6): 639-67.

Godin, B. (2008a), In the Shadow of Schumpeter: W. Rupert Maclaurin and the Study of Technological Innovation, *Minerva*, 46 (3): 343-60.

Godin, B. (2008b), *Innovation: The History of a Category*, Working Paper, Project on the Intellectual History of Innovation, Montreal: INRS.

Godin, B. (2009), Making Science, Technology and Innovation Policy: Conceptual Frameworks as Narratives, *RICEC*, 1 (1).

Godin, B. (2010a), *"Innovation Studies": The Invention of a Specialty* (Part I), Working Paper, Project on the Intellectual History of Innovation, Montreal: INRS.

Godin, B. (2010b), *"Innovation Studies": The Invention of a Specialty* (Part II), Presented at the Workshop "Rhetoric of Innovation in Contemporary Society", University of Helsinki, Institute of Behavioral Sciences, 7-8 February 2010.

Godin, B. (2010c), Innovation without the Word: William F. Ogburn's Contribution to Technological Innovation Studies, *Minerva*, 48 (3): 277-307.

Godin, B. (2011a), *Innovation and Culture (Part I): The Diffusion Controversy and its Impact on the Study of Innovation*, Project on the Intellectual History of Innovation, Montreal: INRS, Forthcoming.

Godin, B. (2011b), "Meddle Not With Them That Are Given to Change": Innovation as Evil, Project on the Intellectual History of Innovation, Montreal: INRS.

Godin, B. (2011c), *Republicanism and Innovation in Seventeenth Century England*, Project on the Intellectual History of Innovation, Montreal: INRS, Forthcoming.

Godin, B. (2011d), *The Idea of Innovation in Post-Revolutionary France*, Project on the Intellectual History of Innovation, Montreal: INRS, Forthcoming.

Goldenweiser, A. (1925), Cultural Anthropology, in H.E. Barnes, *The History and Prospects of the Social Sciences*, New York: Knopf: 210-54.

Goulemot, J.M. (1968), Emploi du mot "Révolution" dans les traductions françaises du VIIIe siècle des discours de Nicolas Machiavel, *Cahiers de lexicologie*, 13: 75-83.

Greely, H. et al. (2008), Towards Responsible Use of Cognitive Enhancing Drugs by the Healthy, *Nature*, 456, 11 December, pp. 702-705.

Hardy, W. (2006), *The Origins of the Idea of the Industrial Revolution*, Victoria: Trafford Publishing.

Horowitz, M. C. (ed.) (2004), *New Dictionary of the History of Ideas*, New York: Charles Scribner's Sons.

Hunter, M. C. W. (1995), The Debate Over Science, in *Science and the Shape of Orthodoxy*, Woodbridge: Baydell Press, p. 101-19.

Kelly, P., and M. Kranzberg (eds.) (1974), *Technological Innovation: A Critical Review of Current Knowledge*, National Science Foundation.

Koselleck, R. (1969), Historical Criteria of the Modern Concept of Revolution, in R. Koselleck, *Futures Past: On the Semantics of Historical Time*, New York: Columbia University Press, 2004: 43-71.

Koselleck, R. (1972), Begriffsgeschichte and Social History, in R. Koselleck, *Futures Past: On the Semantics of Historical Time*, New York: Columbia University Press, 2004: 75-92.

Koselleck, R. (1977), Neuzeit: Remarks on the Semantics of Modern Concepts of Movement, in R. Koselleck, *Futures Past: On the Semantics of Historical Time*, New York: Columbia University Press, 2004: 222-54.

Koselleck, R. (1996), A Response to Comments on the Geschichtliche Grundbegriffe, in H. Lehman (ed.), *The Meaning of Historical Terms and Concepts*, Washington: German Historical Institute: 59-70.

Koselleck, R. (2002a), The Eighteenth Century as the Beginning of Modernity, in R. Koselleck, *The Practice of Conceptual History*, Stanford (Calif.): Stanbdford University Press: 154-169.

Koselleck, R. (2002b), Time and History, in R. Koselleck, *The Practice of Conceptual History*, Stanford (Calif.): Stanbdford University Press: 100-14.

Laroque, F., and F. Lessay (2002), *Innovation et Tradition de la Renaissance aux Lumières*, Paris: Presses Sorbonne nouvelle.

Levitt, T. (1966), Innovative Imitation, *Harvard Business Review*, September, pp. 63-70.

Long, P.O. (2003), The Cultural Uses of Invention in Early Modern Europe, in L. Hilaire-Perez and A.-F. Garçon (eds.), *Les chemins de la nouveauté*, Paris: CTHS.

Lyons, G. M. (1969), *The Uneasy Partnership: Social Science and the Federal Government in the Twentieth Century*, New York: Russell Sage Foundation.

