The innovative subject in education:
A philosophical perspective

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Abstract

The field of innovation studies is both very recent and constituted through a variety of disciplines. It has become one of the dominant discourses of the modern research university driving reforms, the changing relationship of the university to the knowledge economy and international rankings of institutions. This thesis reviews these literatures and their implications for a student-centred view. Specifically, the thesis examines the literature of innovation in economics, reviewing and analysing the work of three selected theorists – List, Schumpeter, and Lundvall – and the figure of the innovator as entrepreneur. The predominant economic understanding of innovation treats the process of innovation as a black box and neoliberalism views innovation as a means of increasing productivity, largely ignoring the student's contribution. This thesis argues that students' capacity for innovation, which is already present in their subjectivities as tacit knowledge is enhanced through the use open architectures and digital platforms that becomes the basis for social innovation as a form of collective intelligence in higher education. This new model of open and social innovation is a very different notion to the standard economic view, bringing to the fore the ethics of collaboration in the service of peer and co-production that is more suited to the digital age of social media.

Keys words: Innovation, the subject, black box, paradox, knowledge space

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Introduction

The thesis argument begins from the premise that, instead of ignoring the tacit knowledge of innovation that students express in their already formed innovative subjectivities, this tacit knowledge and these innovative subjectivities should be embraced to the benefit of institutional processes of ideation. To this effect, it is argued innovative students have something to offer institutional innovation – not in the aspect of institutional productivity but in how the institution addresses the problems of the world that Education[1] supposes students engage in their learning. This is the task and responsibility of the politics of education: to not just focus innovation on increasing the performativity of the operations of service provision but also to understand how student ideation in a learning economy contributes to a much broader concept of what *qua* innovation is and what change and novelty comprise.

In taking this perspective on the role of student innovation, the possible role of students in institutional processes of ideation, in how the ethics of collaboration inform the capacity to co-produce across networked information economies and the formation of collective intelligence that these developments produce all suppose a new theoretical understanding of innovation. This development is already fore-grounded by thinkers outside the education sector. However, in the education sector itself there needs to be a break from reliance on the tyranny of human capital creation and this needs to be done without breaking completely with the idea of formal learning in the educational institution. By focusing the thesis on the paradoxical situation of the already innovative student, it will be argued that embracing the significance of this subject's approach to the need for change and novelty in their learning will in itself transform and reorient Education towards the collective tasks that students face in the digital age.

Johnson (2010) is one such author who is working outside the immediate field of innovation studies and education, and whose thinking on innovation extends beyond the mere commercial interpretation of what change and novelty

[1] Education will be capitalized throughout whenever the discussion needs to refer to education being inclusive of all related interests and their stakeholders. Otherwise it will be spoken about more specifically, for example, the politics of education, in which case it will not be capitalized.

refer to. He has the following to say on how innovation needs to put within a broader perspective:

> Every economics textbook will tell you that competition between rival firms leads to innovation in their products and services. But when you look at innovation from the long-zoom perspective, competition turns out to be less central to the history of good ideas that we generally think. Analyzing innovation on the scale of individuals and organizations – as the standard textbooks do – distorts our view. It creates a picture of innovation that overstates the role of proprietary research and "survival of the fittest" competition. The long-zoom approach lets us see that openness and connectivity may, in the end, be more valuable to innovation that purely competitive mechanisms. Those patterns of innovation deserve recognition – in part because it's intrinsically important to understand why good ideas emerge historically, and in part because by embracing these patterns we can build environments that do a better job of nurturing good ideas, whether those environments are schools, governments, software platforms, poetry seminars, or social movements. We can think more creatively if we open our minds to the many connected environments that make creativity possible. (p. 21)

Speaking of innovation in this way and by using the metaphor of a long-zoom perspective, Johnson (2010) highlights how privileging the *object of innovation* (product or service) over the *innovation the process* depreciates the role of collective thought in the realization of new ideas and their contribution to innovation. What is important is not so much the fact that the process of innovation does not warrant equivalent status but that this depreciation of the process of innovation negates the participation of innovative actors and their contributions to its realization. Such an approach to innovation, where the exclusive focus is on *ends*, may work well for the educational institution, in that it allows the institution to separate the function of its commercial operations from the function of its service (the provision of education). Furthermore, participation by students and teachers in institutional innovative processes, played out in the provision of education as a service, has the effect of empowering the commercial operations of the institution.

However, the *initiation* of actions that realize institutional innovations can be restricted to commercial management – those who manage commercial operations. This means that while students and teachers populate the

implementation and reception of the provision of teaching and learning, the actions that produce benefits to the institution actually occur in a domain of power relations that sits outside the realm of teacher and student participation.[2] From such a long-zoom perspective, it is possible to speak of how the institution delineates public and private goods within its overall production function while being inclusive of students and teachers in the development of the institution's profile as a service provider.

This introductory chapter will follow the following structure. It will begin with an explanation of the topic**,** which will be followed by an explanation of what is meant in taking a philosophical perspective in relation to this topic. An account will be provided of the manner in which the philosophical canon will be engaged and then there will be a series of explanations of how the key concepts that make up this philosophical perspective are analysed. This will lead into an explanation of the theoretical framework and its key components: experimentation, genealogy and post-Cartesian thinking. Following this explanation, there will be a description of the literature engaged and the approach taken in this engagement. Finally, there will be an exposition of the structure of the thesis in accordance with the development of the argument.

An investigation of the role of innovation in Education could have been done from various perspectives with an interest in a range of objects including: the institution as a quasi-commercial enterprise, new pedagogies, administrative practices, digital governance, new curriculum developments, business and education policy, the evolution of the role of the teacher, new technologies used in learning and teaching, Research and Development (R&D), non-Government Organizations (NGO) and their interest in innovation in Education, the politics of innovation and research funding, futuristic learning spaces, to name a few.[3] These are all objects of research that might be considered to require viewing thought a close-up zoom perspective. In keeping with an interest in how new ideas might

[2] The actions that benefit the institution can be thought of as falling under the following categories: increases in ranking, increases in foreign student numbers and the securing of new funding streams.

[3] Futuristic learning spaces refer here to "innovative learning spaces", "modern learning spaces", and "flexible learning spaces".

better inform the creation of an understanding of how educational institutions might be more endogenously innovative, it was decided to investigate, from the long-zoom perspective, the least called-upon to participate in institutional ideation: the innovative student.

This student, as an innovative subject, does not as such refer to the traditional and obvious candidate – the postgraduate student working in R&D but rather refers to all students from the moment they begin primary school to the moment they complete their formal education. The premise for this interest is based upon the notion that students can be considered to begin their formal schooling with already existing innovative capacities. This premise breaks with the notion that students need to complete their formal education, or at least complete it up to the point of entering R&D, before they can be considered to be innovative actors. It is argued that this requisite experience is demeaning to students if they consider themselves already innovative. This politics of innovation, and its reliance of the acquisition of human capital as the means of qualifying students to be innovative, makes students dependent upon the progressive model of Education that inhibits students from thinking for themselves, both in terms of what innovation means and what the ontology of problems that student innovative activities might address.[4]

While this approach to capacitating students with skills and knowledge is required by the politics of education (see David, Gabriel, & Lopez, 2001; The Treasury, 2008), it should be said that this ideological structuring of the purpose of education is in function of the notion that innovation can only be understood to refer to technological innovation and, as such, as commercial innovation. This is to say, it will be argued by incumbent policy-makers that students cannot be considered *already innovative* because there is presently no way of tracking the impact of student innovation in the market place. What this means for Education in a market economy is that there can be no innovation during a student's education, barring time spent in R&D, when there is usually collaboration with commercial partners. The reason for this is basic to how Education is contemporaneously understood (Christensen & Eyring, 2011; Drucker, 1959, 1969).

[4] See Bingham and Biesta (2010) for an explanation of the limits of the progressive model of education.

The ethos of Education under neoliberalism creates an archetype that pretends to hold exclusive authority over how Education should serve the purpose of a particular interpretation of the concept of innovation (see Besley & Peters, 2007; Murphy, 2015; Murphy, Peters & Marginson, 2010). Neoliberalism, on the back of international policy influences, including The International Monetary Fund (IMF), The World Economic Forum, the Organization of Economic Co-Operation and Development (OECD), among others, interprets innovation as exclusively referring to technological innovation, the merit of which can only be assessed according to its commercial success in the market place. Whether this is an appropriate interpretation of innovation for the proprietary domain, where various forms of enterprise occur, is not a question that is going to be addressed here. However, when Education is made to serve the purpose of innovation – the purpose being to embed, through its process and acceptance, society in a single universal vision (see Drucker, 1959), then Education can be said to have delimited intellectual development and the formation of new ideas that the role of innovation has in informing society of the task of Education. Just as we do not know what tomorrow will bring, Education has a moral responsibility to allow the diversity that makes up the present generation of students to act upon existing articulations of what this vision refers to and to innovate according to how they understand the demands of the future.

If students are not encouraged to challenge the existing vision and in so doing, are not shown ways in which they might challenge the foundations of why we do what we do, then it seems that the very aspirations of neoliberalism are in self-contradiction. To elaborate in brief, the following scenario could be posited. If neoliberal thinking in Education corresponds to the intention of producing more entrepreneurs and innovators, this is seemingly to be accomplished without students experiencing risk-taking in their learning, where thinking can be developed in relation to all relevant contexts and not just as a separate competency. Without this engagement with the unknown through the strategic employment of new ideas in relation to real problems, the "animal spirit" (Akerlof & Shiller, 2009), or what we might call today the spirit of endeavour or the spirit of adventure cannot be fomented and formed. In this sense, student invention and the ideation that follows is neglected and/or abandoned. How do we know this? Because the performative value of learning outcomes, generally speaking, makes

no room for heuristic learning, which by definition involves independent thinking – whether this be individual or in collective form.

How is this scenario framed? If we are speaking of student ideation and new interpretations of existing problems, then we are speaking about the role of creativity and innovation in the way we work with knowledge, for reason that it is knowledge and our understanding of it that makes ideation possible; ideation being the process that enables individuals to connect the particular to the universal (Badiou, 2011). This is ideally how collectives of individual thinkers work together (see Leadbeater, 2008), but the question is, what happens when Education as a service renders learning as an experience as one that must uniquely conform to what Lévy (1997) calls "the commodity space"? The power relations that rule this space, in their adherence to privileging the importance of performativity in the progressive model (Bingham & Biesta, 2007), stifle both freedom to think and the risk required to break with notions of what a universal truth might be. Perhaps this problem can be summarized by the idea that invention – that which initiates the process of innovation (Schumpeter, 1934/1911) – cannot occur unless diversity is free to appeal to the relationship with the self, because without this possibility nothing new can be initiated.

The approach taken in this investigation in elaborating this argument will not be to say that innovation is a deficit in student learning, or that there is a lack of independent thought and heuristic learning, for reason that the absence of these qualities also lies with teachers, the politics of education, and the politics of innovation. Rather the approach is to begin from the premise that the student should be thought of as an *already innovative subject*. The basis for the premise and its underpinning of this point of departure is that student innovation can now be thought of as being implicit to the paradox of learning, where *diversity of thought* and the *system of education* are incommensurable with one another. This idea has its metaphysical foundations in the idea posited by Arendt (1968) in the 1950s, when she said that "natality" by definition means that Education in its present form has outlived its use to he or she who has just been born – that Education must be renewed and transformed. Why student innovation can now be thought of as being implicit to the paradox of learning is that networked peer-to-

peer collaboration breaks the traditional hierarchy with teachers and depends upon independent thinking.

If the system of education fails to respond to the need for renewal and transformation that corresponds to the presence of the *already innovative subject* and their intrinsic diversity in nature, then not only will this individual student be left excluded to the benefit of institutional self-interest but so will generations of students to come. In these circumstances, there is no inclusion of diversity or welcoming of the individual whose will seeks this renewal. Rather, each individual, each new subject of the education system becomes an information asset that profits those who fear risk in place of fearing not taking the risk. If the politics of administering educational operations are such that, having enrolled, students should just accept *what is* and put up, then it is up to students to transform that which they are provided with and to innovate to the benefit of their learning and their search for opportunities. It is in emotional and philosophical empathy with these students and the situation they find themselves in that the *already innovative subject* has been identified at the outset of this investigation as the actor most likely to protagonize the collaborative transformation of Education.

Of course, it can be argued that Education is always being collaboratively transformed but, in truth, this can only be said in a very limited sense. Verification of this fact is easily made. It only needs to be asked, who initiates? If the initiation of change and innovation responsible for transformation is limited to the actions of commercial and administrative management, then innovation cannot be said to involve the inclusive collaborative participation of students: they will only be carrying out what has already been initiated. For students to be protagonists in the collaborative transformation of Education, the very concept of innovation needs to be examined and developed and furthermore the status of the student, as an *already innovative subject*, needs to be examined for its role in the process of innovation. What is more, the problems that innovation addresses need to be opened to the diverse interpretations of students, such that the arbitration of the value of innovation is not merely measured by performance in the market place.

Theory and philosophy

The task of adopting a philosophical perspective in relation to the topic of this investigation is conditioned by the fact that there is no existing research that s the situation of the already innovative subject in Education. This is to say; philosophical thinking on the question of what it is to be innovative has been concerned to this point with questions that are other than the question that is posed here. Therefore, there is no philosophical canon specific to the relationship between the formation of the subject and the meaning of innovation as a category. There are of course philosophers who address the question of the subject's formation (for example, Foucault) and there are philosophers who address the problem of understanding innovation (for example Bacon and Machiavelli) but none of these do both. Yes, Foucault (2010) mentions the significance of innovation in *The Birth of Biopolitics: Lectures at the Collège de France*, 1978-1979, but he does not engage this phenomenon at any length.

Despite this situation, it remains necessary to assume a philosophical perspective in relation to the topic of this thesis, the reason being that the situation of the innovative subject in Education is thought of here as a paradoxical one. It is the paradoxical situation that requires the researcher to philosophize in that I understand that the paradox can only be addressed through philosophy (Badiou, 2010). In philosophically addressing the situation of the innovative subject in Education, the method becomes one of analyzing concepts related to the question of better understanding this situation. In the following pages, a series of concepts will be discussed with respect to the approach that will be taken in this investigation.

The subject

The discussion in this investigation features two types of *subject*: the *innovative subject* and the *subject of innovation*. The innovative subject will also be referred to as the *already innovative subject*, which refers to the idea that an individual can be innovative before their education supposes they should be able to be. This subject is innovative despite the system of education, not because of it. The subject of innovation is a subject who accepts that manner in which they are governed by the politics of education, thus focusing on benefitting from the

Education provided them through acquiring the requisite human capital that innovation will later require. This subject is also known as *homo economicus* (economic man), as the *enterprising subject* or the *entrepreneurial subject*; as in the subject who treats the formation of the self as an enterprise. While these two subjects – the *innovative subject* and the *subject of innovation* – are juxtaposed in what appears to be a binary, this binary does not exist in reality. It is merely a theoretical binary created for the purpose of examining the various manners in which the subject might form him or herself in the setting of a neoliberal education. In fact, the relationship between the two is regarded as fluid and dependent upon the will of the student to think for him or herself.

Innovation

The idea that a student might be an already innovative subject requires an examination of the concept of *innovation* for the reason that their innovative activity cannot be thought of as a purely commercial activity. As such the investigation required an examination of the history of innovation as a category. This aspect of the inquiry is pursued from the premises that there is more to technological innovation than technology itself and that there is always a political aspect to innovation, meaning technological innovation (the orthodox understanding of innovation) refers to something outside what it pretends to refer to and this epistemological aspect is in part political in nature. As such, the history of innovation as a category is not treated in an historicist manner and therefore as a sequential development, where religious innovation is followed by political innovation and political innovation by social innovation and social innovation by technological innovation. It is argued that when a genealogical approach is taken to the situation of the innovative student, it makes more sense to think of these historical interpretations of the category as existing simultaneously in the innovative process of the student where they find their own balance according to the nature of the problem addressed. This genealogical approach supposes that there are other fields of arbitrating the value of innovation besides the market place, which is the theoretical space where the commercial value of an innovation can be assessed.

Education

Opening up the discussion on the meaning of innovation in *Education* implies an opening up of a discussion on the purpose of *Education. Education* may contemporaneously be regarded as having been charged with the task of providing the means for further economic development, but there is more to *Education* than job training – especially in a context when we are told that jobs are soon to disappear on mass as a result to cheaper artificial intelligence (AI) (see Blundell, 2016). Even one of the greatest promoters of neoliberalism, The World Economic Forum (as cited in Shaw, 2016), is now saying that neoliberalism got it wrong. Firstly, the approach will not be one of analyzing neoliberalism with a view to showing how its politics stifles student innovation – this is rather a project that takes the side of the already innovative student in order to understand the paradoxical situation he or she finds him or herself in. So neoliberal politics of *education* is only engaged in as much as it contributes towards a more complex understanding of the situation of the student. Secondly, if the introduction of information and communications technologies (ICTs) in the form of computers networked to the Web has dismantled hierarchical relations between students and teachers, then student autonomy supposes a radical new disposition to knowledge, learning and the purpose of *Education*. The approach taken in this project involves thinking of student innovation as a phenomenon that should be conditioned by the idea that AI adds positive value to humanity's experience of both itself and the environment. This is the alternative to doing nothing. The accompanying feature of this thought is that the development of AI in Education must be done in parallel to the development of collective intelligence.

The Black Box

In becoming such a sexy term, innovation has become the husk of a concept that very few people can explain, and so too the fate of the concept of the *black box* is likely to suffer. When the *black box* refers to the meaning of an object like a flight recorder, it can be said that its function depends upon a consensual understanding of its meaning. However when the *black box* refers to the meaning of an object that is abstract in nature like ideas then it is difficult to say what the purpose of using the *black box* is as a metaphor. In this instance, rather than facilitating disambiguation, it creates ambiguation. The *black box* is used in this investigation

in the first instance to recognize this ambiguation and then it is used to illustrate that it has been created by and/or a problem of understanding – the most absurd ambiguation occurring when the black box is created by thinking that pretends to be rational. The latter would appear to be the case of economics, not just standard economics, when thinking of the process of innovation; a catalyst in the discussion in this investigation.

The Paradox

Also a catalyst in the discussion is the *paradox*, in particular, the *paradoxical* situation in which the already innovative subject finds him or herself on account to the educational institution not recognizing the merit of student innovation. A *paradox* in this investigation is understood to refer to a situation where there are two elements bound together that cannot be measured by the same means or as commonly understood where the two elements bound together are incommensurable with one another. There are a number of *paradoxes* in this investigation, but the most important one is the *paradoxical* of the situation of the already innovative subject. The danger in misinterpreting the significance of student innovation is that this innovative activity is seen as political provocation or political deviance for reason that it does not sit conveniently with the politics of the institution. But this is a mistake as a *paradox* cannot be thought politically without it being reinterpreted as a contradiction (Badiou, 2010), which of course can be measured by the same means. The researcher understands that *paradoxes* need to be thought philosophically and that the risk and responsibility lies in this question with the student. The incommensurability of the teacher-student relationship exists on account of the student's autonomous learning engagement, in a networked peer-to-peer collaboration, breaking with the traditional hierarchy that is used to governing this relationship. At a recent international symposium on learning environments,[5] there was evidence that teachers in this situation no longer know what to call themselves, and that furthermore students were leaving the host institution because they had concluded that they could learn more on their own through taking charge of their own learning trajectories. This situation

[5] See http://www.aut.ac.nz/study-at-aut/study-areas/education/learning-environments#key

produces a *paradox* that should challenge our understanding of the role of teaching.

Governmentality

Such an argument as the one made in this thesis must consider how the concept of *governmentality* is understood. The notion that the problem of governmentality refers to the "conduct of conduct" (Foucault, 2000), as a metaphor, does not refer to a stable notion of what power relations in Education refer to or, more particularly, what the power relations in teacher-student relations refer to. The meaning of "the conduct of conduct" which might otherwise be taken to refer to *the teacher's direction of the student's direction of the latter's relationship with the self* is conditioned by the context in which these power relations occur.[6] At least three factors have recently become prominent: the replacement of new public management by "digital era governance" (Peters, 2013, p. 10); the introduction of the innovative learning environment;[7] and the disruption of the teacher-student hierarchy on account of the formation of new student autonomies when working on networked information economies. All of these three factors bring *the student's direction of the self* more strongly into play supposing new dimensions of both responsibility and risk taking. While Foucault provides the following explanation of "conduct as conduct" as referring to accepting to be governed by the other through referring to the relationship with the self (Foucault, 2000), it is argued in this investigation that this notion of governance is coming to be conditioned by the emergence of the above factors. As such, the theoretical framework employed in this investigation is one that is conditioned by the contingency of these emerging factors. The most important implication of this development is that student innovative activity is likely to produce new expressions of political subjectivity, which in turn is likely to make the discussion of ideas more dynamic. Theoretically-speaking, if teachers do not engage in a compensatory development

[6] The researcher understands conduct to refer to the action of directing oneself and/or another to do something, so governing behaviour implies a certain orchestration of behaviour. This inference to directing behaviour comes from the researcher's knowledge of the Spanish understanding of *conducir*, which means to direct or to drive.

[7] The innovative learning environment is alternatively referred to as the modern learning environment, the flexible learning environment and the space where the focus is on the acquisition of so-called 21st century skills and knowledge (see OECD, 2013; Osborne, 2013)

that involves a positive expression of this development in student learning, student innovation is likely to also be disruptive and force a more convert engagement with the problems that students are addressing in their learning.

The knowledge space

Finally, there is the concept of *the knowledge space* (see Lévy, 1997). This is the space where it is understood that most student innovation in Education is likely to occur. This space is delineated from the commodity space by the fact that the nature of the good that it produces changes. The commodity space is understood to produce commercial goods, which in Education can be understood to refer to the creation of human capital. Lévy theorizes that *the knowledge space* produces human qualities. It is this delineation of spaces that speaks to the earlier distinction made between the already innovative subject (or the innovative subject) and the subject of innovation (or *homo economicus,* the enterprising subject, the entrepreneurial subject). It is the latter subjects who comply with the requirements of the politics of education by accepting that learning in the commodity space will produce the relevant capacities to be a contributor in the commercial world upon graduation. *The knowledge space*, on the other hand, is more likely to engage innovative subjects in a more complex understanding of innovation than what technological innovation alone supposes is possible, where instead of self-interest being the guiding force to the formation of the self, the innovative subjectivity forgoes individual ownership and integrates into the network of collective activity. This is where collective intelligence is developed and students are forced to think philosophically and to develop new ethical knowledge about the problem of collaboration.

Theoretical framework

The theoretical framework used in this investigation embraces the use of three approaches: the experimental, the genealogical and the post-Cartesian. These approaches and their relationship will be discussed in the following paragraphs.

The experimental approach

The investigation is *experimental* in various respects, including: firstly, the proposal that innovative capacities will develop independently of the application of human capital theory and that this is possible because endogenous growth theory supposes such a possibility; secondly, the proposal that, as a consequence of the introduction of networked learning economies to educational institutions, "the commodity space" (Lévy, 1997, p. 139) is challenged as the only space capable of providing adequate learning opportunities to students; thirdly, the proposal that theorizing the relationship between the already innovative subject's learning and a new interpretation of problems that can be addressed where the innovation involved is not limited to technological innovation as commercial innovation; fourthly, the proposal that the inclusion of students in institutional processes of innovation benefit not only students but also the development of institutional ideation that informs the purpose of innovation and change; fifthly, the proposal that the metaphor of the black box, as that which is used by standard economics to describe the process of innovation, is most appropriately thought of, when referring to the student's relationship[p with the process of innovation, as referring to the object of the blacked-out-theatre before a play begins; and finally, the proposal that, while philosophy is not taught in the national curriculum, students, while thinking the paradox of their situation, will respond to the limits of the curriculum through philosophical thought.

The genealogical approach

The *genealogical* and *post-Cartesian* approaches, within the theoretical framework, are both in their own way also experimental – all three approaches being implicitly related to one another and conditioning the role of the other. The *genealogical* approach refers to how this investigation uses history for the purpose of rethinking the nature of problems that students engage within their innovative activities; this concept of genealogy drawing on Foucault's (1997a) idea that genealogy involves a problematization of the history of the present. Problematization is an opaque term in the sense that very few researchers, in adopting Foucault's use of the concept of problematization, highlight whether they make the same distinction between the possible tasks of problematization; "the history of thought", "the history of ideas" and "the history of mentalities" (1997a, p. 117). This distinction is very difficult to make as one that would

involve an adopted schema, as did Foucault in focusing on the history of thought. In relation to the history of economics and the constitution of Education as a quasi-commercial enterprise, the focus in this investigation is framed by in the relationship between "the history of thought" and "the history of ideas". In the case of the learning environment and in regard to the formative nature of student thinking, the complex relationship of these orientations towards history is more difficult to delineate. The best that can be done in the context of this investigation is to be aware of the subtle influence on thought that these histories have.

Other features of the *genealogical* approach involve the following: a rethinking of the history of the concept of innovation as one where its various historical meanings political, social and technological are conceptualized as informing contemporary student interest in problems of the present; an acknowledgement of the fact that the teaching of history itself supposes an ironic student genealogical engagement with the possible value of innovation – that knowledge without history implies "the leap" of innovation (Drucker, 1959, p. 13) involves more "an organization of ignorance, rather than that of known facts"; a special emphasis on the velocity and impact of technological development on student learning, with respect to how their engagement with new technologies and networked learning economies heightens fluency with the velocity of this development – something that requires a "forgetting" (OECD, 1996); a special emphasis on embracing the genealogical value of the biographical histories of List, Schumpeter, Lundvall and Drucker as personal histories that have informed the formation of ideas that are now universally used; and an evaluation of *genealogy* as a means of engaging with, critiquing and breaking with neoliberalism without having to subjugate the investigation to a politics that has its basis in an ideology (Dardot & Laval, 2013; Peters, 2011).

The post-Cartesian approach

The *post-Cartesian* approach to the theoretical framework of this investigation does not refer to the idea that Cartesian thought can be left behind. Rather it refers to the capacity to be objective in that this process of objectivization informs the individual's thinking as an experience that becomes the basis for elevating the importance of the relationship between subject and object. Some professionals in Education will say that the relationship is everything but this is not the approach

taken here. The subject and object still exist as distinct entities and in fact they become more important than they might have been before in that consciousness of them now becomes conditioned by what transpires *within* the relationship. This *post-Cartesian* approach has been gradually acquired as a consequence of reading Foucault; in particular his later work.

On what philosophical basis is a *post-Cartesian* approach pursued? The black box, the paradox of the situation of the already innovative student, disruptive student innovation, and digitally aided autonomy, the problem of integrating individual and collective processes of subjectification (Lévy, 1997) all presume a new emphasis on the importance of the relationships. Given this development and that fact that it is the intention of the researcher to theoretically empathizing with the situation of the contemporary student in general and already innovative subject in particular, an approach needs to be taken that avoids objectification of these above phenomena at the cost of the dignity of the individual student's heuristic learning.

Literature

Now to the question of the *literature* engaged in this investigation. As soon as it became evident that traditional economics had discarded serious interest in the process of innovation, it was obvious that this tactical exploitation of the concept of innovation would imply a need for a broad and interdisciplinary approach to reading. This is not to say, economics has been ignored. Nor is it to say that economics has been turned against itself. To this effect, the problem of engagement with the literature on innovation and related subjects to this investigation is one of allowing orthodox and incumbent interests to be as they are. Yes, analysis and critique of the implications of neoliberal economics in Education are necessary, but this is done only in as much as it becomes possible to witness the theoretical engagement of the already innovative student with the institution, the politics of education and the politics of innovation. The choice and particular engagement of literature is sensitive to the notion that there is no formal and conceptual recognition of the already innovative student as an already innovative subject. This is to say, there is an attempt, in as much as it is possible

in the theoretical, to identify where the already innovative subject makes a case for him or herself.

Given this above approach, strategies have been adopted to manage the vast array of related literatures; which is to say, literatures that have not been previously engaged in relation to this topic – a new topic, without an established discourse. For instance, there is a heavy reliance of primary reading. The thesis does not involve an analysis of discourses but rather involves an engagement with primary literature in relation to a new and novel purpose – the yet to be recognized *already innovative student*. While this engagement is formal and serious, there is also engagement with sources less associated with scholarship: namely Wikipedia. The purpose of embracing Wikipedia as a source is to facilitate epistemological engagement with the existing colloquial understanding that students are already innovative before the politics of education believe this is possible. This is to say that the epistemological basis for such cultural and societal understanding, by definition, exists outside the piety of academia and, as such, is more closely related to the pragmatic reason of colloquial knowledge.

Lastly, while the title might suppose a substantial engagement with philosophical texts, such texts are only discretely engaged. The philosophical perspective is employed in the investigator's use of a post-Cartesian approach to engaging the problems that populate the discussion. The central problem being the researcher's determination to theoretically empathize with the *situation* of the already innovative subject; the problem existing because the theoretical cannot be thought of as enabling an overcoming of the paradoxes that characterize this research. Of course, these paradoxes exist on account of differences in age, gender, experience, education, culture, and they also exist on account of differences in understanding between the already innovative student and the politics of education as to the meaning of innovation.

Structure of argument

The thesis argument begins with an analysis of the standard economics' treatment of the process of innovation as a black box and a discussion of the implications of this treatment for the innovative subject in Education. In order to ground the thesis argument, initial descriptions of how innovation is understood in economics and

Education are provided. The emergent problem in this chapter relates to recognition that the history of economics has made void the relationship between the innovative subject and their process of innovation.

In Chapter Two, a study is made of the thinking, lives and work of three economists with the intention of extrapolating historical evidence of the relationship of the innovative subject to processes of innovation. While the discussion is genealogical in nature, it is not one that supposes that these economists critically identify where the relationship between the innovative subject and processes of innovation have been made void by the history of economics. Rather the intention is to provide evidence of why it should be understood that there exists such a relationship.

From here, the discussion moves to the need to differentiate between the concept of the innovator and the concept of the entrepreneur as the two actors who are most commonly associated with the process of innovation. The distinction made here highlights the fact that the history of the innovator has followed the history of innovation, which today is understood as technological innovation, whereas the entrepreneur is understood as being able to implement new initiatives both in the marketplace and in domains where the effect of their impact is not judged according the commercial value of that which is introduced.

This is followed by a discussion on the situation of the already innovative subject as a problematic. This problematic is extrapolated from both political and philosophical perspectives in order to draw a clear distinction between the interests of politics and the interests of philosophy. This aspect of the thesis discussion is completed with an analysis of the situation of the already innovative subject as a black box, with a view to how the black box could be used as a metaphor that would enable the student to have greater protagonism within processes of innovation or change that take place in educational institutions.

Chapter Five, grounded on the discussion in the previous chapter, involves an investigation of the individual student's relationship with the educational institution and the institution's processes of innovation. The distinction is made between the student's experience of institutional processes of innovation that are focused on productivity and the student's own processes of innovation. Particular importance is given to human capital theory and the role this theory plays in tying

students into institutional processes of innovation. This analysis produces an explanation of how the individual can be absented from processes of innovation.

Following this, the discussion moves to address how technological innovation is understood in Education. Drawing heavily on s done by Godin (2010a, 2010b, 2015b, 2015c), the influence of American and European traditions are examined with respect to how both commercial management and researchers think about technological innovation in the educational institution. These contrasting influences are further complicated by a brief analysis of Foucault's (1997a) understanding of technology, with a view to highlighting the role technologies of the self that play in the formation of innovative subjectivities.

The discussion then moves a description and analysis that differentiates between the subject of innovation and the innovative subject as two distinctive if temporal actors. The former is associated with acceptance of the Education as it is provided to them and, as such, as a subject who accepts to merely populate the institution's processes of innovation that are focus its productive function. The latter subject is associated with the individual who has the capacity to break with the Education that they are provided with through initiating innovations in their own learning. This chapter finishes with a discussion of the importance of the relationship between risk and responsibility.

Chapter Eight examines open innovation. After a discussion on openness, an explanation of Bergson's (1935) understanding of static and dynamic societies is provided with the intention of highlighting the situation of the already innovative subject when the educational institution is closed to the student's desire to take new initiatives. This chapter finishes by highlighting the importance of tacit knowledge as being fundamental to the student's innovative processes.

At this point, the discussion moves to engage with the concept of social innovation. This discussion involves an examination of the difference between social innovation that responds to an interest in reforming the existing system and social innovation that implies the existence of a will to break with the existing system, and begin a new project from new foundations. As neither of these approaches appear capable of offering real change or profound innovation in the face of neoliberalism's attitude to its own social failings, the discussion picks up the political challenge of initiating change from below. The intention is to problematize the system's "tyranny without alternatives" (Unger, 2013) with the

aim of understanding those aspects that may be susceptible to transformation through radical change.

The final chapter looks at how student open and social innovation, in the context of the use of networked information economies, produces learning experiences that imply new possibilities of the development of collective intelligence; a new public good that both accedes and challenges the significance of the commercial good. “The commodity space” (Lévy, 1997, pp. 135-138) and “the knowledge space” (pp. 138-141) are analyzed with respect to the problem that students face in developing new human qualities – qualities that become necessary for the formation of collective intelligence. This learning is thought to be measured according to how students learn to re-evaluate the value of knowledge as that which does not always need to be governed by the interests that govern the commodity space.

CHAPTER ONE

Innovation and the Black Box

Introduction

An education system that treats its role as one that requires it to focus on simply increasing its productivity has a limited future. Treating institutional productivity as an end in itself and as the principal purpose of its function cannot guarantee its survival (see Lundvall, 1996). While this scenario may have functioned well prior to the introduction of open architectures and digital platforms, in that commercial student self-interest might have identified itself with the institution's quest for commercial success, this is no longer the case. It now becomes obvious that networked peer-to-peer collaboration in the learning environment demands new possibilities for student implication in institutional strategic development in both the commercial and educational domains. This development however remains blocked for reason of the institution's understanding and application of innovation. On the one hand, the commercial management of the institution appears to regard innovation as an activity that can only be initiated from above, while on the other hand, the same management appears not to have anticipated that new ecologies of student knowledges will evolve once student learning economies find their way about the open architectures and digital platforms of the contemporary learning environment. These ecologies of knowledge not only extend student collaboration to include the virtual participation of others in engagement with open source learning but they also involve students in addressing problems of the world that require a more expansive understanding of innovation.

The initial theoretical problem in this investigation has to do with institutional reliance on its present economic model and the fact that this model stifles student participation in innovation processes that, it is argued here, would otherwise benefit both student learning and how the institution contributes to student futures. If the institution is stifling student participation in innovation, it needs to be shown how this is being done when the institution regards innovation as its prerogative and an activity that can rationally only be initiated by its

commercial management. This is to say the institution's understanding of innovation excludes the possibility of innovation being understood in any other way. The intention is not to construct a polemic but to develop an argument which requires the politics of innovation to be more open and less irreproachable.

The discussion begins with an analysis of both the treatment by standard economics of the process of innovation as a black box and of the implications of this treatment has for the innovative subject in Education. In order to ground this point of departure in the discussion that follows, descriptions of how innovation is understood in both economics and Education are provided. The emergent problem in this chapter revolves around recognition of the relationship between the innovative subject *per se* (not just the innovative subject in Education) and their process of innovation has been annulled within the history of economics.

1.1
Economics' ambiguous treatment of innovation

Economics treats innovation in an ambiguous manner. Innovation is thought of as one of the drivers of economic development (see Section 1.2), which may suggest, because of its importance to the economy, that its understanding of innovation is beyond reproach. However, innovation, as an activity, is also considered to be "outside the framework of economic models" (Freeman, 1974, as cited in Godin, 2010a, p. 9). In relation to the former statement, it is new goods and services that drive economic development. In relation to the latter statement, it can be said that economics' understanding of the importance of these new goods and services to economic development inhibits it from having a general theory of innovation. Of course, there are automated and digitally managed manufacturing plants, in relation to which cutting edge science is mastered in order to ensure that the product produced competes in the marketplace, but such knowledge of this process is very hard to further develop without having the effect of depreciating the initial results.

This ambiguous picture is complicated by the fact that there are various streams of economic thought. The main ones engaged in this investigation are

standard economics,[1] neoliberal economics, neo-Schumpeterian economics and the economic thinking of Innovation Studies (Godin, 2010a, 2015a). The following statements, made by Freeman (1974) – the father of Innovation Studies – furthermore make these distinctive ways of thinking about innovation difficult to think of in terms of each other. Freeman paints this picture in the following way:

> Innovation is far too important to be left to scientists and technologists. It is also far too important to be left to economists and social scientists. (As cited in Godin, 2010a, p. 5)

This is to say, how is it possible to say that standard economics, as a discipline, is capacitated to speak for the significance innovation has as an aspect our political and anthropological complexity, if standard economics regards innovation as being foreign to the way it thinks of its responsibilities? Even neoliberal economics, neo-Schumpeterian economics and Innovation Studies are not able to think their way through this paradox. Innovation may be strongly locked into a neoliberal rhetoric that presumes societal acceptance of innovation as the mechanism for economic growth. This is evidently based on the notion that coupling science and technology enables the possibility of making the market the unique arbiter for what innovation is understood to be. This rhetoric is rarely challenged.

This thesis will challenge not only this crude paradox that standard economics has created for itself. What is more, it will also challenge the lack of serious endeavour on the part of neoliberal economics, neo-Schumpeterian economics and Innovation Studies to overcome their own limits in relation to the idea that innovation may in fact rightfully belong to a much larger field of activity than that which can be described as involving mere commercial activity. What are these limits? What is being referred to here is the inability to tackle the tyranny of human capital theory in Education and economics' incapacity to recognize or speak to the individual subject in a manner that coincides with the nature of the expression through which individuals express their innovative subjectivities.

All four forms of economics flatten the innovative subjectivity as if the contemporary individual could be thought of as nothing more than a consumer-

[1] Standard economics is also referred to as classical economics, depending on the authors engaged.

producer (see Becker, 1976; Becker, Ewald & Harcourt, 2012). Of course, the role of individual and therefore of subjective choice can be theorized as a means of explaining consumer behaviour (Treasury, 1987).[2] However, the idea that there exists a methodological individualism that enables a universal objectification of the individual as a consumer has been effectively debunked by Arrow (as cited by Lundvall, 2016a, personal communication).[3] Arrow explains that methodological individualism is unable to account for individual subjectivity because this subjectivity requires language to express its particular diversity. Then what happens to the individual as producer? This is the subjectivity of the entrepreneur and the significance of this individual will be engaged in Chapter Two and then throughout the thesis at various points.

So one problem that economics has is that the individual actor – whether a consumer and/or a producer – is not entirely an economic actor; he or she is not wholly *homo economicus*: the individual actor is someone more, someone less or someone other than the ideal of economic man. The other significant problems *homo economicus* has are to do with how economics understands the process of innovation and the fact that this aforementioned individual anonymously participates in this process. Their agency in facilitating the realization of the process of innovation is realized in response to an external vision with which they are neither intimately acquainted nor have the authority to question. As such, innovation is a mechanism for political change.

The relativity of economics' engagement with innovation seems to be, in part, because economics, in its various forms, is almost uniquely oriented towards profiting from its interest in producing *ends* in themselves: goods, services and good-services.[4] It is through this almost exclusive focus on *ends* and the profits that can be reaped from the commercial outcomes that economics is able to theoretically leave innovation unattended (see Godin, 2017), and furthermore to leave the process of innovation to one side, as if the theory of innovation could exist without any idea of how innovation occurs.

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[2] The discourse on subjective choice begins with von Mises book *Human Action: A treatise on economics* (1949)

[3] This was explained to me by Lundvall, during a conversation when I interviewed him in August, 2016.

[4] Good-services is expressed here to explain the economic function of the APP: that APPs provide both a product and a service; a hybridization of its two attributes.

Being focused on *ends* – economic outcomes – means that while economics is able to measure the performance of a product or service of innovation according to its own theoretical framework, the process of innovation remains difficult to explain in relation to the same framework that defines the importance of an *ends* orientation to economic activity as a working model. As Fagerberg (2005) explains, in his Introduction to *The Oxford Handbook of Innovation*, it is "… the innovation process … [that] has been more or less treated as a "black box"" (p. 3). This being the case, it is the process of innovation that becomes important in this discussion because it is the process of innovation that conveys the most about the politics of innovation. Fagerberg (2005) furthermore adds that "[w]hat happens in this "box" has been left to scholars from other disciplines" (p. 3). The significance of delegating the process of innovation as a *problem* to other disciplines will be addressed a little later in this section.

Continuing, it would be wrong to say that there has been no interest on the part of economics in the process of innovation. In practical terms, there seems to be a stage in an economy's development when it moves beyond a dependence on developing new manufacturing, when production processes need to be flexible to new ideas and to be able to adapt to the arrival of the products of new competitors in the market.[5] These developments are described but little else. However, in theoretical terms, interest in the process of innovation is limited. For example, while Freeman (1972, as cited in Godin, 2010a) states an interest in opening the black box and more recently while his descendants in Innovation Studies proclaim the same interest, there is no interest in identifying within this black box the relationship between the innovative actors and the process of innovation. Therefore, one would wonder how, for example, *learning by doing* could be explained as an aspect of the innovation process.

What then is the hurdle to economics in approaching a deeper understanding of this relationship? Initially, it is surmised that there is a phenomenological problem with respect to economics working to a framework that is unreceptive to the need to speak to the creative aspect of the process of innovation. In particular, it lacks to means of speaking to the subjective which

[5] This is what is occurring in China at this time. See Shipley (2017) and his article China's Factories Don't Fear Trump.

initiates the process of innovation. Economics is not short on theory, beginning with von Mises *Human action: A treatise on economics* (1949), when it comes to needing to explain consumer choice but it is a different story when needing to explain the same individual's creativity when contributing to an innovative production process. Yes, there is the entrepreneur, the leader in the development of new ideas, but what happens when the commercialization of new ideas becomes dependent upon collective innovation processes which acknowledge the participation of all subjects involved?

It is with this problem in mind, that the discussion now turns to the need to exposit a working definition of the black box. The meaning of the black box, is a subject of discussion in this investigation, is not brought to a significant head before the end of Chapter Four. What follows is an attempt to lay the foundation for the interim discussion.

The black box, as a metaphor, refers to an object's capacity to facilitate a process of disambiguation ('Black box (disambiguation)', 2015), or clarification of understanding. In rudimentary terms, the black box in economics refers to how "inputs" produce "innovation outputs" (Rosenberg, 1982, p. 233). However, while economics might wish to treat the innovation process as a black box, it might be more accurate to argue that what economics is actually doing is what is called "black-boxing" (Latour, 1999, p. 304) the innovation process. This is say that economics makes the innovation process ambiguous. Elaborating, Latour (1999) describes black-boxing as follows:

> … expression from the sociology of science that refers to the way scientific and technical work is made invisible by its own success. When a machine runs too efficiently, when a matter of fact is settled, one need focus only on its inputs and outputs and not on its internal complexity. This, paradoxically, the more science and technology succeed, the more opaque and obscure they become. (Latour, 1999, p. 304)

As such, the process of innovation cannot be explained away as a black box: the action of black-boxing supposing the presence of a subject. This is to say, while it can be said that economics treats the process of innovation as a black box, it needs to be added that it is economics, through its own lack of attention to how

economic results are created, that makes the innovation process into a black-boxing – evidently, from what Latour (1999) says, by a process of black-boxing.

What would seem to be critical is to highlight the relationship between how economics and Education understand the process of innovation. While commercial enterprise black boxes the innovation process, which, according to Latour (1999) can be seen as being indicative of a celebration of the successes of science and technology, Education equally relies on science and technology, through embedding the STEM subjects in the curriculum with the effect of black-boxing the institution's processes of innovation.

In order to bring to the fore the reality of the already innovative student in contemporary Education, it becomes necessary to expose the nature of Education's black-boxing of its own innovation processes because it is in the institution's black-boxing of its own innovation processes that it makes the already innovative student anonymous. There are various ways in which Education's black-boxing of innovation can be seen to do this, for example, in the creation of human capital over the creation of human qualities, and in the privileging of assessments and exams over formative learning. These are structured orientations that ascribe the purpose of education in that the student works on him or herself to create human capital by excelling in summative measurable academic performance. This claim presupposes the need for a complex analysis, before which it will be necessary to understand how economics and Education understand innovation according to their own interests.

1.2
The black box as metaphor

The black box, as a metaphor, can refer to an abstract concept, as in the case of that which houses an ambiguous and difficult-to-access understanding of something. The black box, as a metaphor, can also refer to the object that it gives its name to; such as a flight recorder, which ironically is orange in colour, not black. In this case, the black box refers to its interior of the apparatus that contains post-accident data that is yet to be understood. The black box as a metaphor, is used in a broad range of disciplines ('Black Box', 2017) without a common purpose. While this situation is problematic, it also provides an opportunity.

The black box could be an abstract painting that mixes brutal gestures and with a fragile consciousness. While the aesthetic itself might be simple, the viewer intuitively knows that the complexity responsible for the expression is mostly hidden beneath the manner in which the paint is applied. In this situation, there are objective and subjective elements that both make up the content of the black box and provide the means for understanding its content. It could be said that there is not a viewer who does not, in some way, appreciate Rothko's painting *Orange, Red, Yellow* (1961), and it is equally likely that there is little agreement as to why this painting is so appreciated. The illusion is that the black box refers to the obfuscation of some aspect of experience that is both fundamentally common to all while being extremely difficult to identify. It is as if the black box – the abstract painting in this instance – recovers Kierkegaard's question in the aftermath of Descartes' sweeping "aside man's [of] spiritual existence as irrelevant" (Drucker, 1969, p. 304) and when he (Kierkegaard) asks: "How is human existence possible" without knowing its contents? Perhaps the black box is most usefully understood as a paradox of reason – the means by which reason can know itself only through being other than itself. The purpose of this analogy of the abstract painting is to highlight the futility of objectifying something in isolation from its context (the painter's experience and the viewer's world), while at the same time abandoning a sincere interest in the significance of the object – as the viewer does who complains that their child could paint the same painting.

As already iterated economics in abandoning intrinsic interest in the process of innovation and jettisoning this object of interest to other disciplines (Fagerberg, Mowery & Nelson, 2005), also denies any consciousness of an intrinsic interest in the innovative subject – the actor who populates the process that makes innovation possible. If the attitude of economics, with respect to its role, is accepted by society without question, perhaps there is nothing more to say. However, the intention here is to argue that economics, in black-boxing the innovative subject, along with its black-boxing of the innovation process, provides an opportunity to reconceptualize innovation and, as such, to theorize the innovative subject in Education.

To do this, the concept of the black box needs to be d, this time not just in terms of its ambiguous function (as reported in Section 1.1) but also in terms of how the concept has come to be abused and misused, and with respect to the

possibility that it offers new insight into the role of the innovative subject in Education. To this effect, the remainder of this section will be taken up with outlining how reference to the black box enters into the methodological approach assumed in the investigation of the innovative subject in Education.

Polanyi and Prosch (1975), when discussing the relationship between the metaphoric term and that which it refers to, remind us that "a word has a *meaning*. It *bears on* something else which is its meaning. A word and its object are not equal partners in an association. An explanation of language along associationist lines is thus fundamentally wrong" (p. 69, emphasis in original). This *something else* upon which the term black box *bears on* is, as alluded above, going to vary significantly. [6] The black box can refer to the existence of a sphere of understanding that, until now, has not been adequately explained (see 'Black Box', 2017). In a more tangible domain, the black box can refer to computing and engineering devices, a transistor, an algorithm and even the human brain, not to mention the object most people are more familiar with, the flight recorder used on aeroplanes.[7] As can be seen, the relationship between the word's *meaning* and its *object* can be very ambiguous if it is not already announced what the black box refers to in concrete terms. This variability not only depends on the ontology of the object but also on the type of data sought within it. To this effect, the terminology black box lends itself to being loosely used. Sometimes the term the black box is used to communicate that the author is a cutting-edge thinker when in fact little is learned that significantly changes global understanding of an experience. Genuine engagement with the black box therefore presumes a ground-breaking revelation.

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[6] The black box refers to the following *objects*: in transport, the black box refers to the flight recorder (used in aeroplanes), the event recorder (used in trains), in information and communication technology. The black box also refers to a Window's manager (who works with X Window System platforms) and to a software development environment. In relation to questions of security, the black box refers to the briefcase that accompanies the President of the United States, containing nuclear missile launch codes. In pharmaceuticals, the black box refers to a warning on a prescription drug, and in the arts, it refers to the black box convention (a blacked out theatre before a performance). The meaning of the black box as a metaphor is generally understood to refer to the objects capacity to facilitate better understanding through disambiguation ('Black box (disambiguation)', 2015).

[7] "The term *black box* was first recorded used by the RAF [Royal Air Force] in approximately 1947 to describe the sealed containment used for apparatus of navigation, this usage becoming more widely applied after 1964" ('Black Box', 2015).

In the thesis discussion, the use of the terminology *black box* proposes that there exists a dilemma at the crux of the problem of speaking to the existence of the already innovative subject. While economics treats the process of innovation (and therefore the innovative subject) as a black box that it is not interested in approaching as a problem, the argument made in this investigation is that both economics and society stand to gain from a positive engagement with the problem of speaking to the innovation process. What is more, it is thought that this initiative not only benefits both the innovative student and Education's understanding of innovation but also our global understanding of economic development.

To this effect, the underlying intention is to see to provide greater clarity in relation to the student's experience of the nature of change. Elaborating briefly, it can be said that there is a marked difference in where the 'intrinsic interest' lies (Polanyi & Prosch, 1975), i.e., whether it lies with the metaphor or the object its meaning refers to. While economics uses the metaphor of the black box to formalize estrangement between innovation and the process of innovation, the intention in this discussion is the contrary: to theorize the relationship between innovation and the process that process the innovation is to also theorize the role and status of the innovative subject. The task is therefore, on the one hand, to critique the 'semantic mechanism' that governs how the black box is used by economics while, on the other, it is to give clear and forceful meaning to the significance of the process of innovation and to the value of the innovative subject.[8]

This analysis of the role that the black box plays in the upcoming discussion cannot be wound up without also referring to the fact that sometimes these two semantic mechanisms (the metaphor of the black box and the object of its meaning) will not be able to be discussed in the same moment of the inquiry. This approach to argumentation reflects the need in some moments to acknowledge the Cartesian construction of the operational function of Education in economic development while, in other moments, it reflects the need to argue for the significance of the process of innovation and the value of the innovative

[8] This problem is beginning to emerge in Education as I write. See article 'Pay teachers based on students' progress: Thinktank' (Collins, 2017).

subject from a post-Cartesian perspective. In the latter instance, the emphasis is firstly, on drawing relations between student participation in innovation processes as a relationship that conditions the way students constitute themselves and secondly, on drawing attention to the educational institution's alienation of the already innovative subject. The challenge is to see these two realms of the inquiry as distinct and yet genealogically intertwined around the problem of facilitating heuristic learning that requires innovation.