Maclaurin, W. R. (1953), The Sequence from Invention to Innovation and its Relation to Economic Growth, *Quarterly Journal of Economics* 67 (1), pp. 97-111.

Macleod, C. (1988), *Inventing the Industrial Revolution: the English Patent System, 1660-1800*, Cambridge: Cambridge University Press.

Macleod, C. (2007), *Heroes of Invention: Technology, Liberalism and British Identity, 1750-1914*, Cambridge: Cambridge University Press.

Mansfield, E. (1968), *Industrial Research and Technological Innovation*, New York: Norton.

Marx, L. (1994), The Idea of 'Technology' and Postmodern Pessimism, in M. R. Smith and L. Marx (eds.), *Does Technology Drive History? The Dilemma of Technological Determinism*, Cambridge (Mass.): MIT Press: 237-57.

Marx, L. (2010), Technology: The Emergence of a Hazardous Concept, *Technology and Culture*, 51 (3): 561-77.

Merton, R.K. (1938), Social Structure and Anomie, in R.K. Merton, *Social Theory and Social Structure*, Glencoe: Free Press [1949]: 131-60.

Milton, A. (1995), *Catholic and Reformed: The Roman and Protestant Churches in English Protestant Thought, 1600-1640*, Cambridge: Cambridge University Press.

Mohebbi, P. (2003), Intégration et refus des nouveautés techniques européennes en Iran, in L. Hilaire-Perez and A.-F. Garçon (eds.), *Les chemins de la nouveauté*, Paris: CTHS.

Molella, A. P. (1988), Inventing the History of Invention, *Invention and Technology Magazine*, 4 (1): 22-30.

Mulgan, G. (2007), *Social Innovation: What It Is, Why It Matters and How It Can Be Accelerated*, Working Paper, Center for Social Entrepreneurship, Oxford: Said Business School.

Norval, A. J. (2000), The Things We Do with Words: Contemporary Approaches to the Analysis of Ideology, *British Journal of Political Science*, 30: 313-46.

OECD (1966), *Government and Technical Innovation*, Paris: OECD.

OECD (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, Third Edition, Paris: OECD.

Panofsky, E. (1960), *Renaissance and Renascences in Western Art*, Stockholm: Almqvist & Wiksells.

Papon, P. (2004), L'invention du Neuf, in P. Papon, *Le temps des ruptures: aux origines culturelles et scientifiques du 21e siècle*, Paris: Fayard.

Pleij, H. (2007), Novel Knowledge: Innovation in Dutch Literature and Society of the Fifteenth and Sixteenth Centuries, in P. H. Smith and B. Schmidt (eds.), *Making Knowledge in Early Modern Europe: Practices, Objects, and Texts, 1400-1800*, Chicago: University of Chicago Press: 109-26.

Pocock, J. G. A. (1975), *The Machiavellian Moment: Florentine Political Thought and the Atlantic Republican Tradition*, Princeton: Princeton University Press.

Pocock, J.G.A. (1985), *Virtue, Commerce, and History*, Cambridge: Cambridge University Press.

Radnor, M., I. Feller, and E. Rogers (eds.), *The Diffusion of Innovations: An Assessment*, Evanston, IL: Northwestern University.

Reader, S. M., and K. N. Laland (2003), *Animal Innovation*, Oxford: Oxford University Press.

Redlich, F. (1951), Innovation in Business: A Systematic Presentation, *American Journal of Economics and Sociology*, 10 (3): 285-91.

Reichardt, R. (1997), Révolution, in M. Delon (ed.), *Dictionnaire européen des Lumières*, Paris: Presses universitaires de France: 939-43.

Richter, M. (1995), *The History of Political and Soical Concepts: A Critical Introduction*, Oxford: Oxfoird University Press.

Rogers, E. M. (1962), *The Diffusion of Innovation*, New York: Free Press.

Rogers, E.M. (1967), *Bibliography on the Diffusion of Innovations,* Department of Communication, Michigan: Michigan State University.

Schatzberg, E. (2006), Technik Comes to America: Changing Meaning of Technology Before 1930, *Technology and Culture*, 47: 486-512.

Schumpeter, J. A. (1934), *The Theory of Economic Development. An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Cambridge: Harvard University Press.

Schumpeter, J. A. (1939), *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. New York: McGraw-Hill.

Schumpeter, J. A. (1942), *Capitalism, Socialism and Democracy*, New York: Harper, 1962.

Scott, J. (2000), *England's Troubles: Seventeenth-Century English Political Instability in European Context*, Cambridge: Cambridge University Press.

Scott, J. (2004), *Commonwealth Principles: Republican Writings of the English Revolution*, Cambridge: Cambridge University Press.