1.3
Innovation in economics

In this section, an initial sketch of how economics understands innovation is provided. Given that publishing on commercial innovation is growing at a rate that outstrips the growth of publishing in general (Fagerberg, 2005), this sketch will be both rudimentary and overarching in nature. It is not a literature review but rather provides a preliminary picture of the relative status of technological innovation in the various sectors of the economy that have an influence of the thinking of policy-makers in Education.

The embedding of innovation into human activity is a relatively new initiative Innovation has not always been so important in economic life: technological innovation, commercial innovation and economic innovation are recent concepts and less than a hundred years old; technological innovation being the first to emerge in the late 1940s (see Godin, 2008). To understand why these concepts became so fundamental to the contemporary understanding of economics – although not all economics[9] – it is necessary to understand the significance of a number of political, economic and theoretical developments that took place during the 20th century and more particularly after the end of the Second World War. These events include the reassertion of liberal values in the form of neoliberalism (Dardot & Laval, 2013; Olssen & Peters, 2005), the move from classical to neoclassical economics (Samuels, Biddle & Davis, 2003), the development of the global marketplace ('Economic Globalization', 2017; The World Bank, 2017), the contemporary emergence of knowledge as a factor of production (Machlup,

[9] University Readers prescribed by Business Management Schools and Economics Departments surprising ignore the significance of innovation, despite innovation being identified in their curricula as a driver of economic development.

1962), the advent of the world-wide-web ('Tim Berners-Lee', 2017), the networked information economy (Benkler, 2006) and the formation of digital capitalism (Peters & Bulut, 2011), the Organization for Economic Co-operation and Development's (OECD) protagonism of national systems of innovation as policy and application (Lundvall, 2004), to mention just a few of the crucial developments. These developments being what they are, the intention here is not to provide an historicist approach to understanding the origins of how economics came to value innovation, but it is to use knowledge of these events to trouble the notion that the concept of the innovation should be the prerogative of economics.

What is interesting about the significance of innovation during the last 80 years is that the history of economic activity has *not* resulted in the development of a theory of innovation that holds for all forms of industrial development. The World Economic Forum (2016) is now speaking of industrial development since the mid-18th century as being marked by four revolutions, each involving a new orientation in production: "acceleration", "mass production", "automation", and "cyber-physical systems" (Bloem, van Doom, Duivestein, Exoffier, Mass & van Ommeren, 2014, pp. 11-12). The difficulty of articulating a theory of innovation is not merely because of the radical change in orientation that these developments suppose but also because these four orientations can be seen to exist simultaneously and alongside each other in the same business. The relevance of these categories to Education has to do with how they inform the discussion of performativity such that the accent of student performance can be d in relation to how these categories stifle the already innovative student. This line of inquiry will be picked up again in Chapter Three.

1.3.1

New combinations of productive means

Having briefly illustrated the complexity of the dynamic in which innovation, as a concept and application, has emerged, it is time to problematize the stock definition of innovation. The contemporary concept of innovation gets its initial definition from Schumpeter (1934/1911), when he describes innovation as that

which results from "new combinations of productive means" (p. 66).[10] These combinations covered what Schumpeter called five cases:

> (1) The introduction of a new good … ; (2) the Introduction of a new method of production … ; (3) the opening of a new market … ; (4) the conquest of a new source of supply of raw materials of half-manufactured goods … ; (5) the carrying out of a new organization of an industry … (p. 66).

The curious thing about this description of the five cases n which innovation takes place is that fact that, while they identify distinctive economic activities that can influence the behaviour of the market, they do not share a lot other than the presence of the need for the profit motive (Schumpeter, 1934/1911). There are other things an entrepreneur does and there are other activities that generate wealth. The vagueness of this selection of categories becomes more obvious once *knowledge* is abstracted from *capital* as one of the three principles of modernist economics along with labour and land, and becomes itself a *bona fide* principle of economics (see Marshall, 1890). The emergence of *knowledge* as a principle of economics does not really occur until after the Second World War when Bush (1960) requests researchers work with industry to invigorate economic development in the United States (see Godin, 2008). From this point onwards, its emerging importance is captured in a series of developments that can be said to begin with Machlup's (1962) studies of the economic value of knowledge (as cited in Peters, Marginson & Murphy, 2008) and continue through to the advent of the knowledge economy, beginning with the OECD's (1996) use of the term "knowledge-based economy" (as cited in Peters, Marginson & Murphy, 2008, p. 3). As is well known, knowledge assumes the full weight of it significance with the development of the world-wide-web (Benkler, 2006; Lévy, 1997, among many others) and the global dissemination of knowledge.

What is surprising about this development is that Schumpeter's (1934/1911) categorization of cases or contexts in which innovation occurs has remained, for the most part, unchanged for over 80 years. The OECD (2005)

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[10] While the impact of innovation on economic development began to be understood in the 20th century as a consequence of Schumpeter's *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle* (1934), the original work was published in 1911, nearly a quarter of a century earlier. One can only wonder what would have happened if the original German text was translated into English in 1911. Could it for instance have contributed to the possibility of staving off the catastrophe of the First World War?

defines innovation, post its own use of the terminology "knowledge-based economy" (1996), as:

> … the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method inbusiness (sic) practices, workplace organization or external relations. (p. 46)

Returning to this initial sighting of innovation in economics and its broad brush-strokes, while it is not possible to say that the advent of the knowledge economy reflects the existence of an entirely sequential process of development in capitalism – the effects of the four so-called industrial revolutions, "acceleration", "mass production", "automation", and "cyber-physical systems" (Bloem et al., 2014, pp. 11-12) continue to be fundamental – the knowledge economy adds an added dimension to the ecology of human behaviour. This is to say, these distinctive features of economic development function simultaneously, as Freeman (2008) notes, even within the same business, the automobile factory being a good example.[11] Given this complexification of economic activity and its related features, the importance of neoliberalism, the networked information economy, social media, digital capitalism and the ever more educated consumer, there needs to be some pivotal theoretical developments in economic thinking on innovation for there to be the development of a philosophy of education capable of turning the rationale and logic of economic thought against itself and, as such, bringing economic thinking on innovation and its black-boxing of the innovation process into question.

The pivotal theoretical developments considered in this investigation are: the political impetus to couple technology to innovation after the Second World War (Godin, 2008), Drucker's analysis of innovation in *The landmarks of tomorrow* (1959) and the advent of a concept for the global study and management of the National Systems of Innovation (NSI) (Freeman, 1988; Lundvall, 1988; Nelson, 1988). These particular developments have been chosen over others because of their relevance to the problem of understanding the role of innovation in Education.[12]

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[11] To be performative within its design and financial parameters, and therefore to be competitive, an automobile factory needs to optimise these four industrial functions.
[12] See Chapters Two, Four and Five.

In more general terms, "innovation" is "spontaneously understood as technological innovation" (Godin, 2012, p. 4). On a theoretical level, the term innovation is variously thought of as referring to any change or novelty, diffusion, new products, processes, services, technologies, organizations, market strategies, the invention of a new idea, the commercialization of a new idea, the work of entrepreneurs, and work done in R&D (see Fagerberg, Mowery & Nelson, 2005; Godin, 2015a, 2015b, 2008; OECD, 2007). Evidently, the relationship between theory and practice is not a simple one. For instance, a technological innovation cannot be explained by a theory of innovation that pretends to be universal. The reason for this is that the concept of innovation refers to an extremely broad range of phenomena each of which might have involved innovation processes that do not overlap, although this is by no means always the case.[13] Furthermore, it is questionable as to whether innovation can be theoretically described in the form of a universal explanation or even whether this would be a desirable theoretical development.

1.4
Innovation in education

It has been argued that innovation is regarded, in the current education model, as the prerogative of commercial and administrative management. The weaknesses of this model, with respect to the extent to which the institution is able to be innovative, are three-fold: (1) the institution black-boxes its own innovative process at the cost of understanding that it is black-boxing the innovation process as a knowledge asset, (2) the institution's understanding on the purpose of Education requires it to ignore students who are already innovative, meaning the institution also black-boxes the already innovative student, and (3) in allowing itself to be led by purely commercial interests, the institution is closed to other forms of innovation, such as political, social and ecological innovation.[14] These weaknesses have become structural obstacles that inhibit Education serving students, knowledge and society on their own terms. What is more, the institution sees no need to explain its incapacity to address these weaknesses – its politics of

[13] Godin's (2017) work addresses this issue.
[14] These weaknesses will be addressed in detail in Chapter Four.

innovation already being justified by its concept of economics. If this ideological disposition fails the institution and innovation is poorly managed to the point of compromising its commercial performance, rather than questioning its understanding of the concept of innovation, Education brings in new commercial expertise, in the form of a new manager to the school board or a new vice-chancellor to the university.

The attitude that will be taken in this investigation is one that no model can be thought to be beyond reproach. This is to say that the institution's politics of innovation should always be open to change in its own processes and what is more that such change should be able to be effected from below. Furthermore, it is thought that the *vision* that underpins this commercial model should be open to being transformed by the collective participation of students in the institution's innovative processes. What the latter refers to is collective student capacities to transform the manner in which education is provided them, whether this is by introducing new forms of learning or through seeking to be assessed according to a new means of understanding the value of learning.

1.4.1
Neoliberal forms of educational innovation

Neoliberalism's transformation of the educational institution into a commercial enterprise logically supposes the adoption of a concept of innovation that must have its epistemological foundations in economic theory and how innovation is understood in the commercial world. Except for some crude differences, it is possible to say that the educational institution and the commercial enterprise operate with the same objectives: they pursue innovation as an "application" (Drucker, 1959, p. 17) with the aim of achieving greater presence in the marketplace. When speaking of crude differences, the following can be postulated: (1) that students (as proxies for their parents) pay to learn to work, whereas workers get paid for what they know and do; (2) that students work to create themselves as human capital, whereas workers create goods and/or services; and (3) that 'learning', 'already existing innovative capacities' and 'concepts of the important problems of the world' are not triangulated in the non-proprietary sector, whereas they are sometimes in the proprietary sector,

depending on the status of the worker (see Sennett, 2006). It will be argued in later chapters that, in making these basic claims, it is *the strategic application* of human capital theory as an instrument of institutional innovation policy that obstructs understanding how students might contribute as innovative subjects to the institution's innovation process. This is to say that innovations initiated by students should not only be considered to be integral to their creation of new learning pathways, but that these same innovations should also be considered to merit the possibility of transforming the provision of the service that is provided them. How else can educational institutions stay abreast of the influence of the technological developments that benefit student learning? Student learning involves more and more learning by doing and these new technological developments are likely to result in greater student understanding of how they benefit their learning – a capacity for which, we can only imagine, most commercial and administrative personnel will struggle to keep up with.

The difficulty with the institution's incumbent conceptual understating of innovation as technological innovation has to do with its will to control the formation of new ideas such that the only ideas that can be considered innovative are those that can be commercialized. In the present political economy, the very status of the student, as an individual who has not completed the formation of the self as human capital, delimits the student possibilities to be innovative such that their ideas can never have commercial implications as long as they are still studying, let alone the implications involved in addressing other problems. Sometimes there are exceptions but these possibilities, it is argued here, are largely stifled. In the educational institution, the illusion is that new ideas are the unique prerogative of commercial and administrative management and that such similar or equally important ideas do not arise in student thought, experience and research.[15] The unanticipated emergence of new ideas in the student cohort is not always welcomed, as the nature of such ideas can also suppose the emergence of new political subjectivities; an emergence that challenges the political legitimacy of the institution's commercial model for the development of knowledge.

[15] One way some universities prohibit the possibility of student innovation is by controlling the parameters of with which their intellectual property is used. For example, postgraduate student ideation is prohibited from being promoted under the university banner in that students can be prohibited from using the university logo and header on a set power point of slides at a conference presentation.

The political legitimacy of the educational institution as a commercial enterprise is therefore a precarious one. While Education is historically a public good, the contemporary institution is made to function as if its legitimacy can only be determined by its performance in the marketplace. This is to say, Education's programme for facilitating the production of human capital supposes the paradoxical situation where the public educational institution must act as if it is a private institution.

The feat of situating the educational institution in the proprietary domain has required the ongoing adherence to a cohesive metanarrative that, in economic history, begins with Schumpeter's explanation of innovation in 1934. As intimated in Section 1.2, in 80 years, there has been little theoretical development of the concept of innovation; something that has been guaranteed by the OECD's promulgation of a concept of innovation that is uniquely limited to being a driver of economic development. Lundvall's (1996, 2007a) work for the OECD has ensured that this conceptual consistency is carried over into the development and application of the learning economy.

1.4.2
A New Zealand case in point

In New Zealand, The Treasury is a key influence on both economic and education policy developments. The Treasury would seem to play a strategic role in the way that it speaks or does not speak to the meaning of innovation. Its work is more about extrapolating existing analysis and providing an ideological orientation. To this effect, innovation is thought of as being "one of five 'drivers' of productivity" (The Treasury, 2008, p. 1), and can be understood to conceptually draw on NSI literatures.[16] Here, innovation is thought to be characterized by "non-linear", "pervasive", "specialization", "cumulative" and "collaborative" (p. 16) processes. The Treasury considers knowledge creation to be important in "driving innovation performance (and ultimately productivity)" (p. 18). To be more specific, knowledge is thought of in terms of capacities for "accumulation" and "application" (p. 18).

[16] National Systems of Innovation will be further engaged in Chapter Two.

This above thinking is fed down into ministry policy. Roger Proctor (2008), for the Ministry of Economic Development,[17] describes innovation as driving productivity that is produced by "the discovery, creation and commercialization of new and improved products (goods and services) that consumers value, the development of productive markets for existing products, and the discovery and implementation of new and more effective ways of organization production, distribution and marketing" (p. 3). While this thinking draws on both Schumpeter's and the OECD definitions (see Section 1.2), it also breaks from Schumpeter's concept with respect to who should assume the risk of innovation. To Schumpeter (1934/1911), it is the creditor, to Proctor (2008), it is the entrepreneur. One of the positive aspects of this definition, with respect to how it might influence understandings of innovation in educational institutions, is that it does not say who discovers, who creates and who commercializes. In other words, the initiation of innovation (its invention as an idea) is not formally delimited to the role of commercial management.

At this point, it could be argued that the narrative that tracks the impact of the concept of innovation on Education becomes murky. Education makes rhetorical reference to innovation without explicitly stating how innovation should be understood in the education sector (see Ministry of Education, 2016). However, in this context, it is also logical that it should be harder to see how the commercial and administration management understand the value of innovation as a means of transforming Education. The educational institution, although strategically commercial, is situated in the non-proprietary domain where the profit motivation for innovation is supposedly subsumed in support of the myth (some might say false idea) that Education should function as a project that is independent of explicit commercial interests. This obfuscation of the profit motive is perhaps only possible because of the structural role human capital theory plays in ordering the relationship between Education and the commercial world. If the development of innovative capacities were not framed by the requirements that students develop skills and knowledge in the form of human capital, the profit motive that drives the institution's process of innovation would become transparent and imply the need for alternative ways of understanding innovation.

[17] This ministry is now called the Ministry of Business, Innovation and Employment.

For example, an alternative way of understanding change is to understand it as political innovation – where innovation involves the application of one idea over another; the commercial aspect of this idea is subsumed to become fundamental rather than being the sole motivation for change.

In the aforementioned context, innovation, as a transformative capacity that might implicate the conscious participation of students and teachers, in the political sense of what new ideas in Education should imply is for the most part stifled. In the schooling system, this stifling of the formation of student and teacher innovative capacities is structurally supported through the state's designation of innovation as a "value" (Ministry of Education, 2007, p. 10). This would not be such a bad thing except for the fact that thinking, as a key competency, is designated to be learned as an extant competency and not as something that should be learned in all moments of the student's education (see Hipkins, Bolstad, Boyd & McDowall, 2014). Because thinking, in the understanding of these authors, is not thought of as endemic to all learning, it is possible to reify innovation as a commercial value. In doing this, the incumbent politics of innovation is able to evade student re-evaluation of commercial innovation in such a manner that student thinking should cause them to break with the institution's particular notion of what it means to be innovative.

So, instead of innovation being understood as a phenomenon that could be subject to discussion rich in diverse interpretations, it is made to adhere to an understanding that equates with the concept applied by the institution's commercial management. To this effect, the student could not be blamed for thinking that the meaning of innovation is beyond reproach. What this means for the student, as an already innovative subject, is that they must either critically challenge the nature of the curriculum or they must covertly pursue their thinking such that their tacit knowledge of innovation should remain hidden. If not, the student can be assumed to identify with what will later be described, in this investigation, as the *negative* subject of innovation;[18] in other words, as the object that they make themselves into during the process of producing the human capital that they are yet to become.

[18] See Chapter Seven.

At the level of teacher implication in the innovation process, teacher experience is largely prescribed by policy. A good example would be the The Teacher-led Innovation Fund (Ministry of Education, 2014). While teachers are enthusiastic about the opportunities this fund supposes (Ministry of Education, 2016b), teacher innovations will need to be sanctioned during the application process, which means teacher innovations are likely to need to be supportive of the already existing top-down governance of innovation. While teachers might believe that they are responsible for effecting change in the form of introducing new innovations to their teaching, equally they are executing a politics of innovation (the application of this politics) that has already been initiated by the institution's executive. This politics of innovation, where the carrying out of teaching innovations executes what has been already decided, can be thought of as back-fill as it only seeks to add to the power of the institution's political economy. For this reason, teacher innovation cannot transform the teaching experience such that it might challenge the institution's politics of innovation. It might be added that teacher subjugation is also a form of human capital development, in that the institutional process of innovation invests in teachers, through professional development, so that they improve their capacity to improve quality;[19] that is, so as they make the machine perform more efficiently.

Conclusion

It has been argued in this chapter that standard economics black-boxes its own process of innovation, which itself has the effect of black-boxing the actors who bring this process to completion. The theoretical benefit of such a feat is that, in objectifying this aspect of its own work, it gifts this problem of self-ambiguation to those who research beyond the realm of economic problematics. This is to say, standard economics gifts others the possibility of deciding how this problematic might be reconstituted as a problem for humanity rather than as a mere economic problem. In this sense, science cannot solve the problem of why the process of innovation has been black-boxed. Humanity at large has to do this collectively as a consequence of its recognition of its anthropological condition. What this means

[19] *The Teacher-led Innovation Fund* (Ministry of Education, 2014) is part of a program that seeks to "Invest in educational success".

is that we are faced with a decision over whether we want to participate in change, in order to consider the nature of the problem that we face.

The initial task in this investigation is to accept this above invitation as one that implies the need to explore how the aforementioned problem might be re-interpreted. To begin this exploration, the next chapter will involve an investigation of the innovative actor and their innovative process through and exploration of three historical exemplars – those of List, Schumpeter and Lundvall. This discussion begins from the premise that if economics is responsible for the estrangement of the innovative subject from the process of innovation, then this estrangement has been bedded in over time, conceivably since the beginning of the first industrial revolution. This said, it is decided here that instead of attempting to extrapolate the genealogy of this error, it would be a better to begin from the perspective that there is value in analyzing the work of three economists who have not sought to hide the importance of the process of innovation, as the reason for why these thinkers might be celebrated for the innovation that characterized their careers.

CHAPTER TWO

List, Schumpeter, Lundvall: The Process of Being Innovative

Introduction

If the process of innovation and by implication the innovative subject is treated by standard economics as a black box, the genealogical study that would be required to reveal *how* and *why* this theoretical separation occurred would involve a complex analysis that in itself would be too exhaustive for this investigation. Such a project, for example, would require an analysis of *why* economics has historically been permitted to focus on a macro interpretation of human activity at the expense of developing a more cohesive understanding of the macro, meso and micro levels of human activity that might also allow the autonomous evolution of these three elements.[1] For such an analysis to benefit the argument of this thesis, there would also need to be an in-depth study of *how* political innovation, social innovation and even religious innovation have been subsumed in the history of thought while continuing to contribute to how technological innovation is thought of today.

An alternative strategy is required to tackle the theoretical dilemma that standard economics poses in abandoning theoretical interest in the process of innovation. Instead of focusing on the aforementioned error in standard economic thought and therefore the history of thought in general, as would be required in any rigorous genealogical study (Foucault, 1998a), this chapter will adopt another approach to genealogical study. In place of a concern for the fate of an error – the separation of the innovative subject from the process of innovation – this chapter will concern itself with the destiny of creative thought that does not fall into error.

This is not to say that the analysis of the separation of the innovative subject from the innovative process should never be thought of as an error. The intention is rather to alter the equilibrium in the balance shared by the will to risk and the will to responsibility such that theoretical empathy has the researcher siding with the will to risk so as not to be restrained too much by the lessons of

[1] This is what neo-Schumpeterian economics tries to do (see Dopfer, 2007).

the past – as economics is be prone to being. The reason for this approach is that the intention is not only to reveal the positive history of the role of the innovative subject in the process of innovation, but it is also to elucidate that manner in which this relationship might be thought of as speaking to the situation of the already innovative subject in Education. It is in this sense that it is thought here that the economists List, Schumpeter and Lundvall might speak to the needs of a student whose will it is to be innovative.

The argument, in positing this change in how genealogy is thought of, revolves around the idea that innovation, as a category, and therefore as a phenomenon that contributes to how the contemporary student understands the problem of being innovative, has been abused by contemporary historians and especially historians of economics (for example, Landes, Mokyr & Baumol, 2010). This is to say, innovation has not merely evolved in a manner that sequentially corresponds to an historicist analysis of history. This discussion instead rests on a genealogical understanding that innovation should not simply be thought of as being responsive to a sequential evolution of its category, where social innovation accedes the political (in the 19th century) and the technological innovation accedes social innovation (in the 20th century). The genealogical notion of the value of history supposes innovation must still be concerned with the political and the social (see Drucker, 1959, Godin, 2015b). This is to say the social, political and technological aspects of innovation exist both in historical sequence and simultaneously in the foundations of innovation as a category.

In making this argument, the question is how to structure the discussion so that these aspects of innovation as a category, that are both sequential and simultaneous, are elicited together and yet within the era that was particular to the life and work of each economist discussed in this chapter particular. List's (1789-1846) understanding of innovation would have been conditioned by the problems of the era in which he lived and worked, as would have been the formation of Schumpeter's (1883-1950) and Lundvall's (1941-) understanding of innovation. Therefore while it might be logical to engage the thinking of List, Schumpeter and Lundvall on the process of innovation in historical sequence, as it were, the approach will also attempt to couch each engagement according to how Schumpeter thought innovation should be studied.

Godin informs us that when Maclaurin sought advice from Schumpeter as to how to study innovation, Schumpeter proposed the following methodological framework: the "historical analysis of industries and business", … "industrial monographs", and the "biographies of business leaders" (as cited in Godin, 2008, p. 7). While the intention in this discussion is not to adhere to these categories of research in the way that Freeman did in his work (see Godin, 2010b).[2] Rather is my intention to allude to how List's biographical experience dominates our understanding of the process of innovation (Henderson, 1983: Hirst, 1965); as it is my intention to allude to how historical analysis predominates in how Schumpeter's experience informs our understanding of the process of innovation (Schumpeter, 1939, 1954, 1987); and as it is my intention to allude to how Lundvall's detailed study of the mechanics of technological change informs our understanding of the process of innovation (Lundvall, 2017).

2.1
Friedrich List

Just as it can be said that there were individuals who understood that knowledge was an economic principle in the creation of wealth before knowledge became a factor of capitalist production, it can also be said that the *innovative subject* exists before this terminology enters common use. List was one such individual: he was an innovative subject who understood the value of knowledge as a factor in economic development and furthermore, that knowledge needed to be developed before technology could play its part in the development of political economy. Why has it taken so long for these terminologies – the *innovative subject* and knowledge – to be accepted in economic theory – something that has perhaps assisted in better understanding the significance of List's contribution to economic development through innovation? In relation to the *innovative subject*, this terminology as a theoretical description of the innovative individual is yet to enter the theory of innovation. In relation to the value of knowledge as an economic principle, perhaps it is because historians of economic history have closed ranks on List's genealogical approach to understanding how knowledge can be used to

[2] This is to say, Freeman adopts the same advice, as that which was offered by Schumpeter to Maclaurin, when he (Freeman) initiates the development of a new tradition with respect to how technological innovation is understood, (Godin, 2010a). See Chapter Six.

develop the concept of political economic. While List is known today, largely on account of the work of Freeman (2008) and the development of the concept of *national systems of innovation*, little has been written about the work that List did to unify Germany's productive forces prior to its political unification in 1871.[3]

So the question is, if List is so little known in discussions on innovation, how does his approach to the problem of being innovative facilitate the possibility of addressing (1) why the process in innovation has come to be neglected by economic theory and (2) why the innovative subject can be thought to be integral to the process of innovation? One thing that is unavoidable in reading on List's life (Henderson, 1983: Hirst, 1965) is the idea that there was nothing theoretical in his thinking that was not already implicit to his understanding of the practical problem that preoccupied him. While it is possible to say that his interest in initiating new economic development was abstract (captured best in his writing of pamphlets, journalism, policy and books), his writing addressed practical problems of significance, where his knowledge was often used in ways that his possible collaborators were largely resistant to. These above questions are thus posited on the premise that List was himself an *already innovative actor*, in the sense that the already innovative student suffers a degree of anonymity. To this effect, List was a very paradoxical figure in the sense that he can be throught to have tried to think the paradoxes that defined the situation in Germany in his time (see Henderson, 1983: Hirst, 1965; List, 1966/1885).