Shapin, S. (1994), *The Social History of Truth: Civility and Science in Seventeenth-Century England*, Chicago: University of Chicago Press.

Shavinina, L. V. (ed.) (2003), *The International Handbook on Innovation*, Amsterdam: Elsevier.

Shils, E. (1981), *Tradition*, Chicago: University of Chicago Press.

Skinner, Q. (2002a), *Visions of Politics: Regarding Method*, volume 1, Cambridge: Cambridge University Press.

Skinner, Q. (2002b), *Visions of Politics: Hobbes and Civil Society*, volume 3, Cambridge: Cambridge University Press.

Skinner, Q. (1998), *Liberty before Liberalism*, Cambridge: Cambridge University Press.

Skinner, Q. (1996), *Reason and Rhetoric in the Philosophy of Hobbes*, Cambridge: Cambridge University Press.

Skinner, Q. (1988), Language and Social Change, in J. Tully (ed.), *Meaning and Context*, Princeton: Princeton University Press, pp. 119-132.

Skinner, Q. (1978), *The Foundations of Modern Political Thought*, 2 volumes, Cambridge: Cambridge University Press.

Smalley, B. (1975), Ecclesiastical Attitudes to Novelty, c.1100-c.1250, in D. Baker (ed.), *Church, Society and Politics*, Ecclesiastical History Society, London: Oxford University Press: 113-131.

Smith, G.E., et al. (1927), *Culture : The Diffusion Controversy*, New York : Norton.

Spengler, O. (1932), *Man and Technics: A Contribution to a Philosophy of Life*, Honolulu: University Press of the Pacific, [2002].

Stamp, J. (1929), *Some Economic Factors in Modern Life*, London: P. S. King.

Stern, B. J. (1937), Resistance to the Adoption of Technological Innovations, in US National Resources Committee, *Technological Trends and National Policy*, Subcommittee on Technology, Washington: USGPO.

Stoneman, P. (ed.) (1995), *Handbook of the Economics of Innovation and Technological Change*, Oxford: Blackwell.

Taylor, C. (2004), *Modern Social Imaginaries*, Durham: Duke University Press.

Thirsk, J. (1979), *Economic Policy and Projects*, Oxford: Oxford University Press.

Thorpe, C. DeWitt (1937), Addison and Some of His Predecessors on 'Novelty', *PMLA*, 52 (4): 1114-29

Thorndike, L. (1957), Newness and Novelty in Seventeenth-Century Science and Medicine, in P. P. Wiener and A. Naland (eds.), *Roots of Scientific Thought: A Cultural Perspective*, New York: Basic Books, pp. 443-457.

US Department of Commerce (1967), *Technological Innovation: Its Environment and Management*, Washington: USGPO.

Usher, A. P. (1929), *A History of Mechanical Inventions*, New York: Dover, 1988.

Whitney, C. (1986), *Francis Bacon and Modernity*, New Haven: Yale University Press.

Wiener, P. P. (ed.) (1968-74), *Dictionary of the History of Ideas: Studies of Selected Pivotal Ideas*, New York: Charles Schneiber.

Williams, R. (1976), *Keywords: A Vocabulary of Culture and Society*, London: Fontana.

Yamamoto, K. (2009), *Distrust, Innovations, and Public Service: 'Projecting' in Seventeenth-and Early Eighteenth-Century England*, Doctoral thesis, Department of History, University of York.

Zaret, D. (2000), *Origins of Democratic Culture: Printing, Petitions, and the Public Sphere in Early-Modern England*, Princeton: Princeton University Press.

Appendix

The Vocabulary of Innovation

(Seventeenth-Century England)

1. On an Age of Innovation

Age of Innovation
Age of Novelties
Spirit of Innovation
Phantastik Age
Daily Innovations
Days of Innovation
Eternal Fountain of Innovations
Plague of Innovation
Scandal of Innovation
Trumpet of Innovation
Deluge of Innovation
Addiction to Innovation
Challenge of Innovation

Innovating (self-love) Age
Innovating Spirit
Innovating Humour

2. On Innovation

Novelty

Novellism

Fancy

Folie

Fashion

Trumpery

Reformation

Sedition

Faction

Misbelief

Sect

Device/design/artifice

Confusion

Error

Confusion

Obstruction

Tumult

Idolatry

Idol of fancy

Doubt

Disquiet

Disobedience

Scandal

Fable

Human invention

Schism

Ambition

Prejudice

Innovation and …   … Innovation

Change	Evil	Affection to
Alteration	Odious	Addicted to
Corruption	Extreme	Spur of/itch of
Danger	Tumultuous	Fondness of
Superstition	Violent	New fangledness
Sedition	Profane	Humour of
Tyrany	Humane	Thirst of/lust of
Pollution	Sudden	Love of/desire of
Rebellion	Turbulent	Given to/inclined to/prone to
Faction	Schismatic	Apt to/propensity to
Invention	Idolatrous	Zeal for/labour for
Novelty	Repugnant	Greedy of
Error	Irrational	Purpose of
Revolution	Unlawful	Design of
Project; device; design	Criminal	Guilty of
Heresy	Illegal	Inducer of
Encroachment		Long for/strive for
Endeavor		
Disorder		
Degeneration		
Fancy		
Usurpation		
Imposture		
Abuse		

3. On Innovators

Sons of Innovation
Men to be avoided

Trumpet blower	Changer	Projector
Turbulent Spirit	Overturner	Divider
Innovating party	New modeller	Alterer
Sectary	Novellist	Changer
Upstart	Novellizing Humorist	Given to change
Misleader	Heretick	Introducer/bringer in of…
Adversary	Sectary	Reformer
Corruptor	Separatist	Fantastik Reformer
Disturber	Adversary	Propounder
Incendiary	Libeller	Setter up
Upstart	Corruptor	Perturber
Incendiary	Misleader	Undertaker
Self-conceited	Leading	Agressor
Matchiavilian	Leveller	Illeterate
Mis-begotten	Giddy-pated	Ignorant
Seducer	Mutinous	Unlearned
Boutefeu	Trayterous	Simple
Sworn-men	Pretender	Parent of iniquity
Rigid	Giddy-brain	Superstitious
Seditous	Oppressor	Itinerant
Proud boaster	Dissenter	Audacious
Culpable	Repugner	Creed-hated
Fool	Cunning	Depraver
Usurping	Blasphamer	Unrestrainable
Erroneous	Presumptuous	Platter
Itching	Blundering cavils	Whimsical
Rude	Arbitrary	Schismatic
Fanatick	Impertinent	Temerarious
Rash/rude	Ridiculous	Sacriligious
Disturbed	Illegal	Seducer
Changeable	Lawless/unlawful	Sinful
Given to change	Grand rebel	Prophanenous
Sophistical	Unhappy	Corruptor
Soul-poisoning	Unquiet	Malicious
Scandalous	Full of confusions	Unnecessary
Mad	Pragmatical agitator	Persidious
Turbulent	Odd	Forwardness
Notorious/notable	Destructive	Boldness
Especial	Backslider	Ambiguous
Obstinate	Intruder	Calumnist
New/modern	Hotbrain	Fanatick
Zealous	Ambitious	Fantastick

Dangerous
Perverted
Bold
Factious
Impious
Interested
Dreamer
Enthusiast
Disturber
Incendiary
Libeller
Despiser (of authority)
Innovating Bee

Vain glorious
Manifest
Idolater
Mischievous
Tumultuous
Insolent
Contentious (humour)
Factious (Spirit)
Propounder
Setter up
Perturber
Schismatic

Dangerous
Superstitious
Rebel
Turbulent
Vain
Importuner
Desperate
Pestilent
Malignant
Mean
Stranger
Irrational

… of innovators	Innovators of …
Abuse	Dammed errors
Fancies	Sedition
Obstinacy	Vice
Humour	Tyranny
Vain practices	Arbitrary power
Unquiet disposition	Design
Danger	Artifice
Novelty	Device
Conjectures	Scheme
Usurped power	
Sophistications	
Simplicities	
Spirit of error	
Grossness	
Wantonness	
Vanities and singularities	
Assaults	
Iniquities	
Sect	
Doctrines and fooleries	
Absurdity	

4. On Innovating

Alter

Change

Reform

Introduce/Bring up

Endeavour

Enterprise

Establish

Abrogate/abolish

Interrupt

Omit/leave

Corrupt

Trouble

Transgress

Pervert

Varie

Attempt

Remove/withdraw

Add/diminish

Multiply

Turn

Afflict

Neglect

Violate/break

Breed disorder

Chestise

Prejudge

Wrestling

Amend

Transform

Infringe

Detract/depart

Spoyle

Purge

Falsify

Take away

Invade

Conspire

Mutine

Separate

Dispute

Invert

Intermeddle

Disturb

Fain/pretend

Undermine

Invent

Act against

Interrupt

Destroy

Divide

Oppose

Sophisticate

Differ

Dreams

Labour to innovate

Desire to

Seek to/wish to

Dispose to

Prompt to

Affected to

Ready to

Strive to

Love to

Itch to

Fit to

Bold to

Suspected to

Forwardness to

Omnious to

Innovating …

(New) Things
All things
Anything
Everything
Most things
Many things
Things contrary to
Some things
Certain things
Everyday/daily
Greatly
Continually
Often
By degrees
Too much
In so high (great) a matter

New opinions
De novo
A new fangle
Trumperies

Inconsiderably
Tumutuously
Violently
Unjustly