2.1.1

Innovation as *end*

In List's day, in 19th century Germany, the concept of innovation had not yet focused its interest on the commercialization of inventions (Godin, 2015b). Although there was a great deal on invention going on (see Murphy, 2010), much of which was focused on acceleration and of mass production (Bloem et al., 2014), innovation itself is not seen as the driver of economic development that it is today. In 19th century Germany, as in neighbouring states, the concept of innovation is going through a transformation (Godin, 2015). The political

[3] The concept of National Systems of Innovation is derived from List's concept of *national systems of production* (see Freeman, 1987, 1988; Lundvall, 1988; Nelson, 1988, as cited in Lundvall, 2007b).

innovation of the French Revolution, while casting a long shadow on account of the loss of life, is falling out of view as the means of understanding change and is being succeeded by an interest in social innovation. The concept of technological innovation comes much later in developments that follow the Second World War. As such, List's concept of innovation needs to be thought of as being evolved within and against the conditions that favoured this transformation.

Within this context and when looking at List's achievements, it would be tempting to think of the Deutsche Reichsbahn – the *national railway system* (Henderson, 1983: Hirst, 1965) – as his innovation, because these are the terms in which innovation is thought of today: as an *end*. However, when innovation is thought of as a *means* and an achievement in itself, as it was prior to the coupling of technology and innovation after the Second World War, the national railways system, as an innovation, becomes just a piece in wider problem and puzzle, more of which will be explained in Section 2.1.2. Defining the national railway system as both a means and an end helps illustrate how the relationship between the innovative subject and the innovation process has changed since the 19th century and possibly why the innovative subject has since been absent from that which makes innovation possible.

If Germany's national railway system were to be described in today's paradigm, it would be thought of as a technology that enabled Germany to be more competitive with English and French exporters on the eastern seaboard of America. What this railway achieved for Germany is that it linked the disconnected principalities in Lower Germany to each other and to Prussia and its various regions (see Appendix A), and this global network to the major trading ports.

There are some simple things that can be said about the design of this network that would be easy to miss. One is that while List struggled for years to convince his own people of the merits of building a national railways system, in beginning its construction later, the Germans were able to avoid making the mistakes the French made. The French built their national railway system based on the Legrand Star or *a centralized network*, meaning all lines were routed through Paris (see Appendix B), with Paris acting as the centre to its star structure, which meant that when anything needed delivering to somewhere off the immediate line, it needed to go through Paris and then back out to its final

destination. The Germans chose a different design so as it could link all the aforementioned disconnected principalities and Prussia in the most efficient way possible. This created a *distributed network* (see Appendix C) where there were always alternative routes to getting goods from manufacturers to the major port. This design both lowered the cost and increased the speed with which goods could be delivered to ports. While all this difference in design provided a self-evident advantage when goods reached the market, this design also facilitated something much more important: it unified the disconnected principalities in Lower Germany and Prussia creating a single state and political economy where there were once many, as seen in Figure 1.

2.1.2

Innovation as *means*

As intimated above, List's experience of innovation was a more complex one than that which might be associated with how technological innovation is thought of. This may seem like an audacious claim and especially given how technological innovation is regarded today. But how else should List's *commitment to change* be thought of? He was a man alone who sought to intervene in the cultural history of a country that was divided against itself and furthermore had no intention of changing. As such, the unification of Germany did not simply require the initiation of construction in 1835 of the first railway line between Nuremberg and Fürth (Mitchell, 1966), which eventually led to the creation of Germany's distributed railway network. It required the transformation of a number of fundamental aspects of life that made each principality different such that these political entities would be receptive to being linked to a national network that would homogenize each entity's special character. What made the special character of these principalities so distinctive is that the nobles who governed their principalities, governed them according to the intricacy of their own self-designed bureaucracies (Pinkard, 2005). Pinkard creates a vivid picture of how these distinctive political entities culturally and politically siloed themselves from the world.

> To go from one area of Germany to another was to travel in all senses to a foreign place; as one travelled, the laws changed, the dialect changed, the clothes changed, and the mores changed; the

> roads were terrible, and communication between the various areas was difficult (and consequently infrequent); and one usually required a passport to make the journey. A "liberty" was still within the context of the ancient regime, that is not a general "right" but a "privilege" to do something really quite particular – such as the privilege … to collect wood from a particular preserve – and depended on the locality in which it was exercised. To be outside of a particular locale was this to be without "rights" perhaps at all. (p. 5)

How should List's relationship, as an innovative subject, with the process of innovation be thought of? How did he initiate receptivity in the principalities to change such that their governors would be willing to make pragmatic steps to overcome their foreignness to one another?[4] Did he shame them into action? Was it the force of his argument? As in all great social innovations, what is clear is that he could not have accomplished this great feat on his own and, as such, his argument must be thought of as being one that was in tune with social forces that wanted the same change. By this, it is not meant that List collaborated in a great social innovation, but that he engaged with the implicit nature of the problems that faced the German commercial populace: how to compete with the English in the American market (Henderson, 1983: Hirst, 1965).

What was his method? Through experimenting with this process abroad,[5] through taking the problem of political economy – as he understood its function and purpose – and problematizing it in the political and civic arenas of economic life in France, England and America (Henderson, 1983: Hirst, 1965). In terms of his innovation process – his commitment to research, reflection and arguing his case – his innovative activity needs to be thought of within the following framework. Think of the railway: if the introduction of the distributed network can be thought of as a technological innovation in as much as it involves a radical alteration of the models for networking transport that England and France were using, on a societal level, this innovation can be understood to have had more complex and far reaching implications (see Appendix D). List understood that "we need social innovation more than we need technological innovation"

[4] The governors of the state of Wurttemberg, who had previously committed List to prison for insurrection, expelled him from the country, took away his passport and made him a stateless person.

[5] List even built a railway in America to service a coalmine he bought by connecting it to Port Clinton (Hirst, 1965).

(Drucker, 1959, p. 33), and that "'[p]roductivity' is a social innovation even though its tools are, in the past at least, technological" (Drucker, 1959, p. 29). To this effect, List, from the time he was incarcerated in 1822 to when he died in 1846 (Hirst, 1965), engaged in activities that are perhaps best thought of as involving an effort to demonstrate the value of unifying Germany as a state with a political economy that would be self-designed to its best advantage and not as a replica of what Adam Smith (1723-1790) was promoting to the rest of the world (see Henderson, 1983: Hirst, 1965; List, 1966/1885).

2.1.3
List as innovative subject

Beginning with Chapter One, attention has been given to the fact that innovations cannot be thought of as being self generating; that there is a process and that there are actors – innovative individuals – who make the realization of the innovation possible. The critique here of contemporary capitalist thinking is that it emphasizes the importance of *ends* and *outputs* to the detriment of the educational importance of the *means* that those who are its innovative subjects or those who learn from these actors would normally benefit from.

In the case of List's innovations – the national railways network and the political economic unity that ensues from the introduction of this logistical infrastructure – the process was protracted, very idiosyncratic, epic in scope and requirements of energy and exhaustive in terms of the need for perseverance (see Henderson, 1983: Hirst, 1965); it killed him in the end and before the innovation itself had really begin to take shape.[6] Upon reading the history of his experience, it would appear that the innovation process that delivered the aforementioned achievements required a very particular understanding of the innovative process when addressing the problems List hope to address: it required List with his great intellect (see List, 1966/1885), to be faithful to a kind of pre-industrial form of thinking. The process of being innovative required List to defy the separation of roles that becomes ever more explicit during the first industrial revolution, where

[6] List committed suicide in 1846 believing his project was a lost cause (Henderson, 1983: Hirst, 1965).

separate actions are allocated to different actors.[7] List was both the *initiator* of the idea that Germany could be economically competitive on the global stage through the creation of a national system of production that itself could only come about through the introduction of a national railways network, and he was also the *executor* of this strategy for achievement. The process of being innovative for List was therefore one of beginning and achieving as if these roles needed to remain connected and realized by the same individual or group of individuals. This so-called pre-industrial form of thinking can also be thought to exhibit the characteristics of the hero of German Romantic Idealism, the playing to and its associated suffering of the emotional relationship to one's ideas (see Berlin, 1999), but what is more important to take away here is List's intrinsic understanding of what is involved when carrying through such an idea as the one he began with.

This was not an easy task for the reason that to realize his ambition, List had to bring about a fundamental change in German thinking. The nobility that governed Germany's many principalities were happy with their lot and had no reason to change. As such, bringing about this change required work with no guarantees that this would produce results. Perhaps it is possible to imagine this transformation if List were a noble himself and one who worked within the system but he was not and much of his life was spent in forced exile. It is amidst these difficulties that it is possible to see List the innovative actor.

List did not seek to re-innovate Adam Smith's thinking on the creation of wealth, instead he chose to deconstruct the questions Smith addressed and build his own thinking according to what he thought were a more appropriate set of questions (Henderson, 1983: Hirst, 1965; List, 1966/1885). Smith advances Quesnay's thinking with the stipulation that "political or *national* economy must be replaced by cosmopolitical or world-wide economy" (List, 1966/1885, p. 120), where all that would be required for mankind to economically prosper would be "bearable taxation, fair administration of justice and peace" – none of which, could be added, have characterized world history since the 18th century. For the popular school "the well-being of the individual" was dependent upon "the well-

[7] Arendt (1998) describes, in her analysis of the human condition, how action is made to serve the interests of work and in so doing becomes separated by the roles that are ascribed to its realization: 'initiation' and 'execution'. See Chapter Ten.

being of the whole human race" (p. 121), which itself could only be attained through lasting peace.

List (1966/1885) thinking this was an error, inverted Smith's thinking and instead argues that to trumpet "the well-being of the individual" as being dependent upon "the well-being of the whole human race" is irrational for a number of reasons (p. 121), beginning with the fact that such rhetoric is the luxury of the position that England found itself in at the time. To List, England being the dominant economic power afforded its ideologues the opportunity to espouse whatever theory they thought convenient to the purpose of increasing their global economic superiority.

List (1966/1885) instead thought the well-being of the individual could not be left to the fate of the whole human race as there would never be everlasting peace – that war is an aspect of international conflict. Instead he thought that the individual needed to be thought of in terms of their productive powers and that all individual productive powers needed to be unified according to the political economic strategy of the state. Smith does away with the state believing it obstructs real economic growth, whereas List argues that the particular conditions in which individual nations live need to be taken into account when trading internationally: that in fact a degree of protectionism is necessary in order to defend the integrity of an individual nation's right to decide its own trajectory of growth. It is in this sense that List (1966/1885) was theoretically innovative: his process of innovation changed the model by which political economy was understood.

The above speaks of List's thinking with respect to how he thought Germany might achieve the best result for its people through trade. But what were his actions? During the odyssey that was his career, he worked as a civil servant, a journalist, a professor, a politician, and an entrepreneur. He also spent time as The Commissioner of Heilbronn, The Secretary of the Union of Merchants, The American Consul (to various states in Germany) and as spokesman for Germany's national interests(Henderson, 1983, p. xi). Lastly he was a railway pioneer. All these occupations were the medium of his enterprise and, as such, provided the situation within which he could research, write newspaper articles and pamphlets, not forgetting his book *The National System of Political Economy* (1966/1885), all of which might be essentially summarized in the form of *an argument for change*.

If this picture does not convince the reader of the complex situation of this innovative actor, it needs to be remembered that he also suffered the indignity of being a fugitive (1822-1824), a prisoner (1824-1825) and to a lesser extent that of an emigrant (1825-1830).

The last thing that might be said about List's innovative methodology and method, he was a post-Cartesian in a world bound by Cartesian thought: he understood that the future of Germany depended on its capacity to foster the importance of internal *relationships* between the principalities and the other larger provinces through the formation of a dispersed logistical infrastructure: the national railways system.

2.2

Joseph Schumpeter

While Schumpeter is known for having developed the "first approach to a theory of economic growth" and having "identified innovation as the cause of economic growth, and the entrepreneur as its agent" (Drucker, 1969, p. 182), the intention of this section, with respect to the contribution Schumpeter makes to the thesis argument, is to speak to the problem of the relationship between *the innovative subject* and *the innovative process*. There is no doubting Schumpeter's contribution to how the concept of innovation is understood by the major global institutions that influence economic policy[8] or his contribution to understanding the importance of innovation to economic growth – something that continues to be affirmed in global adherence to his original concept of innovation (see Chapter One) – however, Schumpeter's understanding of innovation is mostly utilized to focus on the importance of innovation as an *end*. The question is: what might be learned from Schumpeter about the relationship between *the innovative subject* and *the innovative process* as a means of laying the groundwork for a better understanding of the already innovative student's implication in both his or her own innovative process and the innovative processes of the institution?

In contrast to the previous study, which used history to exposit List's process of innovation and his role in this process, the following study will be

[8] These institutions include, but are not limited to, the IMF, the World Economic Forum, the OECD, The Ministry of the European Union.

philosophical in nature; the reason for this is that Schumpeter's work can be thought of as being *consciously paradoxical* (see Eliasson, 2007; Shionoya, 2004). As already iterated earlier in the discussion, the paradox is an important concept to better understanding the situation of the already innovative subject. Because of the scope of Schumpeter's own work (see, in particular, 1939, 1987) and the brevity of the scope that can be given to this study in this chapter, much of what is argued here comes from engagement with secondary reading; the principal text being Shionoya's (2004) article 'Scope of Method of Schumpeter Universal Social Science: Economic Sociology, Instrumentalism, and Rhetoric'.[9]

2.2.1

Innovation as process

When Schumpeter (1934/1911) describes innovation as that which results from "new combinations of productive means" (p. 66),[10] there is the illusion that he is speaking about ends. After all, he speaks about combinations, but the important terminology used here is *productive means*. Elaborating, Schumpeter refines his definition of innovation by saying it refers to "the carrying out of new combinations" (p. 66). This *carrying out* of new combinations does not refer to the introduction of innovations to the market *per se* but rather to the process of realization that is required to produce an innovation. In other words, Schumpeter is referring to the process of innovation, not the product, service etcetera that is produced; even if it is the product or service, in the end, that is said to reconfigure the market. So when Fagerberg (2005) explains in his Introduction to *The Oxford Handbook of Innovation* that "… the innovation process … has been more or less treated as a "black box"" (p. 3), Schumpeter (1934/1911) can be considered to be one of the exceptions to this tendency, or otherwise the conclusion must be drawn that Schumpeter has been more or less misinterpreted.

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[9] Yuichi Shionoya (1932-2015) was a prominent neo-Schumpeterian (Hanusch & Pyka, 2007).) and was known as "one of the most imaginative researchers in the history of economics" (Yagi, 2016).

[10] Reiterating the definition provided in Chapter One, where innovation was describing as involving: (1) The introduction of a new good … ; (2) The Introduction of a new method of production … ; (3) The opening of a new market … ; (4) The conquest of a new source of supply of raw materials of half-manufactured goods … ; (5) The carrying out of a new organization of an industry … (Schumpeter, 1934/1911, p. 66).

This is important for while international institutions (The World Bank, the International Monetary Fund (IMF), the World Economic Forum, the OCED), government policy-makers (The Treasury, The Ministry of Education, The Ministry of Business, Innovation and Employment) and important NGOs (for example, Callaghan Innovation) continue to orient political thinking towards innovation in terms of its end value – thinking that draws its epistemological basis from Schumpeter's (1934/1911) original definition, these institutions and thinkers are paradoxically emphasizing the opposite of what Schumpeter himself was attempting to emphasize.

In a later text, Schumpeter (1964)

> … define[s] innovation more rigorously by means of the production function…. The function describes the way in which quantities of product varies if quantities of factors vary. If, instead of quantities of factors, we vary the form of the function, we have an innovation. But this not only limits us, at first blush at least, to the case in which the innovation consists in producing the same kind of product that had been produced before by the same kind of means of production that had been used before, but also raises more delicate questions. Therefore, we will simply define innovation as the setting of a new production function. (p. 62)

An interesting observation can be made in relation to Schumpeter's (1964) definition of innovation in terms of its setting up of a new production function: one, there is nothing that exclusively ties this definition to the market as that which needs to be addressed through the application of a commercial strategy. Economic activity is purely an exemplar for providing a definition on innovation as a production function. As Schumpeter says, technological innovation is just one kind of innovation and, as such, is not the only kind of innovation.[11] In the case of Schumpeter's understanding, innovation really needs to be understood in terms of how his theory of economics serves his interest in the "evolution of mind and society" (as cited in Shionoya, 2004, p. 332). As the thesis argument progresses, it will be seen that Schumpeter's open understanding of innovation itself contrasts with the reductive interpretation of positivist capitalism, while at the same time

[11] To quote Schumpeter directly: "For cases in which innovation is of the technological kind …" (1939, p. 63). The idiom of Schumpeter's language at times makes him difficult to quote.

offering a less ambiguous view of how students could be understood to be participants in institutional innovation. This is to say, rather than ambiguating the innovation process, Schumpeter disambiguates it by adopting a broader perspective on what *qua* innovation actually refers to.

2.2.2
Schumpeter's entrepreneur is not just a commercial entrepreneur

The question is, if Schumpeter (1964) really does have a more open understanding of innovation, in place of how his (1934/1911) definition has been adopted by the OECD and policy-makers etcetera, then what is his understanding of the entrepreneur? This question, of course, conditions how the relationship between the innovative subject and the process of innovation should be understood in Schumpeterian terms. What is known in the discussion to this point is that Schumpeter regards the entrepreneur as doing the work of innovation, or in his words, as the actor whose work is the "*carrying out* of new combinations" (1934/1911, p. 66). Important to note here are the facts that "[n]obody ever is an entrepreneur all the time, and nobody can only be an entrepreneur" (Schumpeter, 1964, p. 77), that "entrepreneurs as such do not form a social class" (p. 79). This opens the discussion to the notion that anyone can be an entrepreneur.

Rather than think of innovation and the production function of an entrepreneur as being uniquely tied to the carrying out of new combinations with the commercial intention of introducing something new to the market, it would seem more useful, when trying to understand this more extensive realm of that which comprises innovative activity, to understand how Schumpeter applied the statics-dynamics dichotomy to social life. Shionoya (1964) puts it like this:

> Underlying the distinction between statics and dynamics is the distinction between the conceptions of man: the "hedonistic" man and the "energetic" man. The former is the mass of the people: the latter is the leader. The entrepreneur is a special kind of leader in the economic domain. (p. 338)

The problem with this description of the entrepreneur as the energetic man is that this characterization is made to explain a special kind of leader the commercial entrepreneur becomes because of his actions in the economic domain. If however, this characterization were made in relation to a wider domain of experience, such

that it were possible to identify nature according to a deeper experience of the complexity of life, it would appear possible to isolate the economic domain such that it should be possible to say that economically driven behaviour sits within this wider experience. This would mean that it would then also be possible to speak of how entrepreneurs are formed according to the deeper experience of the complexity of life, where, for instance, an energetic leader might put the value of commercial goods in perspective; that is, as a subset of a bigger picture.[12]

The disclaimer needs to be added here, that in drawing the distinction between the hedonistic man and energetic man, it is not being argued that either is a social class or that the individual is always one or the other. Schumpeter was aware of the limits of the theoretical dichotomies that he was using and furthermore he aware that he needed to think of their relationship as being paradoxical in nature (Shionoya, 2004). To Schumpeter, a paradox is a philosophical opportunity rather than an inconvenience or an obstacle. As such, it is more useful to look at the relationship between the hedonistic man and the energetic man with respect to how this relationship can be characterized by its 'habitus' (Bourdieu, 1980) and practices. This would seem preferable to either stifling the energetic man or woman on the one hand, or inhibiting the hedonistic man or woman from becoming more energetic on the other.[13]

Shionoya (2004) continues,

> The leader as the carrier of innovations in a particular area of social life, is in marked contrast to the majority of people who take adaptive or routine actions. Schumpeter believed that such contrast exists not only in economy but also in science, the arts, politics, and so on. He applied the static-dynamic dichotomy various aspects of social life as the basic vision of a universal social science. (p. 338)

In relation to Shionoya's (2004) words, it would seem important to acknowledge the time that has passed since Schumpeter's death (1950). More than 65 years ago,

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[12] Lévy (1997) alludes to the emergence of such leaders in his book *Collective intelligence: Mankind's emerging world in cyberspace*, the subject of which will be engaged in Chapters Eight through to Ten.

[13] This relationship will be examined in Chapter Five.

Schumpeter proposed the thesis that, rather than capitalism collapsing on account of its economic failures, it would collapse on account of its economic success:

> … its social and moral foundations by a transformation in the ethos of social classes. Thus capitalist economic development driven by the innovation of entrepreneurs will in the long run make the *Zeitgeist* of the society anti-capitalistic and this in turn will gradually create a social atmosphere in which it is more difficult for economic innovation to occur. (Shionoya, 2004, p. 339)

In considering this prophecy and in relation to the argument made in this thesis, it is thought necessary to reflect upon what has become of neoliberal economics when pitted in the light of Schumpeter's vision. It is argued in this investigation, that the trajectory of the former's development is such that despite impressions, it is more and more unlikely that Education and the politics of innovation will permit students to be innovative in ways that challenge the understanding commercial management has that innovation is something that can only serve economic development.

With evidence of neoliberalism's failure mounting (Giroux, 2015) and even in the eyes of one of its most ardent sponsors, the IMF (see Ostry, Loungani & Furceri, 2016), the institutional executive and its commercial management of the educational institution becomes ever more conservative such that it can be interpreted that a tradition has been created that fears change or new forms of innovation that do not require prior training in human capital development. The strong insinuation here is that human capital theory, as it is employed in Education, comes into fundamental question, once it becomes acknowledged that we are witnessing the demise of this form of capitalism.

2.2.3

Schumpeter: Antithesis, rhetoric and paradox

Shionoya (2004) understands Schumpeter to engage with a "system of pretheory" beneath what Shionoya calls Schumpeter's "revolutionary theory in the history of science" (p. 341). Pretheory in economics refers to "knowledge found in a prescientific stage of economics and in a broader field of economic thought". Shionoya elaborates saying that "Schumpeter defined economic thought as "the

sum total of all opinions and desires concerning economic subjects, especially concerning public policy bearing upon these subjects that, at any given time and space, float in the public mind”". The language here is important.

The question is, to what extent is it relevant to speak about pretheory conditioning the formation of opinions and desires concerning subjects capable of questioning the manner in which they are governed by political economy? If the discussion is restricted to the field of economic thought, this question cannot be addressed, as this would be tantamount to extending the theory of economics outside the utilitarian use it makes of science. This would make it necessary for economics to treat Schumpeter's system of pretheory as a black box. On the other hand, that which floats in the public mind and is not uniquely economic and is furthermore capable of producing new subjectivities, must allude to the idea that this black box can be philosophically engaged in relation to economic factors that economics would usually refuse to engage with. Certainly Schumpeter (as cited in Shionoya, 2004) considered it possible to "take out some solid factors from the black box of the prescientific process" (p. 341). The intention in the rest of this section is to illustrate Schumpeter's particular approach to the ambiguity of this problem.

Shionoya's (2004) understanding of Schumpeter's approach to his pretheoretical system of economic thought is that, while the elements of *vision* and *ideology* are commonly thought of as the presuppositions to his work, *rhetoric* is neglected as a fundamental element of the same. If this is the case, it becomes evident that neoliberalism's use of science, in putting technology at the service of economic development, achieves the ironic effect of creating authority even though it does not meet all the requirements of being rhetorical. Yes, its speech-making involves the modification of phrases and sentences in policy celebrations of new *discoveries*, but this logical positivism does not require it to *justify* these discoveries. To Schumpeter (as cited in Shionoya, 2004), rhetoric "is an instrument for posing entirely new questions and for stimulating further exploration of knowledge" (p. 343). If neoliberalism were to do this, it would be lowering its guard, leaving innovation, as a concept, open to new interpretations, or as Godin (2015a, 2015b) puts it, it would bring innovation into the realm of contestability.

Analyzing the value of rhetoric a little further, Schumpeter uses three types of rhetoric as figures of thought: "antithesis, metaphor and paradox"(Shionoya, 2004, p. 343). Of greatest interest here is paradox – while understanding the importance of antithesis and metaphor to Schumpeter's work might have value to the wider scope of this thesis, there is no immediate call to engage these figures of thought here. Shionoya describes a paradox as

> … a situation in which two inconsistent statements appear to be true or a statement alleges they are true. Paradox presupposes an antithesis of two statements, although antithesis does not necessarily mean paradox. If one of the two statements is generally accepted, a paradox merely represents a heterodox view vis-à-vis a received view. A paradox may sometimes engender shocking effects, because one statement denies the other, while each is justified on the basis of different reasoning.
>
> An analysis of paradox requires identification of the contexts or dimensions in which each statement holds and an explanation of why two conflicting statements are proposed in combination. It is important to recognize two points, first, conflicting statements reveal a gap in knowledge, and second, the rhetoric of paradox is an attempt at coordination of knowledge. By a gap in knowledge we mean a situation of split knowledge surrounding us as a result of scientific specialization. In this situation an attempt to disclose a gap will be facilitated by the rhetoric or paradox, because separate dimensions in which each statement is valid are logically incommensurable with each other so that relationship between two statements cannot be dealt with as philosophical knowledge but only as rhetorical knowledge. The rhetoric of paradox demands the coordination of knowledge, and solutions to paradoxes in the social sciences are not to be sought in formal logic but in an enlarged dimension of a universal social science. (p. 344)

Before engaging with the manner in which this definition serves an articulation of the implicit relationship between the innovative subject and the process of innovation, some examples of paradoxes in Schumpeter's thinking should be provided. The aforementioned importance given to the study of statics and dynamics would be an obvious example; as iterated by Shionoya (2004). Rather than focus on dynamics as a means of encouraging the development of a more entrepreneurial ethos in society, Schumpeter studied the dimensional differences

between statics and dynamics as a means of understanding how they represent different types of agents and behaviours that always coexist.

Another well-known example is that of "creative destruction" (Shionoya, 2004, p. 345), both terms in this conceptual couplet being functions of innovation – not just the creative aspect. As Shionoya so eloquently puts it, "innovation creates a new way of life and destroy[s] the old and the two are not on (sic) the same dimension". It should be noted that in the neoliberal domain, only the narrative of the resulting 'new way of life' enters the rhetoric on innovation. The evidence of destruction is not accounted for by neoliberal politics as it strategically avoids highlighting the damage done. For instance, in the static or less dynamic social dimensions of society, it would seem, for reason of needing to avoid having to rhetorically *justify* the introduction of technological innovations, that the disruptive nature of innovation is conveniently overlooked in the moment in which the innovation itself is addressed in, for example, the media. In other words, there is not the same rhetorical consistency applied when promoting the emergence of technological innovations.

The third paradox Shionoya (2004) provides as an example has to do with Schumpeter's thesis that "the demise of capitalism is a consequence of its success" (as cited in Shionoya, 2014, p. 345). According of Shionoya,

> … the trick of [this] paradox is revealed by reference to the framework of his economic sociology, which discusses the interaction between economic and non-economic domains [– a recurrent theme in the discussion of this investigation and the promotion of the significance of student innovation]. Observation of the economic domain in isolation leads us to the dynamic picture of economic development and business cycles that would work forever without disturbances from the outside. But the capitalist system as a comprehensive civilization is confronted with changes in social, political and cultural circumstances that are sometimes negative to economic development as a result of its successful economic performance. (2014, p. 345)

More specifically, what needs to be shown in the thesis discussion is how the economic success of educational institutions can be said to inhibit the students from asserting the value of their own innovations. The next section will explore conflicting statements (by policy-makers and this researcher) with respect to what

they reveal about a paradoxical gap in knowledge where student innovation is disruptive to the institutional notion of what the orthodoxy of innovation comprises. The latter will be engaged with respect to how, in Shionoya's (2004) words "the rhetoric of paradox is an attempt at [the] coordination of knowledge" (p. 344), as in, the institution addresses this gap through coordinating its own perspective so as to manage the logic of its *a priori* exclusion of student understandings of innovation.

2.3
Bengt-Åke Lundvall

Lundvall (1941-) is a Danish economist who lives in Aalborg, Denmark.[14] The significance of his thinking to this chapter has to do with the manner in which he has drawn on the work of both List and Schumpeter, and how his work speaks to the innovative subject as a participant in the development of both national systems of innovation and the concept of the learning economy.[15]This section will focus mainly on these two concepts. It is within Lundvall's explanation of the ontology and function of these two concepts that it is hoped that the third vital piece in the theorization of the relationship between the innovator and the innovation process will emerge and, as such, pave the way for the coming chapters. The concept of national systems of innovation will be addressed first.

It needs to be said that, like List and Schumpeter, the innovative subject is not Lundvall's object of interest. In as much as List and Lundvall deal with big picture scenarios, they do not consider the individual actor with the special consideration this subject is accorded in this investigation. This is not to say that they themselves were not sensitive to the importance of the individual. They are and this is exactly the reason that they are of value to this investigation: they both express an empathic interest in a more complex experience of humanity than that which might otherwise be defined by the interests of standard economics. With respect to Schumpeter, the individual innovative actor is important in the sense

[14] Lundvall does not call himself an economist *per se* (Lundvall, 2016a). Rather he uses economic concepts to address his intellectual interests.
[15] Lundvall has been a prodigious thinker, researcher and policy writer, working with DRUID (http://www.druid.dk/), Globelics (http://www.globelics.org/), IKE Research Group (http://www.ike.aau.dk/) and the University of Aalborg, as well as writing for the OECD. National systems of innovation and learning economy are concepts that are central to his work.

that the innovator as entrepreneur is the actor who imposes an evolutionary dynamic upon the business cycle (see McCraw, 2007).

2.3.1
National systems of innovation

The value of examining the concept of *national systems of innovation* in this investigation has to do with how this concept provides a setting for understanding the concept of innovation itself. There is no settled understanding of the function of national systems of innovation (Lundvall, 2007a): the political economic circumstances and the interests of individual states determine that the concept of *national systems of innovation* should be utilized to different ends. In order to recognize the concept itself as that which is applied in these distinctive contexts, it becomes necessary to recognize its function. Ingelstam (2002) thinks of the function of national systems of innovation as having to do with "performing or achieving something" (as cited in Lundvall, 2007a, p. 27), to which Edquist (2005) adds that "the main function of SIs is to pursue innovation processes, i.e., to develop, diffuse and use innovations" (as cited in Lundvall, 2007a, p. 27).[16] The important terms to grasp here are *perform* and *achieve*. These terms are used to express an action that need not bear any practical connection to how the function was initiated; a thinking which bears an epistemological relationship with how innovation, as production (Fagerberg, Mowery, & Nelson, 2005), is focused on the output without need of acknowledging the significance of the process. The other term of importance here is *diffuse*, which emphasizes the will to popularize the value of innovative activity and its contribution to economic development.

While Lundvall (2007a) understands it to be a mistake to assign a function to National Systems of Innovation, as in to assign a *function* to a *system*, it will hopefully become clearer later in the chapter as to why this error is important and continues to play a significant role in how innovation is understood. To Lundvall, it is not obvious that "systems have a function besides possibly securing survival" (p. 27). Lundvall, for his part, describes national systems of innovation as a "focusing device in order to better understand how innovation affects economic

[16] SIs can be taken to be an abbreviation for Systems of Innovation, and by insinuation, because of its inclusion in Lundvall's (2007a) text to refer to National Systems of Innovation.

development at a national level". Furthermore, he says that he is interested in "both incremental innovation and radical innovation". This is significant because the politics that are governed by innovation economics tend to be resistant radical innovation (Leifer, McDermott, Colarelli O'Connor, Peters, Rice & Veryzer, 2000). To be resistant to radical innovation can be thought of as signifying a resistance to new ideas, which self-identifies as a defence of incremental innovation and the incumbent and therefore conservative vision. Why this conflict is highlighted is that Lundvall's value to the discussion, through his theoretical embrace of *both* radical and incremental innovation, becomes more evident when this embrace is thought of as being symbolic of an embrace of the actors responsible for these types of innovation. That is, he embraces those who are more inclined to incremental innovation along with those who are more inclined to radical innovation. Within this framework, the already innovative subject in Education would be a radical thinker, in the eyes of the conservative educational institution, for reason of the institution's interest in conserving traditional practices.

It needs to be made clear that Lundvall considers the core of this activity to be taking place in "firms and organizations belonging to the knowledge infrastructure" (p. 29), which, to him, does not include the education system.[17] However, Lundvall (2007) remarks that the education system needs to be included "in the [wider] analysis if the aim is to link innovation to economic development" (p. 28). In the context of the intentions of this investigation, it needs to be asked, in what ways does Education link to economic development, as a consequence of the way in which human capital theory is applied in the education experience, and that exists outside the production of graduates with the capacity to contribute to *incremental* innovation. In other words, it needs to be asked, in what ways does Education link to economic development through producing graduates with the capacity to contribute to *radical* innovation. The point is that the absences of learning experiences that produce radical innovation indicate the closed nature of the educational institution and a general disinterest in students as innovative subjects. As Lundvall puts it, "all aspects of society need to be brought in to explain the actual pattern of innovation". This being the case, it would be

[17] The possible consequences of this focus will be addressed in Section 6.1.2.

reasonable to surmise that the attitude of the educational institution does little more than reflect the attitude of society itself.

2.3.2

The learning economy

As is the case with national systems of innovation, educational institutions are not the primary object of the development of the concept of the learning economy. In both cases, the educational institution sits on a second tier with respect to its importance as a site of engagement with the learning economy (Nielsen & Lundvall, 2003). The primary focus of the learning economy is the firm. However, given that in this investigation, the educational institution is treated as an educational firm or quasi-firm (see Chapter Five, Section 5.1), it would seem important to explore how the concept of the learning economy might be understood in the educational institution. The reason for this recasting of the status of the educational institution becomes more obvious now that policy for the implementation of innovative learning environments is being applied across the education sector. The implication of this development, is that in the innovative learning environment, learning is regarded as work (OECD, 2013). This is to say, in Education's linking of the educational institution through the provision of the innovative learning environment to the domain of paid work, the educational institution becomes more directly integrated into the framework according to which the concept of the learning economy is thought of in relation to the firm.

According to Lundvall and Archibugi (2001), the concept of the learning economy has been developed as an alternative to the concept of the knowledge economy.[18] The key differences between the knowledge economy and the learning economy, with respect to the relevance of these concepts to this investigation, centre on the manner in which each concept accords the individual the capacity to respond to new technologies, the increase in knowledge and rapid change in a globalized world. This idea supposes the importance of understanding the differences between how the working subject in the knowledge economy – or more specifically the knowledge worker – and the subject of the learning

[18] Application of the concept of the knowledge economy gets its policy thrust from the OECD report *The knowledge-based economy* (1996b). For a good overview of the development of the concept of the knowledge economy, see Peters (2009a).

economy should be thought of. While the idea of the knowledge worker is commonly understood to begin with Drucker's (1959) identification of the role knowledge plays in the innovative development of new technologies, the status of the individual knowledge worker remains vague. Even Davenport (2005) definition ambiguates the meaning of the term *knowledge worker*. According to Davenport:

> Knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge. Knowledge workers think for a living. They live by their wits – any heavy lifting on the job is intellectual, not physical. They solve problems, they understand and meet the needs of customers, they make decisions, and they collaborate and communicate with other people in the course of doing their own work. (Davenport, 2005, as cited in Kardos, 2012, pp. 2-3)
>
> …
>
> Knowledge workers are workers whose main capital is knowledge. Examples include software engineers, physicians, pharmacists, architects, engineers, scientists, public accountants, lawyers, and academics, whose job is to "think for a living". (Davenport, 2005, as cited in 'Knowledge Worker', Wikipedia, 2017, emphasis in original)

The problem with such a definition is that it does not delineate the workforce as neatly as the definition itself supposes it should. For instance, many jobs involve *physical* heavy lifting where the commercial success of the worker concerned is the result of how they *think*. It would not be farfetched to describe the farmer in New Zealand as a knowledge worker in that they can be said to have levels of expertise, education, and experience that make thinking more important than the lifting or physical work. Once this threshold is crossed, it would seem that the nature of the subject's relationship with knowledge changes such that working with knowledge and in particular new knowledge becomes the core activity, which is of course not to say that the physical aspect of the job can be dispensed with. Furthermore, it is not farfetched to say that a farmer's "primary purpose" is "the creation, distribution, or application of knowledge" – in doing this they potentiate their commercial capacity, by, for example, enabling themselves to diversify and include new categories of fund streams. Furthermore, farming, for the most part, is a team activity that requires fidelity to all the same elements of

performance that Davenport (2005) highlights as being important: problem solving, customer needs, collaboration and communication. So what does this definition actually mean?

Perhaps the subtitle *How to Get Better Performance and Results From Knowledge Workers* to Davenport's (2005) text provides a hint. It is argued here that the knowledge worker cannot be thought of as a political subject in the sense of it being expected that they should have the capacity to challenge authority and to be disruptive in response to the individual possession of new knowledge. For example, if participation in the process of innovation can be thought of as either supporting the entrenchment of institutional traditions or, alternatively, as involving the taking of initiatives that challenge the merit of holding to existing traditions, the question becomes: is it possible to think of the knowledge worker as this second kind of innovator? I am not so sure. The danger is that the knowledge worker is really little more than a worker if they are not able to vindicate their individual evaluation of knowledge through asserting their political subjectivity to the benefit of the project they are involved in – and irrespective of how much disruption they cause.

I would argue that this is where the difference between the knowledge worker and the subject of the learning economy lies, the essential difference being that these two subjects have a different relationship with knowledge. The knowledge worker can be thought of as the individual whose job it is to further apply the existing vision. To this effect, knowledge workers are agents of an already existing political tradition: their work being about providing greater detail to that which already exists. The relationship that the subject of the learning economy has with knowledge, in terms of how it contrasts with that of the knowledge worker can be typified in varies ways. The idea that most conditions this contrast is the fact that the concept of the learning economy is "based upon the hypothesis that over the last decades an acceleration of both knowledge creation and knowledge destruction has taken place" (Lundvall & Archibugi (2001, p. 1). According to Lundvall and Archibugi, the key to success is "rapid learning and forgetting". This is to say, success is not only based on a capacity to keep up, to be performative, but it is also based on a capacity to forget, to abandon, to detach oneself from what was previously important. Forgetting and knowledge destruction, what does this mean?

The evidence of destruction and forgetting is perhaps easiest to see at policy level and then in those educational institutions where new policy is most quickly embraced, for example in the schools that have recently become the flag bearers for the value of innovative learning environments. There is the illusion that there has been a paradigm shift where the introduction of innovative learning environments has accomplished a transformation that makes the immediate past instantly obsolete. The danger is that this instrumental top-down application of the new and its realization of change only involve transformation on some levels in the hierarchy and in some areas of thought. Evidence of this can be seen in those moments when it becomes necessary to speak to the reality of the disruption caused by change, when it is evident that there is an implicit intention to forget. These crises are ameliorated by neoliberal control over the language used. In such moments, success focuses solely on the supposed collective value of creation and remembering, which in doing so implies an obligation to forget the wider social and political implications of what is achieved by giving such weight to the former.[19]

More important to the thesis argument is the question of how the already innovative student engages this process of 'creative destruction', a concept which is drawn directly from Schumpeter's (1987) concept of how innovation impacts upon the market.

Conclusion

The purpose of this chapter was to overcome the theoretical obstacle of needing to explain standard economics' historical depreciation of the process of innovation and its associated absenting of its actors. The idea is that if children and young people are to transform the way innovation is done in Education and in so doing transform how we understand the concept of innovation and the purpose of

[19] This is what neoliberal success looks like, which, despite the illusion, is much less liberal than the name suggests, the point being that this transformation is instrumental in the way it ignores collateral damage, the language of destruction is considered as if the intention of its user is to spoil the party, when what is being forgotten is not the plight of he or she who has paid the price, but the fact that this is really an old and traditional trick that has been understood since Machiavelli's (1961) identification that the task of political innovation, immediately upon initiation is unity of those who populate the transformation.

change and novelty, then our interpretation of the history must be made in such a way that it might prepare us for such unforeseen possibilities.

The intention of the next chapter is to dig more deeply into the positive affirmation of these particular historical exemplars of the relationship of the innovative subject to the process of innovation by analyzing how the innovator and entrepreneur should be distinguished from one another.

CHAPTER THREE

Innovator/Entrepreneur

Introduction

As important as these actors – the innovator and the entrepreneur – seem to be, given the role each plays in economic development, there is no theory that describes how the innovator and entrepreneur should be distinguished from one another. This distinction is important in the context of this investigation because of the way in which innovation is ascribed to and managed by educational institutions that are framed as neoliberal quasi-commercial enterprises. The rhetoric that supports the change that Education has undergone during the past half-century privileges the figure of the entrepreneur that is captured by the notion of the policy-maker as entrepreneur, of the institutional manager as entrepreneur, and of the ideal that the institution has for its graduates as entrepreneurs. However, these models of entrepreneurship differ from those that will be investigated and engaged in this chapter.

The question is, how is the entrepreneurial student to be thought of outside of the above models, and in relation to the change they initiative and carry out in Education? In the case of the innovator, the line of inquiry is both more opaque and more obscure. In the proprietary domain, everyone is an innovator and no-one is an innovator, in that every individual contributes to the innovation process (in the sense that incremental innovation is understood). Yet no individual remains after change and novelty are recognized as being representative of an innovation. Innovation is a collective activity and the identity of innovator who contributes to the process of innovation disappears into the collective achievement. In the non-proprietary domain the question is, if the axiom that *everyone and no-one is an innovator* does not hold in the same way that it does in the proprietary domain, how is the situation of the innovative student understood and in what ways does their disposition assume a complicity with the idea that their innovative activity also involves them in an entrepreneurial activity?

To think of the student in this way is new to the innovation discourse in Education. To this effect, it becomes necessary to do some preliminary work and to provide the theoretical basis necessary to address such questions. The chapter

therefore begins with a brief discussion on the absence of the individual innovative actor; the purpose being to address the notion that the theory of collective innovation removes the significance of the individual. This is followed by an examination of the history and ontology of the innovator and likewise an examination of the history and ontology of the entrepreneur. This comparative examination is summarized with a view to explaining how relations between the individual innovator and the collective cohort of innovators will be thought of in Chapters Eight, Nine and Ten, when the subjects of open and social innovation are discussed with a view to theorizing how student innovative activity contributes to the formation of collective intelligence.

3.1
The problem of delineating one actor from another

For the reasons discussed in Chapter One, the innovative subject has no experience of their individual identity during the process of innovation. In as much as it is habitual for the commercial world to speak of innovative activity, it equally ignores the fact that this activity would not otherwise be possible if it were not for the actors who contribute to its realization. This is a curious fact given that innovations are not self-generating. Commercial innovations are more commonly spoken about as involving producers and consumers (see, von Hippel, 1988), although some authors (mostly neo-Schumpeterians) speak of entrepreneurs (see Fagerberg, Mowery & Nelson, 2005; Hanusch & Pyka, 2007) or that innovation is the job of entrepreneurs (Drucker, 1997; Schumpeter, 1934/1911, 1964), who are often just spoken about as business managers.

In the case of the non-existence of the innovator – the commercial innovator or technological innovator – they are only customarily referred to in retrospect. Steve Jobs[1], for example, might be thought of as having been a great innovator (Isaacson, 2011) but it was long after his many innovations were introduced to the market that he was thought of in this way. Furthermore, the question concerning the absence of the innovative subject during the process of innovation is not just a question for *innovation studies* (Fagerberg & Verspagen,

[1] Co-founder of Apple Inc, http://www.apple.com/

2009) or for *the study of innovation* (Godin, 2016)[2]: it is a question concerning the nature of the innovative process and how the individual subject both absented him or herself and was made absent from this process. This is to say, the absence of the innovative subject is a question for post-Cartesian thought and how the object of innovation supposes a relationship to its subject: the innovator and/or the entrepreneur.

The entrepreneur, as a problematic, is distinctive from that of the innovator. While the innovator, as an actor, is only retrospectively associated with the innovation that they contributed to and are therefore considered to be in some part responsible for, the entrepreneurial actor exists prior to the innovative activity being initiated. If the entrepreneur exists before an innovation is initiated, what is it that exists in the entrepreneur that constitutes a relationship of subject to object during the innovation process? A significant hypothesis might be drawn from the problem of this comparison with the innovator. As a preliminary thought, it might be speculated that what separates the innovator from the entrepreneur is that the entrepreneur initiates the innovative project with a tacit appreciation that he or she must bear both the *risk of* and *responsibility for* the success or failure of the innovation – the entrepreneur may realize the innovation collectively, but this individual is the entrepreneur for reason of their leadership in the realization of its process.

With respect to the seemingly *fictional* innovator, the issue of responsibility and risk would seem to be a more complex one for reason that these capacities of risk-taking and responsibility are more ambiguously delineated than they are in the case of the entrepreneur. The entrepreneur, as an actor, is the lead actor (Schumpeter, 1934/1911; Drucker, 1959) whereas the innovator might identify with a troupe of actors without identifying him or herself as a leader. The relative prominence of the entrepreneur's personality can however change with circumstances. In the commercial setting, when a new product or service is introduced to the market, it needs to be managed and serviced and further enabled such that its existing market might grow (Schumpeter, 1939; Drucker, 1997). So an entrepreneur cannot always be a trailblazer in the sense that their initial

[2] See Chapter Six for a comparison of these two perspectives on innovation.

innovation suggests is possible: they must instead transform themselves into managers.

This above differentiation provides simplistic explanation of how these two actors' roles might be delineated; the question of failure to profit from an innovation cannot be passed over. Because more innovations, and the business that promote their introduction to the market, fail than succeed (Fisher, 2014), bearing the risk and responsibility can be thought of as being a problem of a socio-political nature rather than that of a technological nature. To effectively carry out a new idea, such that it delivers the financial benefits, is more a reflection of failure to benefit from the collective intelligence of the group than it is a failure to understand the technological weaknesses of an innovation. This is the case because technological weaknesses are more likely to make themselves apparent if there is collective collaboration. While it is possible to imagine the possible financial fallout born by the entrepreneur if the innovation fails (leadership being responsible for the credit necessary to fund the innovation), not a lot is known about the experience of the contemporary innovative subject in a collective innovative process and what their experience of responsibility is in the aftermath of a failure in the market.

3.2

The ontology of the innovator

There are only a few thinkers who theorize innovation in the form of an open exploration of the history and meaning of the concept as a category. Godin (2017) is one such thinker. Most current thinkers on innovation begin from the premise that innovation is technological innovation, and thereafter seek to explain innovation in relation to the task of achieving a premeditated end. The contributions made to *The Oxford Handbook of Innovation (*Fagerberg, Mowery & Nelson, 2005) are a good example of this later orientation to studying innovation, which has come to be known as *Innovation Studies* (see Fagerberg & Verspagen, 2009; Godin, 2010a, 2010b). While the latter field of interest is interesting from the point of view of understanding the student as an innovator in as much as innovation studies prescribes possibilities for the student to shape the self as *homo economicus*(economic man), this is not the innovator that this

chapter is concerned with.[3] When comparing and contrasting the innovator and entrepreneur in this chapter, the intention is to explore how an understanding of the innovative actor, as one who engages all manner of problems (not just commercial problems), might inform an understanding of the conscious and already innovative subject in Education. As such, Godin's approach to *the study of innovation*, as against *innovation studies*, is going to be more useful for reason that the former is both more reflective and involves a more profound exploration of the role innovation plays in how change and novelty contribute to history (See Godin, 2016).

It needs to be iterated that innovation is only discussed in this section in as much as the study of this concept enables a better understanding of the ontology of the innovator. The history of the innovator as an innovative actor is dealt with in the next section.

Godin (2015a) describes innovation as an "anonymous concept" with a meaning that is "rarely questioned" (p. 5). Furthermore, "[t]he history of the concept of innovation is an untold story" (p. 6). What this means is that if it is difficult to conceptualize the object of innovation in relation to the process that produced it, then it is equally difficult to conceptualize its subject; the innovator. How then is the innovator to be thought of today, if innovation itself does not contain within it an implicit understanding of what it refers to? It is in this theoretical ambit that the student is theorized as an innovative subject in this investigation. The student as an innovative subject is not simply *homo economicus*: he or she is also a subject who is able to act within and upon the paradoxes that characterize the prescription of his or her identity as a student and consumer.

The capacity to *act* and to not just accept the prescription that one's learning should suppose the experience of a consumer is important to what follows in this chapter because "innovation is a subjective concept" (Godin, 2015a, p. 6. Any understanding of innovation as concept must be perspectival and, as such, conditioned by the subject's relationship with the self and the world. While innovation has been promoted since the end of the Second World War as

[3] Innovation Studies will be discussed in more depth in Chapter Five 'The Dynamic and Static Self-s of the Innovative Institution'. The innovator as *homo economicus* will be discussed in greater detail in Chapter Seven 'The Subject of Innovation/The Innovative Subject'.

requiring science to serve economic development through the creation of new technologies (Godin, 2008), this development does not require the innovative subject to identify with the innovation processes that this production of new technologies depends upon. This suggests that any positive analysis of the innovator must be thought of in terms of a post-Cartesian experience of the relationship between subject and object. This latter fact highlights the possibility that a better understanding of innovation, and hence the constitution of the innovator, requires a re-engagement with history itself; something that characterizes Godin's work throughout and that furthermore makes him unique as a theoretical thinker on the concept of innovation (see Godin, 2017). To engage history is therefore an engagement with a genealogical subject of innovation where the constitution of the innovator is conditioned by the historical formation of innovation processes that inform how the innovator comes to think as an innovative subject.[4]

Godin (2015a) highlights that while innovation is understood today as technological innovation, innovation was understood first as a religious idea from the late-Middle Ages (from 1297), and then as a political one beginning circa 1642. This political idea of innovation endured through to the end of the French Revolution (1789) (Godin, 2015b). After the French Revolution and during the first Industrial Revolution (1760-1820/1840), innovation came to be known as a social idea that either described actions of social reform or alternative radical strategies for social change. This theoretical development and its practical implications endured as the predominant positive and pejorative interpretations of innovation until the Second World War.

While it might be tempting to think of technological innovation as having succeeded both political and social forms of innovation, thinking of history in a genealogical manner gives rise to a different story. If a genealogical understanding of the concept of innovation is one that understands the status and fate of the innovator as a subject, then the concepts of political innovation and social innovation do not fall out of view. On the contrary, it is argued that *problems* of a political and social nature that in themselves require political innovation and social innovation continue, to exist - if on a subtler plane. These

[4] This notion of genealogy as conceptualized as a problem of the present draws directly from Foucault's (1997d) understanding of genealogy.

problems can now be seen to predominate what neoliberals would like to regard as a problem of market equilibrium (Nelson & Winter, 1982). As Godin puts it, there is always a political aspect to innovation (2015b);[5] meaning, there is an aspect of the problem that innovation addresses and an aspect of the process of innovation that are always political. For the mere reason that an innovation process cannot be replicated to produce something new, new ideas that alter the process must have political implications for the collective relations that populate the process and ensure its success. Likewise the success of an innovation process is conditioned by the social aspect of those that participate in its realization.

To this effect, it is further argued that any interest in describing the constitution of the contemporary innovator would need to attend to the political and social aspects of technological innovation. In order to do so, it would seem necessary to understand the nature of the political techniques of capitalism used to repress and prohibit political and social innovations that question the values of neoliberal capitalism. The consequences of such an inquiry, in the context of this discussion, should be able to be seen in the *problems* that students identify with and in the manner in which they use political and social innovations to address them.

3.3

The history of the innovator

The term *innovator* is first used in France in 1500 (Godin, 2015a). The term *innovation* had already been in use in Europe since 1297. What is significant in the developing use of this language is that *innovation*, according to Godin, was regarded as a pejorative term, first in relation to challenges made on the authority of the church and then in the political domain. What this meant is that the innovator inherited this pejorative connotation and was seen, to use the contemporary term, as a disruptor of the *status quo* and of the incumbent power relations of official knowledge (Godin, 2015b).

The question that is central to this chapter is: how might these historical forms of innovation contribute to the constitution of a history of the present, with

[5] See Godin's chapter Republicanism as Innovation … or Not Innovation (2015b, pp. 101-121), where he begins: "We may have forgotten in these days, but innovation is a political concept" (p. 101).

respect to how it might be possible to interpret their *problems* they address and their *associated processes* as informing how the already innovative subject in education might be understood today? Rather than analysing the use the terms *political innovation* and *social innovation*, as Godin (2015a, 2015b) does, the intention is now to the concept of innovation as understood by various thinkers, when innovation itself was understood to refer to the presence of either a political or a social problem. This analysis begins with the precept that these innovators, as described in Godin's (2017) exploration and analysis of the history of the concept of innovation, acted in a manner conditioned by the power relations that governed the individual innovator at the time.

While the individual, who sought to bring about change in 1500, did so in a context where religious innovation carried a singularly pejorative connotation, the Reformation (beginning in 1517) changed the way in which people thought of the act of innovation: innovation acquired both positive and negative connotations; the Reformation and the Counter-Reformation each defending their own perspective (Godin, 2015a). What this meant was that the initiator of change (the participant in the Reformation) was no longer thought of in purely negative terms.

While Godin describes innovation as acquiring these positive and negative connotations during this period, René Descartes' (1596-1650) made it possible for the individual to constitute the self according to how he or she thought about existing objects of knowledge (Hatfield, 2015). This is to say a political innovation– for example the event of the French Revolution – could acquire the character of something that could be understood as both good and bad or right and wrong. What this meant was that those who were either responsible for initiating or carrying out this change-event or were witness or affected by it began to understand that they were free to form the self according to their individual relationship to that event. In this way, innovation can be thought of as bearing an implicit relationship to Cartesian thought.

So, not only were there positive and negative interpretations of political change during the Reformation and afterwards, up until the culmination of the French Revolution in 1789, but thereafter there were also positive and negative connotations ascribed to social innovation during the 19th century (Godin, 2015a). This prevalence to interpret innovation both positively and negatively begs the

question, why is innovation today thought of in purely positive terms? Is it possible that there is the basis for a negative connotation that is, for example, implicit to technological innovation or commercial innovation? Does technology *per se* need to be questioned as the instrument of all change?[6] It might be argued that a positive view of innovation is being used to obfuscate the moral paradox of how a society constitutes itself. This is to say, despite society's identification with the vision that innovation promises (see Drucker, 1959), the recommended and sponsored method for realizing this vision delivers negative economic outcomes and extreme alienation as a consequence (see World Economic Forum, 2016, as cited in Shaw, 2016).

The relevance of speculating the possibility of a negative aspect as implicit to technological innovation is that there already exists a theoretical pretext to recognize the already innovative student as a *subject* of neoliberal economic aspirations: neoliberalism as an ideology, by definition, and as a political instrument, must absorb all diversity irrespective of the damage done to the individual. This subject is of course the most likely actor to address the above paradox. Neoliberals have no intention of addressing this paradox as it would seem that alienation is too useful a tool when leveraging submission to its education programme. It is therefore through thinking of the innovative student as an *innovative subject* that the power relations that guard neoliberal values should be re-evaluated.

Returning the discussion to the relevance of what the Reformation did for innovation, the question of what makes an innovation positive or negative becomes perspectival, or as Godin (2015a) puts it, innovation is always subjective. The categorization of positive and negative qualities of innovation refers to the delineation Godin makes when describing the actions of the Lutherans and Calvinists as the positive force of innovation, and the actions of the Catholics and later the counter-reformists as the negative force of innovation. This capacity to categorize innovation in dual and then diverse manners refers to the constitution of the individual innovator. From here it is possible to extrapolate and

[6] There is a line of research initiated by Heidegger's *The question concerning technology and other essays* (1977) that in proceeding through the work of Marcuse and Feenberg addresses this question (Peters, 2015a, personal communication). This line of inquiry is not taken up here for reason that these authors do not address the significance of technological innovation as a driver of economic development.

say that if power relations are also about the relationship with the self (Foucault, 1997b, 1997c), then the relationship with the self can involve both these positive and negative qualities, each of which can be described in the opposite way to how they are understood by the subject – depending on the individual's perspective in their relationship with the self. The paradox is that what may be thought of as being a positive quality – for example, reflection – may not be able to be measured in the same way when the same quality is thought of as a negative quality – for example when reflection is thought of in terms of performativity, and *vice versa*.

What this means for the already innovative subject in Education is that the epistemological foundations that provide the basis for understanding the paradox faced by already innovative subject are themselves provided in Godin's (2015a, 2015b) history of innovation as a concept.

The study of innovation as such, opens the way for students to be considered to be already innovative subjects. From this point on, the already innovative subject denotes the already innovative student.

3.4
Towards an entrepreneur of ideation

Rethinking the status of the actor in his or her relationship with the process of innovation is not merely about rethinking the concept of the innovator and the concept of the entrepreneur. Examining the combinatory actions of the innovative subject in Education cannot involve an analysis that is extant from its cause or what it addresses: the innovative process sits between the creative thought that initiates its process and the problem that it addresses. As already argued, the problem that the innovative student addresses is not simply a commercial problem that is arbitrated in the market-place; it is a problem with a theoretical end with a value that must be arbitrated according to the nature of its own phenomenon. The question then becomes how to theorize student innovation if there is no system for its realization and application?

This is not a new question in the sense that combinatory actions that result in the initiation of innovative processes in the proprietary domain also involve processes of ideation that involve the use of new knowledge. The difference

between these processes of ideation is that ideation in the proprietary domain is systemized (see Fagerberg, Mowery & Nelson, 2005), while processes of ideation in the non-proprietary domain can only be systemized when this ideation is governed by the application of the curriculum. This is to say, ideation only has a theoretic end in the sense that the creation of human capital, in making the institution more productive, creates uncertainty for the student with respect to whether they foresee their human capital equating to a commercial value appropriated to it by the market.[7] However, when student ideation addresses problems that, by definition, cannot be mediated by the market and that cannot be systemized by the curriculum and its delivery, the phenomenon of student innovation can only ultimately be valued according to its relationship to individual intention, about which there exists a good deal more uncertainty.

In this section, uncertainty is explored in respect to understanding the conditions under which risk is taken in the context of certainty. This problematic is examined first in relation to the first treatise on entrepreneurship (Cantillon, 1755, as cited in Godin, 2015a) and then in relation to the situation of the entrepreneurial student in the educational institution.

3.4.1

Richard Cantillon: The entrepreneur and the risk of uncertainty

Cantillon (1734-1860) is credited with being the first to conceptualize the term ‘entrepreneur’, (‘Entrepreneurship’, 2017). Of immediate interest is the date when Cantillon published *Essai sur la Nature du Commerce en Général* (1755). The term ‘innovation’ – a principal task of the entrepreneur today – was first used, according to Godin (2015a, p. 9), *circa* 1297, while “any general concept of an entrepreneurial function” (cited in Dioguardi, 1996, p. 1) is said to have emerged long after Cantillon’s conceptualization of the “entrepreneur” in 1755. Between 1297 and 1945, the concept of innovation was referred to as something other than that which enabled commercial enterprise or what it is that an entrepreneur does today. Only a little less significant is the fact that the work of an entrepreneur

[7] As Freeman says when referring to technological innovation, an innovation is only an innovation when it first impacts in the commercial domain (Freeman, 1974).

between 1755 and 1934 was not defined as being innovative *per se*. For nearly 200 years of the most important years of industrial development, the entrepreneur functioned outside the parameters that currently define commercial innovation. In other words, before 1934 the entrepreneur and innovation can be thought to have maintained an unspecific and informal relationship. On this evidence alone, it would seem tenuous to think of innovation, as it is understood today, as defining the metaphysical function of the entrepreneur – an observation that would seem to offer sufficient scope to theorize innovation and the function of the entrepreneur in ways other than how neoliberals would prefer these concepts to be theorized.

Schumpeter describes Cantillon as having "a clear conception of the function of the entrepreneur" (Schumpeter, as cited in Dioguardi, 1996, p. 2). The clarity of Cantillon's concept of *the function* of the entrepreneur is tied to the description of *the situation* of the entrepreneur and what he or she was trying to achieve in their historical context. Because the situation of the entrepreneur changes with the context and over time, the function of the entrepreneur cannot be other than uncertain in the broader picture of what history makes of itself. How does Cantillon (1775) describe the situation of the entrepreneur? Schumpeter, in his *History of Economic Analysis* (1954), comments on Cantillon's understanding in the following way:[8]

> First, Cantillon had a clear conception of the function of the entrepreneur. It was quite general, but he d it with particular care for the case of the farmer. The farmer pays out contractual incomes, which are therefore 'certain', to landlords and labourers; he sells at prices that are 'uncertain'. So do drapers and other 'merchants': they all commit themselves to certain payments in expectation of uncertain receipts and therefore are essentially risk-bearing directors of production and trade, competition tending to reduce their remuneration to the normal value of their services. This, of course, is scholastic doctrine. But nobody before Cantillon had formulated it so fully. (As cited in Dioguardi, 1996, p. 2)

While this description of *a-cause-to-action* is explained in rudimentary terms such that Cantillon's entrepreneur's actions could be recognized in the actions of

[8] Secondary literature is used here as there is no existing translation of Cantillon's *Essai sur la Nature du Commerce en Général* (1755), meaning we are therefore reliant on those researchers like Schumpeter and Dioguardi who evidently read French.

today's entrepreneur, it would seem important to remember Schumpeter's (1934/1911, 1939) intention to promote the importance of the entrepreneur as the actor who brings about economic development through innovation. As such, highlighting the function of the entrepreneur is important to Schumpeter's project. But just as this definition of an entrepreneur's actions over time cannot be said to be those of a universal entrepreneur, the function of the entrepreneur changed in the mind of Schumpeter. In the beginning, the entrepreneur was a heroic figure who acted alone in response to market opportunities (see Schumpeter, 1934/1911). Later, the function of Schumpeter's entrepreneur was less the lone hero and more the manager who needed to continue to make changes to what had already been introduced to the market (see Schumpeter, 1939). It turns out that the function of the entrepreneur is more plastic and malleable to the needs of the situation than the theorist of economic development would prefer to believe. It would seem that understanding the nature of the entrepreneur's relationship to the opportunities they respond to has to do with the understanding of the importance of opportunities that can be addressed. Entrepreneurship has to do with military adventure, civic adventure, and social adventure. Commercial adventure is privileged at the moment, but this does not mean that other forms of adventure do not exist or that they will not replace commercial adventure sometime in the future.

With this thinking in mind and in keeping with Schumpeter's (1939) characterization of the above description as a scholastic one, the domain or arbitration where the value of entrepreneurship is decided should not be thought of as the market place *per se*. The market, which is not something new, has been deterritorialized and has become a domain of *abstract principles*, governed as much by "nonmarket principles" as market principles (see Sandel, 2013, p. 122). This being the case, it becomes not so much a question of whether non-market principles can be thought to govern in *domains of arbitration* that are other than those that are purely commercial, but whether non-market principles enable a better understanding of the nature of the actor's actions when responding to new opportunities. Could these non-market principles for instance be expressions of 'animal spirit' (Akerlof & Shiller, 2009) as expressed in the following: the form of a collective will to collective survival; the collective spirit to break with the role of the traditional educational institution to pursue heuristic learning; of the spirit that

leads the collective actions to break with rules, tradition, conventions and protocols; of the spirit of creation that fosters the diffusion of new forms of existence; of the radical new actions that cut through where resistance did not cut through in the past, and so on?

The justification for tying the employment of certain and uncertain factors exclusively to the arbitration of market so as to describe the situation of the entrepreneur as being uniquely commercial, would therefore seem to be a tenuous one. If the motive is financial gain, then the market is the logical arbiter. However, if the motive of combining certain and uncertain factors in new ways is other than financial gain, then the risk-bearing activity must be thought of as pertaining to domains of arbitration that are conditioned by a dynamic of interests that are other than commercial. Such a risk-bearing individual can be thought of as a 'social entrepreneur', a 'political entrepreneur', amongst other forms of entrepreneur (see Bjerke & Rämö; 2011, Grebel, 2004; Steyaert & Hjorth, 2006). As yet, we do not have a name for the risk-bearing student; that is, other than the *already innovative subject*.

3.4.2

Innovation as an organized leap

The idea that innovation involves an *organized leap* refers to both Drucker's (1959) concept of the innovative process as entailing a "systematic, organized leap into the unknown" (p. 13) and the idea that this discussion needs to leap forward both from Schumpeter's (1954) interpretation of Cantillon's understanding of the entrepreneur to how the entrepreneur might be understood today.[9] While there would be something to be gained from an analysis of the history entrepreneur, there is not sufficient scope in this investigation for such a discussion. Instead, the discussion will focus on the idea that Education needs to examine the concept of the entrepreneur from both the perspective of its own commercial interests and from the perspective of the student's individual interests. These interests cannot be the same or even commensurable because the problems they address are not

[9] Peter Drucker (1909–2005) was an Austrian-born American management consultant, educator, and author, whose writings contributed to the philosophical and practical foundations of the modern business corporation. As he was also a leader in the development of management education, he invented the concept known 'management by objectives and self-control' and he has been described as "the founder of modern management" ('Peter Drucker', 2017).

measurable by the same means, in that it should not be thought that students will logically progress towards sharing the same concept of innovation that the institution presently espouses.

The school and the university have continued to build their institutions on an historical model that is centuries-old, before the current politics of education began to concern itself with how to make its institutions perform as quasi-economic enterprises.[10] This is to say that the principal work of the entrepreneur and the principal actions that we would describe as involving the spirit of entrepreneurship, either happened at the inception of the formation of the concept of these institutions, or they happened in the moment of major events that presumed the need for a major transformation of the function of the institution. Evidently, this investigation is concerned with the instance of the latter occurrence. However, what I want to draw attention to here is that in the aftermath of major transformations, the entrepreneurial work that directed change in the development of schools and universities, involves a mutation of disposition such that the management and improvement of performance comes to refer to getting greater performativity from that which already exists.

The maintenance *of that which works* ultimately involves quite a different disposition to entrepreneurial activities than that which is employed in the student's approach to problematizing and initiating change. Students are in a period of their lives when progress and maturation can involve the need to learn how to break with that which already exists (the Education provided them).[11] This is not the same type of action that involves making what already exists perform better. These two dispositions – over simplified as they are – are actions that involve different forms of innovation. Students innovate to create and invent themselves (see Dardot & Laval, 2013); they act upon themselves to transform themselves into human capital and/or, as Lévy (1997) would have us understand,

[10] See Derek Bok's The roots of commercialization. From universities in the marketplace: The commercialization of higher education (2003). In Michael A. Peters, & Ronald Barnett (Eds.), *The idea of the university: A reader*. New York, NY: Peter Lang.

[11] Breaking with the education that they are provided with is but one example of a reason for students to break with the reality that they are confronted with. Others might concern poor teaching methods; disagreement with a good teacher's understanding of a problem; a need to affirm diversity of thought or culture; the need to privilege a more effective way of learning, and so on. All of these reasons for the innovative action on the part of the student that results in their breaking with the institution to some extent (see Section 4.4 on breaking while maintaining the relationship), while part of the paradox of the student's situation, can be thought to produce *positive* actions on the part of the student, in that the student is acting to protect their learning.

to create human qualities that only they can create through their own decision-making. Paradoxically, this involves a process where students must act both inside and outside the system of education, in order to learn what they believe they need to learn. This form of innovation tends to be more radical than that of the institution in that it involves the initiation of new ideas that the institution might struggle to anticipate. This creative student thought can even involve students breaking in an absolute manner with the institution, whether this is just to escape a dysfunctional environment or to pursue non-institutional forms of education.[12]

Before moving on, I will summarize the student's relationship with the institution and in respect to what it means to say that they approach change and do new things in different ways and according to different ends. The innovative activities of the institution and its commercial management and the innovative activity of students are different for reason that they address different problems; commercial management innovate in order to improve the performance of the institution and its status in the market. This involves conserving what the institution already does well while initiating incremental innovations in relation to furthering the strategic plan. In practical terms, this is done with an ability to manage, which refers to being able "to organize people for ongoing work" (Drucker, 1969, p. 61). This organization needs to be understood in terms of how work produces performance or in terms of performativity. Identification of the people who organize and those who are organized provides an indication of how distinctive incremental innovation is from what students do: the organization has to do the role incremental innovation plays in the operational functions of the institution in its focus on increasing its commercial power,[13] while student innovation seeks to transform the experience of innovation according to the organization of individual and collective interests.

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[12] At a recent national Symposium on Innovation Learning Environments (http://www.aut.ac.nz/study-at-aut/study-areas/education/learning-environments#key), a professor from another institution recounted how students had recently shared with him that they had discussed how they could learn more about business by abandoning university and learning what they believe they needed to learn on their own and according to their own design of what this learning pathways should involve.

[13] See Chapter Six and Foucault's technologies of power for more on this commercial administration of power.

Specking for the student, the problem that the already innovative student faces only involves engagement with the market in the sense that the completion of their studies supposes a correlation between their *future* commercial value and the market value of their human capital (Becker, 1964). But this is a supposition and a very unstable one at that. During a student's formal education many factors can change and furthermore it is logical to assume that the goalposts will naturally move at frequent intervals: policy can change qualification requirements; institutional funding arrangements can change with little warning; institutional viability can affect courses offered; the economic sector's knowledge of its own needs can change; demands on Education from the economic sector can change and so on (Ministry of Business, Innovation and Employment, 2014). Added to these variables is the narrative and reality that technological developments are occurring at a greater and greater rate is the rhetoric from Education itself, which that reminds students that they are studying in preparation for jobs that have not yet been invented. The most recent form of rhetoric to appear on the horizon of student futures refers to the impact of artificial intelligence and the threat that future workers will not be needed because a cheaper worker has already being fabricated (see Blundell, 2016).

In these circumstances, student entrepreneurship must be centred in the purpose of learning rather than the purpose of education. Student capacities to recognize the challenges that they face have to do with those factors which condition the possibility of learning in new ways. The question from the orthodoxy might be, why is this in itself innovative? Are not students just doing what they are meant to do? After all, it would seem impossible to justify this heuristic learning activity as innovative if its value cannot be arbitrated by the market. But this is exactly the point. The problem that students are innovating in relation to is not centred in the market place: the non-market principles that are influencing their decision-making have been formed in relation to problems other than market growth and market equilibrium; they have been formed in relation to problems of which the market is a subset in time. What are these problems that students are engaging with and inventing and innovating in relation to? They are problems of human value that have to do with our relations with the social world, the gendered

world, the world of multiple cultures, the political world, the environmental world, among others.[14]

Having said this, the discussion needs to be taken one step further. The difference in problem has been explained, as has the difference in relationship to these distinctive problems, the difference in how each actor understands innovation, and the difference in the purpose of being innovative. What has not been explained in any detail is the nature of the relationship between these actors, given these differences. It is these differences that begin to configure the rudimentary character of the paradoxical situation that the already innovative subject finds him or herself in. These differences cannot be reconciled according to how these distinctive actors conceptualize their life worlds and their motives for acting or behaving in the way that they do. It could be added that economics needs a whole new form of analysis if it is to understand what is occurring in student innovation and the significance of this innovation to both society and the economy. Given the complexity of this situation, it is planned that the discussion should move slowly – this relationship and its complexities are two complex and too important to treat without engaging their ontologies with a minimum of detail.

Conclusion

Evidently, the entrepreneur and the innovator have distinctive relations with the process of innovation in the proprietary domain. It has been argued here that this distinction only partly informs what actually happens in the educational institution. Taking the situation of the student supposes that the student faces a political decision in all moments with respect to how they balance their implication in institutional processes of innovation. Furthermore, students are focused on increasing their productivity through their will to be innovative in ways that differentiates their focus from that of the institution. In this way, the student is at once an innovator in their contribution to the realization of the institution's innovations, and at the same time is an innovator in personal and collective processes that are largely unrecognized by the politics that govern the institution's commercial interests.

[14] This topic will be engaged in Chapter Nine.

It is argued that student innovation sits outside the institution's concept of the student's implication in the institution's own innovation processes, and that this makes the innovative student anonymous for reason of the already anonymous status of the innovator in commercial innovation processes in the proprietary domain. Ignoring this political tactic and focusing on the situation of the innovative student, it becomes important to begin to theorize the innovative subject in Education with respect to how their innovation can be thought of as entrepreneurial in ways that extend beyond entrepreneurial commerce. How is this to be done? It will be argued in the coming chapters that this theorization supposes the student takes the *initiative* in their own learning, and *initiates* change according to their own criteria with respect to what had to be changed and why. This is more ambitious than it seems, because in controlling the politics of innovation, the institution also controls who is permitted to initiate or begin something new.[15] What is more, it is argued that unless students get to do this, they end up doing nothing more than carrying out the institution's work: that is, contributing to the institution's quest for greater productivity without having attended to the problem of identifying their distinctive intentions within the institution's processes of production.

[15] The importance given in the idea of initiating and beginning actions is conditioned by Arendt's (1998) thinking about how human action has been divided according to the need to prescribe distinctive roles of those who are permitted to initiate and to those who are required to execute that which has been initiated. It is this division of roles that facilitates the success of the enterprise of work and its governance. However, this division of roles also stifles workers and students from taking new initiatives even when these initiatives contribute to refining the system that produces what they work toward.

CHAPTER FOUR

The Situation of the Already Innovative Subject

Introduction

In the first three chapters, the discussion alluded to the idea that innovation in Education creates a conflict for the student as an *already innovative subject*. Furthermore, it was observed that the politics of innovation in Education neglects to attend to the paradoxical situation of the *already innovative subject*. For this situation to be identified as a paradox, it first needs to be understood as a political situation. The student's situation is political because the institution and the *already innovative subject* are set in opposition to the idea of what innovation really is and hence how the capacity to be innovative is formed. It might be thought that students do not have their own idea about the formation of innovative capacities because to have such an idea, they first need educating, in that they first need to acquire the requisite human capital for the development of such ideas to be possible. This precept for thinking about what makes innovation possible supposes that knowledge about innovation must first be produced or constructed by the politics of education and that only through this experience can such an idea emerge. In this context, technological innovation only has meaning as a consequence of its commercial impact in the marketplace. This is the perspective that the politics of education would need to consider in order to circumvent the argument that the *already innovative subject* finds him or herself in a paradoxical situation.

The precept from which the discussion will begin in this chapter is that as long as it is possible to understand that students and the institution think in different ways about the same things, then it is also possible to imagine that they might think differently about what innovation is and how the capacity to be innovative is formed. To think differently does not, in itself, suppose the existence of a conflict. However, because the discussion is thought to benefit from acknowledgement of the existence of the aforementioned paradox, it is thought that failure to recognize the possibility of conflict, from the student's perspective,

becomes tantamount to institutional ignorance of the paradoxical situation that has emerged.

4.1

Innovation begins in popular culture

> *Know good ideas when you see them. Then steal them.*
>
> First and foremost, let's demystify Pep [1], says Perarnau [2]. Everyone says that he has reinvented football. He hasn't. His greatest talent might actually be something else: observing and listening closely. He can soak up his colleagues' working methods like a sponge. He knows a good idea when he sees one, and he'll steal it and make it part of a new whole.
>
> I've spoken about this with Pep and his friend, Ferran Adria, who is considered the best chef in the world and was the brains behind Spanish restaurant, el Bulli. Adria makes a precise distinction: "Pep isn't a creator, he's an innovator". (Perarnau, 2015, p. 40)

This tract of text has been chosen to initiate the discussion because of the importance of popular culture as a consumer experience and, as such, as the grounded learning experience that provides students with epistemological foundations for a broader understanding of innovation. Students do not need to be academic in their reading to understand innovation, nor do they need to read football literature: the notion that innovation is a concept that exceeds the parameters of an orthodox of technological innovation is available to all.[3] This epistemological grounding puts students in conflict with the educational institution because the problem of innovation in popular culture has outstripped the development of the necessary discourse in Education.

This analysis of Pep Guardiola's working methodology might be an affirmation of the interests of popular culture – the biography of success in the world of football – but there is much more to this analysis than hyping an engagement with something that is already a proven method. Guardiola's

[1] Pep Guardiola, the Catalonian football manager, is ex-manager of FC Barcelona (2008-2012), FC Bayern Munich (2013-2016), and now manager of Manchester City (2016-), and winner of 21 trophies over 8 seasons.
[2] Marti Perarnau is the author of a new book on Pep Guardiola titled *Pep Guardiola: The inside story of Pep Guardiola's first season at Bayern Munich*.
[3] The orthodox understanding of technological innovation will be challenged in Chapter Six.

methodology is intellectual, interdisciplinary and rigorous in the extreme (see Balague, 2013) and all quite probably without recourse to an orthodox understanding of innovation as either a technological and commercial phenomenon. Guardiola understands that being innovative is a question of combining in new ways what is already known, of recognizing an opportunity and re-interpreting it according to one's interests, of not pretending to invent (the author of the article can be thought to use the term *creator* as a proxy for *inventor*) but understanding the risk and responsibility associated with the desire to act requires the need to leap. So all the conventional features of innovative thought are here and, what is more, the success of Guardiola's innovative methods can be measured in the market-place, although the latter is not the unique means or even the most important means of measuring his success.[4]

On top of this, Guardiola, through Perarnau's analysis, brings something extra to how innovation needs to be understood and, in particular, in the educational context (*The Red Bulletin*, 2015). Guardiola forms what to him is a good idea as "part of a new whole" (p. 40). This is a phrase that would seem to throw the concept of innovation into a whole new light. While the market-place might provide the illusion of comprising a whole in our projection that acts as *universal* moral arbiter of *all* human behaviour, the concept of innovation that transforms the content and the image of the market is a concept that is drawn from a more complex epistemological understanding of the significance of change than that which merely defines the value of goods and services that make up the market. The concept of innovation according to which Guardiola seems to understand innovation would appear to function both inside and outside the parameters that govern economic thinking and what, in this investigation, is called "the commodity space" (Lévy, 1997, pp. 135-138).

There are two essential features of this discussion that can be carried over into the discussion on the conflict created for the student who is already an

[4] Some coaches prefer their teams to play beautifully rather than to win without playing beautifully; football being the *beautiful game*. Winning is the market's criterion for how innovation in football is measured; the measurements being seat sales in stadiums, the size of television audiences and the sales of sports apparel. The success of the beautiful game is measured according to the dignity and loyalty with which a team plays according to the club's or nation's philosophy (see Cruyff, J. (2012). *Fútbol. Mi filosofía*. Barcelona, Spain: Ediciones. B.).

innovative subject: the idea of the whole and the idea of the thing. *The whole* can be understood to replace *the thing* as that which is altered by the process of innovation. By *the whole*, it is not implied that that which is altered is the global experience, or even that which can be said to represent all that football represents or what might be called *qua* football. Rather it is implied that *the whole* comprises the phenomenon that is framed as that which can be proven to be altered. While this proof might be subjective, the proof in football will be made in football by the way the manager explains the result in terms of the strategies employed on the field. Furthermore, proof is seen by those in the stadium who measure their interest in buying a ticket in relation to the performance of the *team* and the idea that the team plays as a whole as the optimal representation of what it means for a team to perform.

Machiavelli (1961) understood this notion of innovation in terms of what it took to gain loyalty from those the prince had newly conquered. In Machiavelli's case, the innovation that enabled the creation of loyalty involved more than just the use of political innovation. In Guardiola's case, innovation involves more than just an understanding of technological innovation: it involves an understanding of social innovation, political innovation and even philosophical innovation, in that he works with concepts in new ways.

This consideration of *the whole*, that can be altered in order to create change and novelty in the game plan and performance, can be considered to embrace the use of both market and non-market principles. To this effect, *the whole* extends beyond the scope of the market and includes a more complex configuration of problems that provide the means to change. As such, the epistemology that supports the innovation that transforms *the whole* cannot be reduced to that which supports the innovation that transforms *the thing*. Without understanding the idea that two of more factors (e.g., the political, the social, the technological) can exist at once while functioning in relation to distinctive objectives, it would seem difficult to understand the paradox of the innovative student who forms him or herself in relation to a regime of learning that does not recognize their engagement with *the whole*.

Guardiola's innovative capacity as a football manager (Balagué, 2012; Cruyff, 2012) might be argued by neoliberals to be a product of the human capital Guardiola formed during his education. Such a claim could not be made without

asking why there are not more innovative subjects of Guardiola's capacity graduating from the same Education system. Does not Education, as a system of formation, by definition, not refer to a capacity to systematically mechanically produce that which can be anticipated? To put the question another way, if the education system is so effectively focused on realizing its objective of producing innovative individuals, it would seem logical that Guardiola could not be such a startling example of the so-called "transferable skills and knowledge" that a good education is said to produce (David, Gabriel, & Lopez, 2001; OECD, 1996)? Guardiola (2011) explains his innovative capacity in a much simpler manner: "that all he needed was a pen and a notebook – the opportunity to develop an idea was already there: it just took work, experimentation, work, experimentation and so on".

But what if Guardiola's method of developing an idea were taken up within the ambit of the school? This is a kind of *action research* where the innovative process does not begin with what is learned in school and an *a priori* formation of human capital, it begins outside the ambit of the school as an *action that is learned from* through first being an action rather than first being an object of study. Of course Guardiola had the advantage of having a sympathetic schooling environment, in that there existed fluidity between his innovative project and the context in which he did his formal studies in *La Masia* (the Farmhouse).[5] But the existence of this fluidity should not be the point. If a child is already innovative, they should be able to carry their innovative process into their formal learning environment irrespective of the philosophy of the school. This is the case because the child or young student is learning from their own actions, and as such they are learning heuristically by learning by doing.

The next questions should be, in the context of the student bringing their innovation process to the classroom: what should the educational process be by which this innovative capacity continues its formation, without being stifled by the requirements to privilege assessments as the obligatory work of human capital formation? What ensues from this question is the problem of the role of the teacher, when the student already has in play a line of inquiry that was formed such that they would be able to respond to the demands of their own curiosity.

[5] *La Masia de Can Planes* is the accommodation for players in the youth teams in FCBarcelona who are not able to live at home during their formation with the club.

How does the student negotiate the power relations such that the value of their relative autonomy and heuristic learning would be recognized? This is not a simple question as such students are faced with the tyranny that does not conceptualize the need for greater autonomy. It is here that the discussion would benefit from turning to Jacques Rancière's research on the life and work of Joseph Jacotot (see *The ignorant schoolmaster: Five lessons in intellectual emancipation*, 1991). The relevance of Rancière's thinking will be engaged later in the discussion.

4.2

The innovation process: A knowledge asset

In this chapter, the discussion began with a theorization of innovation as a process that is not simply commercial while at the same time has its formation outside the ambit of the educational institution. The purpose of commencing in this manner is to configure the problematic of the already innovative student such that their action is at once desirable and yet not anticipated by the educational institution. Crucial to this configuration is the status of knowledge, which in the case of the already innovative subject, could be thought to be illegitimate, given that it undermines the institution's role in delivering a programme for the acquisition of human capital. Furthermore, if the development of all innovative capacities has occurred outside the institution, then much of the purpose of formal education would be undermined, given Education's focus on producing human capital for the explicit purpose of enabling graduates to be innovative. This overriding of educational requisites that qualify the student to be innovative can be understood to be already occurring in that employers are now beginning to express a greater interest in the less qualified at the expense of those who are more qualified. This suggests that learning involves an engagement with both too much knowledge and the wrong sort of knowledge (see Kander, 2014).[6]

In Chapter One, it was highlighted that economics, in treating the innovation process as a black box, in effect also condemns the innovative subject to the same void of disinterest. It must be concluded that economics does not

[6] See Diana Kander, Published on 27 Aug 2014, Our approach to innovation is dead wrong | Diana Kander | TEDxKC, Re the Marshmallow test where children beat MBA graduates to build a tower against the clock. Retrieved from https://www.youtube.com/watch?v=pii8tTx1UYM

regard the innovation process as being capable of producing significant knowledge or, from another perspective, that it does not regard itself as needing to rethink human behaviour such that its task should be to account for innovative processes that reflect the engagement of human subjectivities. This is a curious fact given neoliberal economics' conceptualization of the consumer subject as an individual and so-called 'autonomous chooser' (Marshall, 1999). Such a conceptualization of the individual subject seems to be limited to the choice to consume. This is to say, the same individual is not conceptualized as one who participates in the production processes where they are equally free to contribute to innovation processes in a manner that would require equivalent and autonomous capacity for decision-making in relation to the possibility of being innovative. The question that might follow is: how does the absence of interest in the possibility that the innovation process produces significant knowledge in economics become a theoretical problem for how Education has been charged by neoliberalism to produce individuals with the innovative capacity to free enterprise?

When a firm (in this case an 'educational institution') privileges the profit of product innovation (goods and services) over the development of alternative innovation *processes*, not everything will be learned about how an innovation is realized (Ichijo & Nonaka, 2007). In other words, it can be assumed that when the firm acts in such a way, it achieves the effect of black-boxing its innovation process and furthermore that it does this at the cost of its own learning and the development of endogenous know-how.[7] This practice can often have the effect of making an innovation look as if it were achieved by accident. This of course can be the case because significant knowledge that the innovation process might elucidate, has not been previously sought. In these circumstances, the conditions that make innovation possible become difficult to reproduce. This is the negative connotation of economic black-boxing in the innovation process. The ultimate effect of this approach is that it supposes an exclusive interest in short-term profits or a lack of interest in "advancement strategies" (Ichijo, 2007, p. 135).

Taking the opposing perspective, black-boxing can contrarily have a positive connotation in business management when, for example, a long-term

[7] In commercial enterprise in the proprietary domain, it is understood that this privileging of product innovation is the result of commercial expediency and the need to be cost-effective.

view is taken and when the innovation process is thought of as a "knowledge asset" (Ichijo, 2007, p. 135). Instead of the black box being an excuse to abandon theoretical responsibility for the means through which innovation is achieved, the innovation process becomes a domain for analysis, interpretation and creative thought. In such circumstances, the firm might, for example, choose to use the black box to make "unique knowledge difficult to imitate". This is usually done through "a combination of factors such as product customization, complexity, and intellectual property protection".

Curiously, the knowledge asset, in the latter instance, is necessarily rivalrous and excludable because the innovation process needs to be secured as discrete knowledge so that the competitive advantage it implies is maintained in the marketplace. This strategy for protecting competitive advantage is highly contextual. Put simply, a knowledge asset can be developed in an environment where both *closed* processes and *open* processes of innovation are practiced (see Chapters Five and Eight respectively). In the latter case, knowledge is considered to be "non-rivalrous" and "barely excludable", as explained by Peters (2008, p. 5), in describing "knowledge as an economic good"[8] in what has been broadly described to the knowledge economy. On the other hand, when knowledge development involves a closed process, its formation is necessarily heuristic and to some extent covert in that it must break with prescribed processes of learning.

4.3
The political problematic of the already innovative subject

The situation of the already innovative subject is problematic in both political and philosophical aspects of the student's experience of the institution's application of knowledge, governance and innovation. While differences in understanding of innovation cannot be elucidated without a philosophical debate, the political intricacies of the particular situation of the already innovative subject need to be described first. Hence, this section will focus on the political problematic, followed by the philosophical problematic.

[8] Peters' (2008) description of knowledge as an economic good is drawn from the work of Paul Romer (1990, 1994).

Learning does not occur in the educational institution without the student being subjected to power relations designed to serve the institution's economic objectives.[9] This means the institution's idea of how the capacity to be innovative is formed directs the manner in which all power relations with students are structured. This is not only the case in all learning areas, but all domains of the student's relations with all that is institutional. So as to avoid the trap of explaining the already innovative student as an ideological subject, the discussion begins with a problematization of these power relations from the student's perspective.[10]

The student's relationship with the teacher is always subjective, as is the student's experience of the curriculum and the world for which Education is said to prepare them for. This subjectivity is of course formed by multiple aspects of experience. As long as individual experience can be thought of as being diverse in itself, then it should be anticipated that this diversity has the possibility of producing new subjectivities in the form of distinctive expressions of thought in speech and action. As such, it is also to be anticipated that power relations involving students and teachers will often be problematic. For this diversity to flourish in its growth and contribution to the learning environment, each individual student endures the peril of functioning in an environment that is divergent in its political orientation, where governance unifies and/or separates individuals according to the extent to which they identify or not with the institution's system of education.

In curriculum policy that supports primary and secondary education in New Zealand, innovation is thought of as a "value" (Ministry of Education, 2007, p. 10); the illusion being that the value of innovation can be objectified and, as such, given a stable definition – the definition stabilized by the idea that innovation is technological innovation and uniquely so. It will be argued here that this is in fact not the case – that innovation thought of in this way is merely an alternative fact in a more complex understanding of what produces change and novelty. The big question is, if innovation is a value, is the meaning of innovation, as a concept, open to being re-evaluated by students?

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[9] See Foucault (2000), Laclau (1994), Negri (1989), Touraine (2001).
[10] In Section 4.2, the institution's politics in relation to this question will be explained.

This is a simpler question than may be thought. Whatever teachers believe is important, in terms of opening up the discussion of what innovation is (Ministry of Education, 2007), the advocates (Hipkins et al., 2014) for the current curriculum delimit the possibility that innovation can be anything other than technological innovation. How is it possible that such a delimitation should frame the significance of all change and as such become the universal understanding of what innovation refers to?

In the big picture, as iterated in Chapter One, Two and Three, technological innovation has been tied to economic development since the end of the Second World War. The inculcation of technological innovation as innovation has been promoted in policy developments by the World Economic Forum (2014) and the OECD (2007), for example, and has been diffused all the way down to the local school in the developed world for over 10 years now. As a consequence, curricula have become oriented towards privileging STEM subjects so that innovative capacities will be acquired by future generations to greater and greater economic effect. Against these enduring historical processes, a new technological innovation does not just become an end in itself: it becomes the means by which society is embedded into a new universal vision (see Drucker, 1959). In such circumstances, the political problematic of the already innovative subject has to do with how Education, to paraphrase Foucault's (2000), conducts student conduct, and directs or drives student self-direction or their capacity to drive the self. This way, technological innovation is used to conduct, direct or drive student diversity such that students are inculcated into the ideological subjectivities that make this universal vision possible.

In Education in New Zealand, as in this subtly drawn-out global *event*, re-evaluation of the concept of innovation is in effect structurally prohibited. How? Through the position of thinking as a key competency (see Ministry of Education, 2007; Hipkins et al., 2014). While the OECD thinks that the problem of thinking is implicit to the problem of developing all key competencies, and that it is "not enough to be able to just do something without being able to think about and critique one's choices and actions" (Hipkins et al., 2014, p. 15), New Zealand policy-makers thought to make thinking a separate competency. Thinking is framed as something that can be developed alongside and yet outside the problem of developing the other competencies in *The New Zealand Curriculum* (MoE,

2007). Apart from the competency of critical thinking, the other competencies are managing self, relating to others, participating and contributing, and using language, symbols and texts. The weakness of this approach is that learning to think independently of the task of acquiring the other competencies would appear to undermine the value of thinking as a competency, and the development of the other competencies. If thinking is learned as an independent competency, what makes this competency a relevant form of thought if it is not grounded in both the ontological and epistemological problems that are particular to understanding associated with managing self, relating to others, and participating and contributing? To take the argument a step further, each of these three competencies supposes distinctive ethical problems that require the thought process to be endogenous. Of course there is exogenous value in reading, listening, social and academic interaction, and being mentored in relation to these problems. The individual needs to decide for him or herself in what ways they are going to identify with the risks and responsibilities that are associated with, for instance, the formation of the competency of managing self in ways derivative of a practice of thinking that is associated with an ethics of being part of that moment. Hipkins et al. (2014) do not the intricacies in depth and instead prefer to speak to the value of applying the curriculum.

The relevance of thinking as a competency that is best developed through the formation of the other competencies – assuming these competencies are in fact the best competencies through which one might learn to think – can also be argued according to what Jacques Rancière (2011) calls the distribution of the sensible. Rancière calls the distribution of the sensible

> the system of self-evident facts of sense perception that simultaneously discloses the existence of something in *common* and the delimitations that define the respective *parts* and *positions* within it. (p. 7, emphasis added)

Sense perception that enables the disclosure of the existence of something in common that "produces a community" (see Rancière, 2011, p. 109, note 5), draws from aesthetic experience. The delimitations that simultaneously define the respective parts and positions within this community are informed by this same aesthetic experience and, as such, make it possible to distinguish one's thinking and identification with ideas from that of another within the same community –

thus making it possible to see the political positions that this thinking produces within it. This is the political aspect of the same experience. Crucially, this distribution of the sensible occurs simultaneously and not sequentially i.e., it is not distributed first as an aesthetic experience and then as a political experience.

Following Rancière, it is meaningless to separate the formation of a capacity to think from the formation of other competencies. If the experience of another competency (say, relating to others) supposes a distinctive aesthetic experience that is particular to the individual's consciousness of community created by the aesthetic experience that "produces a community" (Rancière, 2011) in the context of needing to relate to others, then the individual's capacity to relate to others can only be informed by the political experience particular to the aesthetic experience of that moment.

It is in this manner that Education and the educational institution could be accused of *ambiguating* the experience of both the significance of the innovation process and the situation of the student as an innovative actor. In isolating the formation of the competency to think in the context of aesthetic experience, Education and the educational institution make concepts employed in Education – for example, technological innovation – impenetrable to those who would learn to think as the curriculum suggests is possible; such concepts being beyond the reach of thought. In this way, technological innovation becomes reified, in the sense of not being able to be questioned, because questions relating to the concept itself are not thought of as questions that need to be grounded in an aesthetic experience. As such, this structural abstraction would ironically appear to remove independent thought from the purpose of education. This situation would seem to suggest that students are not likely to have a strong opinion *for* or *against* technological innovation. Without this practice, language becomes purely ontic and loses its phenomenological point of reference. It becomes difficult to understand what critical thinking might be, as it would seem that that which is critical can only be so in as much as it is not disruptive to the neoliberal political agenda.

4.4

The philosophical problematic of the already innovative subject

In this section, the Cartesian and post-Cartesian subjects will be briefly described, after which the situation of the already innovative subject will be described in terms of the elements that make it an incommensurable situation and therefore a paradoxical one. The Cartesian subject (see Hatfield, 2015) is understood to think in a manner that draws a clear distinction between subject (he or she who thinks) and object (the other and all other phenomena that are apart from the subject). This capacity to think, when extended to a description of the other (and all other phenomena), is thought to facilitate the objectification of the other (and all other phenomena).

The post-Cartesian subject, while not a subject who can be thought of as being entirely independent of or separate from their Cartesian forebear, is less recognizable as a Cartesian subject. In fact, according to Foucault, all systems of thought that have to do with the acquisition of "knowledge and the notion of self-transformation" (as cited in O'Farrell, 2007) are post-Cartesian because they come after Descartes and as a product of his thought. So the post-Cartesian subject moves as if the history of subjectivity could be told as distinct from others and related to the formation of others.

In this discussion, the significance of this relative independence given to the post-Cartesian subject comes about as a consequence of a phenomenological shift in the subject's disposition. This shift involves a movement towards privileging the relationship between self and other, between subject and object by privileging the practices or processes through which relationships evolve. It is a shift that is not always easy to see because while this disposition might entail giving importance to, for example a "certain objectivity" (Foucault, 1997d, p. 116), this focus on objectivity can be interpreted as Cartesian if taken in isolation. On the other hand, if this certain objectivity – using Foucault's explanation – is always thought to remain in relation to both "the development of a politics and a government of the self" (pp. 116-117), and "the elaboration of an ethics and a practice in regard to oneself" (p. 117), then the capacity to be objective must be

conditioned by the practices or processes that realize these other two activities – and *vice versa*.[11]

These practices and processes are more easily seen in Education when teachers express their thinking through actions that reflect their understanding that students enter into learning with equal intelligence to that of the teacher (see Rancière, 1991). When teachers acknowledge this equality of intelligence in their actions, then the phenomenological shift of consciousness of the importance given to the relationship and the processes and practices that sustain it can be seen more easily.

The history of the subject, as a concept, has been conditioned by the history of philosophy (Agamben, 1998; Foucault, 1998b). It *might be* argued that the Cartesian subject has disappeared with the disappearance of philosophy, in that today it is not individual consciousness that matters so much as identification with a universal idea of how we should think. Our relationship with technological innovation might be an example of this identification with a universal idea. The fact that innovation is spontaneously thought of as 'technological innovation' (Godin, 2015a) exemplifies this transformation in the thought of the Cartesian subject. To think of the evolution of technology though innovation without questioning the manner in which we constitute ourselves as technological subjects (as Heidegger does), supposes that the task of consciousness has been given over to those whose interest it is that technology should be politically determinant of how human beings constitute themselves as social beings.[12] However, this articulation of the danger of Cartesian thinking may not corroborate our common experience of the role that both technology and the process of innovation have in technological innovation; the benefits of which are explored in Chapters Eight and Ten.

Curiously, the conceptual death of the subject has in more recent times been followed by a discrete interest in its rebirth in philosophy (Foucault, 1998a; Laclau, 1994; Touraine, 2001). It is this subject that might be called the post-Cartesian subject. The post-Cartesian subject might be understood as arising in response to the problematization of the relationship of subject to object, where

[11] This form of problematization is Cartesian, on account of its exclusive interest in objectification (See Foucault, 1997d, p. 117).
[12] Heidegger (1977).

instead of thought requiring identification with that which includes but does not require conscious participation in, thought is radicalized, demonstrating a capacity to both *break with* and *remain in relation to* the other and all other phenomena. Foucault (1989) illustrates this form of thinking when he describes his relationship with Nietzsche in the interview *On Literature* when he says,

> … in relation to philosophy, there is in Nietzsche's work a roughness, a rustic simplicity, an outsideness, a kind of mountain peasantness that allows him , with a shrug of the shoulder and without appearing in any way ridiculous, to say with unavoidable force: "What non-sense all that is!"
>
> To rid oneself of philosophy necessarily implies such offhandedness. It's not by remaining in philosophy, it is not by refining it to the maximum, it's not by turning it against itself that one exits from it. No. It's by opposing with a kind of astonished and joyful stupidity, a sort of incomprehensible burst of laughter that in the end understands, or in any case breaks. Yes … it breaks more than it understands. (p. 118)

The effect of Foucault's post-Cartesian thinking – *his breaking with while remaining in relation to* – can be extrapolated out such that Nietzsche's descendents can be understood as thinkers who both continue to break with Nietzsche's thinking while still maintaining an individual relationship to that which attracts them to his thought. Here Foucault (1989) illustrates how he could be both a Nietzschean and an anti-Nietzschean. Likewise in the same text, Foucault illustrates how he could be both philosophical and anti-philosophical (in the context of academic philosophy at least).

So the question now is how to describe the paradoxical elements in the situation of the already innovative student who is governed by a politics of education that conceptualizes innovation based on the historical exercising of Cartesian thought; that is, a thought that today governs student innovative activities in relation to an objectified notion of innovation that is delimited to technological objective? Of course, the already innovative student may have the good fortune of studying in an enlightened institution and having a teacher whose political subjectivity and courage enables an open interrogation of all concepts relevant to the student's education, but this scenario cannot be assume. Investigating how the concept of innovation is understood in Education from the

perspective of the situation of the already innovative student will benefit how the role of Education is understood if the already innovative subject's situation acknowledges the theoretical conflict that accompanies student innovation in the way that innovation is understood in this discussion – as something much more than just technological innovation. Hence the situation of the already innovative subject is initially cast as a negative one.

Institutional and/or teacher thinking that can be thought of as Cartesian, can be interpreted to understand relations with the student in a binary form – particularly when exercising of power and affirming the hierarchy. The reality of this dynamic – one which is prone to creating breaks in thought and undermining relationships – is easily seen when disruptive student speech and actions are thought of in contrary terms to that which is required by the institution. As such, the rest of the discussion in this section is framed such that the already innovative subject (the student) is understood to be necessarily post-Cartesian and one who is governed in their learning by a teacher and institution that are Cartesian in their thinking. This dynamic can be thought of as the initial characterization of the aforementioned paradoxical situation that these two subjects share.

4.5
The situation of the already innovative subject as a black box

It can be argued that the *situation* of the already innovative subject does not actually exist for reason that the already innovative subject in Education does not actually exist. Be this as it may, it can also be argued, as it is in this investigation, that just as it is possible to say that the *situation* of the already innovation subject in Education does not exist because the same already innovative subject does not exist in *qua* society, the former exists on account of the existence of the latter. Moreover, just as the former argument can be discredited in various ways, so too the latter argument can equally be argued for in various ways. However, the intention is not to create a polemic – the illusion being that the student could not be considered to emerge unscathed from such an argument without compromising their innovative subjectivity. This is because the already innovative subject cannot

be considered a universal truth, just as the entrepreneur cannot be considered to be one either.[13]

When standard economics depreciates the value of learning from the process of innovation and as such treats the innovation process as a black box, it does this according to the interests of its own discipline. This is logical. To this effect, it is also logical that the metaphor of the black box, when used in this way, refers to a meaning and an object that are commensurate with these disciplinary interests. For example, if the purpose and objective of standard economics is to explain human behaviour in mathematical equations that provide macro-pictures of how humanity would be best suited to understanding the world – then this metaphor might need to be thought of as being representative of a shared understanding of a scientific apparatus and, as such, its object might be something like a *flight recorder*. The flight recorder is an apparatus where control is sought over the nature and readings of inputs and outputs, with some variance allowed for variance in the situation that required its use ('Flight Recorder', 2017) – an air accident.

Of interest to this investigation is not the black box as a scientific apparatus and a flight recorder, because it is this very mechanism of analysis, and its capacity for creating a certain kind of macro-picture of events, that necessitate the abandonment of theoretical interest in the process of innovation and the innovative actors associated with this process. When analyzing the cause of an air accident, for example, the inputs must be predefined before the accident; there is no possibility that those who are part of such an event can contribute to this input. If the nature of this data is not predefined, the data outputs cannot be controlled. Such a mechanism is only able to engage pre-codifable information: it is unable to factor in the tacit knowledge of passengers that might be critical to collectively understanding why such an event took place. As imperfect as this model and explanation of the use of a flight recorder might be, in explaining standard economic use of the black box as a metaphor, what matters is that the student, as a

[13] While there are explanations of what the entrepreneur does, that he is a manager and a businessman, as he is understood today (Drucker, 1997), there is universally accepted theory of the entrepreneur most likely because the their actions need to correspond to new conditions of change. Opportunities are both temporal and particular to the individual, and have something to do with the disposition of the spirit of the individual.

metaphoric passenger in this model, needs to be an active participant with a future, not a possible victim who should otherwise pull the blinds and go to sleep.

In Education, the situation of the student is different from the above situation: tacit knowledge is fundamental to his or her learning processes, to their innovative activity and this, in turn, conditions how they think and perform in relation to the requirement that their education results in the achievement of outcomes. The flight recorder cannot not provide either the meaning and/or be the object of the metaphor to which the black box refers in this case. Tacit knowledge might be imperative to the scientific process when attempting to extract information from a flight recorder; however this is external to the effect of the accident: the aforementioned tacit knowledge of passengers before and during an accident cannot be measured, for reason of the limited nature of the scientific inputs used. However, in the case of the meaning and object of the black box that might be used as a metaphor in Education, the meaning and object of the black box would need to refer to the living presence of the students and to the idea that they are protagonists in their individual and collective futures.

What would the object of such a black box look like and what would its significance be for students and, in particular, the already innovative subject? What kind of object would permit the possibility of seeing the significance of the black box as a positive experience for students in their learning? This is to ask, that instead of being possible victims (of an accident of the politics of education), what metaphor would enable students to emerge as beings from their education capable of more than just fulfilling the expectations that economics has for them as consumers and producers (see Becker, 1964; Dardot & Laval, 2013)? In other words, what kind of black box would elucidate for students the possibility of interpreting their learning as involving innovative activities? What kind of black box would elucidate learning as involving innovative activities that were not just about attending to the production of human capital as a process that increased the productivity of the institution?

These questions can neither be addressed by neoliberalism and nor can they be addressed by its negative, as in a critique of neoliberalism, as this negative is also an affirmation of neoliberalism. These questions will need rather to be addressed through “the surprising emergence of new natural and cultural *forms* that could not be deduced from previous facts and logical thinking” (Lévy, 2015,

as cited in Peters, 2015, p. 3, emphasis in original). Here Lévy is referring to the idea that "human qualities" (Lévy, 1997, p. 140), as new natural and cultural forms and the fact that they do not need to appear as a logical consequence of the workings of neoliberalism. He is highlighting the fact that such an event can transpire despite the fact that everything says that it should not, that the exemplary public good is more than a mere commercial good. The significance of this aspect of the discussion is that the black box that signifies standard economic theoretical disinterest in the process of innovation and the absenting of the innovative subject, cannot be the same black box that the contemporary student requires. The already innovative student who wishes to look upon their innovative activity as positively contributing to their learning, despite the fact that this required them to break with the Education that is provided them requires a black box that refers to a meaning and object that cannot be ascribed by the metaphysics that produces the commercial good. Their black box must be accompanied by the emergence of new natural and cultural forms, forms that function with a degree of autonomy that cannot be controlled by market arbitration.

The odd thing about standard economics' use of the black box as a metaphor to jettison its theoretical interest in the process of innovation is that the black box is not described in terms of its actual meaning or object. The most that can be assumed is that this abstract concept refers to a domain with which the so-called scientism of economics does not function. This lack of attention to the use of this metaphor can be thought of as an invitation.

Therefore given the approach taken in this investigation to neither break with economics or turn it against itself, it is argued here that there is value in continuing to use the black box as a metaphor, but to ascribe a more appropriate meaning and object to it its significance. Instead of a purely scientific apparatus that is only able to facilitate outputs based on the prescription of its inputs, and given the intentions of this investigation, the metaphor of the black box would need to refer a notion more oriented to the innovation process and the experience of its associated innovative subjects. To this effect, the black box will hereafter be thought of as referring to the object of the *blacked-out theatre* (see Mederos Syssoyeva, 2013).

The meaning of this metaphor is as follows: It refers to the dimmed lights in a theatre space, both auditorium and stage, before the commencement of a

performance. The significance of this blacked-out space is multiple in terms of the student experience of their Education. The fact that a play, by definition, cannot be performed exactly the same way each time it is performed alludes to the existence of an innovative process, in as much as the actors and audience act upon its form and content to make it accord with their tacit knowledge of what is appropriate or required in the moment. In these circumstances, the situation of the already innovative subject as a black box, becomes the subjective experience of each individual in the unknown of the experience of commencement in their education in the context of a shared experience of an event where "the processes of individual and collective subjectivization come together" (Lévy, 1997, p. 139). Furthermore, this experience and field of analysis is open to all educational experience – it is not limited to privileging the STEM subjects and it does not imply by its process that innovation can only be technological in its end. What is more, the domain of arbitration is reconceptualized so that the effectiveness of the processes involved can be judged both according to the commercial merit of the commercial good while at the same time allowing human qualities to be judged according to their deeper significance. This is to say the theatre of education is not merely judged according to its value in the market.

Conclusion

Key to understanding the situation of the already innovative subject is the problem of understating the distinction between the political and philosophical aspects of such a situation. While the first has to do with the power of numbers and/or the rhetoric and strategies required to leverage more space within power relations, the second has to do with the problem of thinking the paradox (see Badiou, 2010). When Education is only framed in terms of learning as something that takes place in the commodity space, then both these two aspects of student innovation are often, it is argued here, challenging to the institution. The worst scenario for the student is that their working through of their paradox is interpreted as representing a politically contrary attitude towards teachers and the institution. This would be a misunderstanding on the part of the institution for reason that the elements that might comprise a paradox cannot be measured by political thinking: they can only be described and thought of in relation to one another. In this sense, the situation

of the already innovative subject requires new possibilities of elaboration. For this reason the metaphor of the blacked-out theatre has been introduced. The discussion will return to this motif and metaphor later in the investigation.

CHAPTER FIVE

The Individual, Innovation and the Institution

Introduction

In as much as students are treated as anonymous subjects in the educational institution's productive function, they are agents in the institution's innovation processes. While students are agents in the these processes, they are also external to them in that they are fulfilling a vision that is external to what motivates their learning: at least, it must be speculated as being so. On the other hand, this mere population by students of institutional processes of innovation is hardly surprising. Education's commercial contract with students involves fees for services provided, but being active protagonists in the institution's introduction of changes to its production function is not a principle in this contract. The concern is how are student relations with the institution theorized in light of the fact that the student's understanding of innovation is informed by a broader notion than mere technological innovation? As mentioned elsewhere in this discussion, there is more to technological innovation that just *technology* (Godin, 2015b). This raises the importance of human capital theory with respect to how it ties students to the institution's production function and how human capital theory in turn influences the prescriptive capacity the curriculum has in prohibiting students from being creative and being active to their own innovation processes. This issue is d in this chapter, by bringing the institutional intentions of endogenous growth theory into play with its intentions with respect to the creation of human capital. When endogenous growth theory is theorized such that it might underpin the already innovative student's will to be innovative in their learning, then student ideation needs to be controlled. This inevitably creates a tension in student-institution relations.

5.1

The concept of the educational firm

In speaking of how the concept of innovation has been adopted by commercial management in Education, the allusion has intermittently been made in this

discussion that the configuration of the quasi-commercial enterprise involves the use of commercial practices associated with the 'educational firm'. This convenient analogy only serves the discussion up to a certain point. The *educational firm*[1], as it is momentarily referred here, can be likened to the purely commercial firm from the point of view of the school or university's adoption of a commercial ethos that supposes the institution's commercially viability in the market place. Beyond this achievement, the meaning of *educational,* and what it might refers to, would need to be given importance unique to its purpose.

This strategy for commercial development refers to the adoption of such practices as building the firm's identity around a vision, a set of values and a set of principles. While such rhetorical articulations of a vision, values and principles are usually prominently displayed on the educational firm's website, they are probably better understood in the enactment of the firm's mission statement and the strategic plan. What is noteworthy about the strategic plan, is that it is a commercial strategic plan and not an educational one, or in other words, there are not two plans: the commercial strategic plan is made to cover for an educational vision of its own purpose, and so on. Taking this orientation towards the notion of commercial a step further, if the enactment of the mission statement and strategic plan are reverse-engineered, it becomes evident that the vision, values and principles are for the most part singularly commercial in their intentions, and bear a limited relationship to the philosophy of education that guides the work of the institution's academics or teachers.

So what makes an 'educational firm' educational – that is, beyond the fact that it offers a service that provides the fulfilment of qualifications for fees? Why is an educational firm not just like any other firm, company or corporation? Because an educational firm exists, as it were, outside the economy or in other words, it is commercial in its interests, but it is not entirely of the economy. That is, while its management practices are drawn directly from the commercial world[2], they are practiced in the public domain, the non-proprietary domain; meaning, student fees and government funding are the only inputs that can be

[1] Equally, the educational institution could be referred to as a company or a corporation: some universities have more than one campus and multiple campuses in more than one country.
[2] The use of a vision, values and principles are consistently evidenced on the websites of commercial enterprises such that the genealogy of an educational firm's vision, values and principles are obviously derivative as the key elements for the orientation of development.

leveraged to produce increased operational performativity and commercial outcomes. What makes an educational firm not entirely of the commercial world, is that the reception of fees and government funding (along with private and commercial research funding) just occurs in punctual moments, and is not part of day-to-day activities. The production function of an educational firm largely involves structuring operational activities that will fulfil a promise to deliver on something that is already paid for, [3] the performance of which is not measured just by aggregating the assessment results, which produce the school's or university's ranking. In this sense, it is argued that no extra creativity needs to be added to what has been already promised; given what is already known of historical commercial success of an equivalent delivery by the same service. Of course, just surviving this regime of delivery can require constant creativity in the form of a teacher's work, but a teacher's work is secondary to the operational performativity and commercial outcomes: a teacher's work is not necessarily being reflected in the assessment results.

This means that some new questions need to be asked about the purpose of the school and the university. What if an educational firm were deconstructed and d with the purpose recognizing its subjects as comprising an integral society in itself? This question supposes the integration of proprietary and non-proprietary domains of human activity within a commercial paradigm, and the population that occupies itself with activities that are non-proprietary could also be thought of as comprising a society apart. As such, the analysis of institutions that are active in the non-proprietary domain needs to be done with this in mind, which is to say the analysis of the purpose of educational and commercial activities need to acknowledge the purpose for which this particular society holds itself apart.

Drucker (1969) makes the observation, when comparing totalitarianism and the tyranny of old, that totalitarianism "aims at total control of society rather than at control, of government alone" (p. 305). Because it is possible to think of an educational entity as comprising a society – a collective entity "where every social task is discharged in and through a large organization" – then "total control

[3] An Operations management (OM) is the business function responsible for managing the process of creation of goods and services. It involves planning, organizing, coordinating, and controlling all the resources needed to produce a company's goods and services; the function having to do with the educational nature of the commercial business.

seems both attractive and possible". While it may be confusing and even bewildering to many people to think of an educational firm as being governed by a totalitarian frame of thinking, it would appear appropriate that educational firms check, from time to time, whether their discharging of tasks in and through its organization benefits the whole of its society or just those whose task is to leverage greater commercial performativity.

If this analysis is too difficult to imagine, then it might begin with an examination of the purpose of making this discharge of tasks attractive to its subjects. To what extent, for example, does this attractive aspect signify a will to total control? In general terms, it might be speculated that the political techniques that make the activities of an educational firm attractive also guarantee the universality of this control such that it becomes impossible for its subjects (or society apart) to question the firm's vision, values and principles in such a way that this questioning could be thought to serve the emergence of new understandings. In the context of this discussion, it is the intractable nature of this already established new conservative thinking towards the significance of the already innovative activity of students that alludes to the notion that the firm seeks total control over all subjects within its society, and that adherence to its vision must not be disrupted.

It might then be asked, what counts as disruption? Recently, a key policy-maker at a national symposium on learning environments rejected any call for the possibility of teachers or students re-evaluating the key factors employed in strategic development – vision, values and principles – because stepping outside the triangle that these phenomena create would undermine the success of the commercial project: the implementation of innovative learning environments (Osborne, 2017). It will be argued in Chapter Seven that student innovation, if framed according to this kind of politics of education, can only be evidenced in logistical innovation, as an innovation that serves merely the existing commercial aspirations of the institution.

5.2

The survival of the individual student

Proceeding with the above discussion, it might be asked, under what conditions is it possible for the already innovative subject in Education to break with the above

described triangulation of vision, values and principles while maintaining a relationship with the educational institution?[4] Drucker (1969) in the chapter 'How Can the Individual Survive?' remarks that "institutions doing different tasks must be autonomous" (p. 308); different tasks in the contemporary context mean tasks that can only be done independently of the rules of commercial enterprise. Drucker goes on to add that "[t]he freedom of the individual in a pluralist society demands autonomy of institutions". The question is, to what extent is the neoliberal quasi-commercial enterprise of Education an autonomous institution such that individual freedom is both understood and addressed as a condition of an institution being autonomous? Students have commercial freedom, but if the educational experience in an educational firm is also to be the result of such autonomy, then there must also be freedom, for instance, to evaluate an educational firm's vision, values and principles in relation to the interests of the individual, the collective, knowledge and society.

It would seem freedom of the individual, as experienced independently from that which is governed by market principles, can only be anticipated if the educational institution demonstrates an autonomous disposition as described above. This suggests there is more to learn about what an institution does with respect to the manner in which it conditions the possibility of an individual's freedom. According to Shionoya (2004), Schumpeter defined economic sociology as "a sort of generalized or typified or stylized economic history" (p. 339). To Schumpeter, it is the "institution that can generalize, typify or stylize the complexities of economic history" – referring to the economic history of the society that populates the institution. The educational institution has something in its makeup that enables it to generalize, typify and stylize the behaviour of its students such that if it does not want its classrooms populated with already innovative subjects, it makes itself attractive such that there is no alternative but to accept the thinking that is already in the system of education. How would this be achieved so simply? By generalizing, typifying and stylizing through the unique use of market principles as when this is done, non-market principles have no role to play.

[4] Having made the point of how the concept of the commercial ethos can stifle a non-commercial interest in the value of education, the discussion will revert to using the terminology educational institution rather than an 'educational firm'.

But this only tells half the story in terms of the function of the concept of the institution. According to Shionoya (2004), to Schumpeter,

> the concept of the institution is intended to achieve the synthesis of theory and history in that while it is a means of generalizing historical events [of which student innovation that follows non-market principles could be considered one], it is limited due to its historical relativity and specificity. It can be conceived of as a compromise between the generality of theory and the individuality meant by history. (p. 339)

The problem for the emergence of individuality, in the form of innovative activity in the educational institution, is that commercial management exercises control over the theory of how the institution should be managed and, as such, over how history and theory should be synthesized. This would be regarded a traditional responsibility of the educational institution: to assume responsibility for the educational needs of society and, as such, to assume responsibility for how these needs are met in the sense of preparing students to participate in the activities of the world.[5] In the pre-neoliberal paradigm, the synthesis of the theory of education and the generalization of historical events both outside the institution (across a pre-global world panorama) and inside the institution with respect to the generalizing of individual events that mark the education experience of student maturation processes were more open to broader implication by diverse interests in society: something the involvement of the history of philosophy of education involvement would attest to.[6]

However, the value of this synthesis becomes twisted beyond recognition with the templating of neoliberal politics in the management of Education. Both history and theory are debunked – history, on account to series of factors that fermented globalization at the possible expense of the scholarship of history. It is as if local and regional histories need to be reconstituted as the substance of a new global relationship with the world – one that no longer gives credence to the current relevance accorded local and regional histories. Theory has been debunked

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[5] Dardot and Laval (2013/2009) provide a more technical explanation of the task when they say that "[i]nstitutions were constructed to train and supervise subjects somewhat recalcitrant to this existence and to make diverse interests converge" (p. 259).

[6] Philosophers of education in New Zealand have been shut of the development of education policy from the time neoliberalism assumed political control of education (Smeyers & Marshall, 1995).

on account of discourse not implication the actor's life in the voice of he who speaks (see Foucault, 2007). This development coupled with the political of neoliberalism being driven by economic concerns, supposes that theory has been replaced in Schumpeter's synthesis by rhetoric that makes an argument without being open to argument.

So what has come about during institutional change over the last 30 years? While it is possible to see topical periods of focus on institutional theory of growth, institutional theory of sustainability and institutional theory of entrepreneurship, it is still difficult to say what an institution is. As Scott (1995) states, there is "no single and universally agreed definition of an 'institution' in the institutional school of thought" (p. 235). While the contemporary educational institution might conveniently, pass for some, crudely-speaking, as a neoliberal institution, "new public management", which accompanied this reassertion of liberal values, "is dead", the institution is now shifting towards a digital system of governance (Peters, 2013, p. 20).[7] The question then becomes, given that it must be assumed that "digital-era governance" is only just beginning to emerge, how should the individual-institution relationship be thought about in the context of the institution's use of digital capitalism as a mean of recognizing what the institution does to stifle student innovation?

This is a convenient moment to return to the discussion of Schumpeter's thinking on the institution, where Shionoya (2004) has the following to say:

> It is the core proposition of institutional economics that institutions and individuals constitute an action-information loop (Hodgson, 1998, p. 176). Institutions are social norms, consisting of law, morality, and customs. Institutions offer information on normative rules to individuals, and actions of individuals, in turn, provide institutions with information on habitual behaviour. While the former process is concerned with individuals embedded in a society complying with a given state order, the latter process can involve deviations from customs and routines and create new order. Schumpeter sometimes called the institutional totality simply the *Zeitgeist* that exists outside the economy. Therefore the action-information loop between institutions and individuals present another picture of the interaction between economic and non-economic areas in

[7] This situation is made more complex by the diversity of institutions that are now emerging to compete with the traditional institution, including private universities, charter schools, studio schools, forest schools, alternative universities and colleges, and so on.

> addition to the interaction through social classes. (p. 339, emphasis in original)

This explanation of the relationship between the individual and the institution supposes a symbiotic function that facilitates equilibrium between the forces that protect the old order and the will to bring about new order. Independent of ideological interests, this success of this equilibrium would appear to be dependent upon the equity of the benefits of the action-information loop. If the economic and non-economic factors that pass through this action-information loop are not representative of the interests of both parties – the individual and the institution – then the loop is likely to be in function of either entrenching the old order or the disruption of the will to change – the old order coming out on top as otherwise the institution could not be thought to survive.[8] While this balancing act might be facilitated by the digital nature of contemporary institutional governance technologies to create, at a glance, periodic global pictures (for example, financial reports) of the dynamic, it is difficult to anticipate that what comprises a non-economic factor to the student (for example, information included in a course review), that is also representative of a non-economic factor to the institution, and that such non-economic factors inform the renewal of how Education is understood. Without this equivalence valuation of the non-economic factors, students can only be thought to be valued in terms of the institution's commercial interests. Of course, because the original contract still stands – fees for qualification – it is argued that such differences in the evaluation of factors (economic and non-economic) that measure performance of an educational institution are easily removed from view.

These differences cannot be removed permanently because the aesthetic experience and thinking that produced such non-economic factors are political and

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[8] Schumpeter (1954) speaking on teleology (the purpose of institutions), has the following to say: "Mostly, this improper use consists in exaggerating the extent to which men act, and shape the institutions under which they live, according to clearly perceived ends that they consciously wish to realize in the most rational way. This is why the teleological error may be called a particular instance of the wider category of rationalist errors. It is interesting to note, however, that Aristotle was quite free from the teleological error in matters outside of his social science. In *Physicae auscultationes* (II, 8) he recognized, for instance, that our teeth are adapted to chewing food, not because they were made for this purpose but, as he thought, because individuals who are by accident endowed with serviceable teeth have a better chance of surviving than those who have not. What a curious piece of Darwinism!". (p. 55)

by definition define the diversity that makes up the community that populates the institutions' activities. In this respect, the contemporary institution is different from the one Schumpeter describes (as cited in Shionoya, 2004). The educational institution today cannot be thought of as a *Zeitgeist* – as a reality apart – because the educational institution of today has been grafted onto the stock of the commercial economy; it has been made to work for the commercial economy such that it becomes an agent for an external vision of what its purpose should be. In the recent past when Schumpeter wrote of the institution as a *Zeitgeist* that was outside the economy, such diverse roots to the collective epistemology continued to subtly feed the actions that gave the institution its purpose – economic and non-economic, as it was.

5.3
Tradition and new-conservatism

When innovation is thought of as involving change through the production of new combinations of knowledge that temporarily define common identification with a particular articulation of the reality in which this change is promoted, then change is potentially disruptive to the current reality to which it is about to be applied. This dynamic is an especially complex one in Education for reason that the educational institution depends on continuity of practices and ways of doing things (habits) that in turn become *traditional* practices and ways of doing things (see Bergson, 1935).[9] Such tradition is not necessarily a good or a bad thing.

To understand what kind of threshold tradition is in an institution that both prides itself on the production of both new knowledge and graduates with innovative capabilities,[10] it becomes necessary to the meaning of tradition as a threshold. In colloquial terms, what kinds of change and novelty are possible and what kinds of change and novelty are not possible? In the theme of inquiry in this investigation, the question is what kinds of innovation are possible and what kinds of innovation are not possible? To be more explicit, innovations that employ new organizational technologies in the form of digital programs that streamline the appearance of performativity might be possible – this depends on whether the

[9] This idea is elaborated upon in Chapter Eight, Section 8.2.
[10] A viewing of most university websites confirms the essence of this self-characterization.

innovation comes from above and from the gatekeepers of tradition. However, what of innovations that employ technologies of the self, innovations that benefit not only the individual concerned but also the network of peers with which they interact? Are these innovations possible at the threshold of tradition? [11] Put more bluntly, what kinds of innovations are possible when innovative activity is asserted from below? Of course, if Education is configured such that its processes of ideation do not acknowledge student innovation prior to graduation, then of course no innovation can possibly be thought to come from below. To this effect, student innovation in the collaborative network of information economies has to be thought of as being of a covert nature. The discussion returns to this theme in the last section of this chapter.

To propose the question that it is necessary to know what kinds of innovations are possible, as a means of learning about the nature of the threshold of tradition, is but one question. What of the institution's profile at this moment as one that recounts the institution's history in relation to change? In addressing this question, it would seem pertinent to engage Schumpeter's comment in 1950 (nearly 70 years ago) that innovation becomes "routinized" (as cited in Stinchcombe, 1990, p, 152), when the economic requirements for economic evolution sees the disappearance of many of its economic effects. As Stinchcombe notes, "[e]ven if innovation continues, … its routinization destroys the entrepreneurial function". In this situation, it is not difficult to see that the innovation that occurs must for the most part be incremental rather than radical, and that it must serve the continuity of existing institutional traditions rather than be open to new initiatives that might challenge existing foundations. It is in this moment that it becomes possible to speak of the educational institution as defending its conservatism, and furthermore of what Drucker (1959) predicted would be the result of innovation losing its way: the production of a "new conservatism" (pp. 33-34).

[11] See Besley and Peters (2007, pp. 19-32) for an analysis of the relationship that technologies of the self and technologies of domination share.

5.4

Human capital theory: A political instrument without alternatives

Interest rates on mortgages must be at just correct level for capitalism to tie Education to its commercial enterprise. This is to say, the student's investment in their future capacity to capitalize on their possibilities of financial security, through investing in their education, must be sufficiently screwed to the cost of living that nobody would suppose an alternative to the theory of human capital and therefore, to the role that Education plays in economic development. It is as if without reliance upon the fidelity of the assessment machine, the necessary skills and knowledge could not be acquired, as there is no other theory that outlines such a possibility of financial security.

From a practical point of view, the theory of human capital is both soundly formed and consensually accepted as the ideologically appropriate mechanism to use to this end. Alternatively, the theory of human capital could be described as being ideologically embedded in a manner that makes it difficult to imagine how Education could serve the future in any other form. This said; it is evident that some very dramatic changes are on the horizon. Artificial intelligence is currently being reported as involving the imminent replacement of workers by automated processes, especially in "low-income jobs in offices and administration, sales and services, transport, construction and manufacturing" (Deloitte, as cited in Blundell, 2016, p. 17). This means that the certainty of the appropriateness of this system of education comes under scrutiny, or at least its reliance of the creation of human capital.

In this section, it will be argued that the best way to test the value of human capital is to theorize the relationship between the theory of human capital and the theory of endogenous growth. Why the theory of endogenous growth? After all, this theory now hardly appears in education policy,[12] and publications that influence education policy coming out of The Treasury have not had much new to say on endogenous growth theory since circa 2005.[13] The reason for giving importance to endogenous growth theory in this investigation is the increasing importance of knowledge in education acquired in collaborative peer-to-peer

[12] See http://www.education.govt.nz/ A good search for scholarly articles tells a similar story, the principal exception being articles on the exogenous and endogenous funding of education.
[13] See http://www.treasury.govt.nz/publications

networked economies of information in innovative learning environments in schools and universities. This is to say that when there is greater student autonomy resulting from, for example, a change from one teacher teaching 30 students to two teachers facilitating learning for 100 students, there is more individual need of endogenous growth.

Beyond the provision of discrete descriptions of these two theories and the problematization of the nature of their relationship, the discussion will engage a small array of issues that structurally stifle the formation of innovative subjectivities in educational institutions. To do this, the discussion will begin with Becker's (Becker, Ewald & Harcourt, 2012) notion that the theory of human capital puts the individual at the centre of economic life.[14]

In this discussion, human capital is understood to refer to skills and knowledge acquired through the student's investment in their education as an investment that provides them with capacities to respond to employment opportunities (see Becker, 1964, 1971, 1976; Schultz, 1971).[15] While human capital is also thought to refer to what the individual has inherited (Becker, 1964), here the focus will be limited to the acquisition of skills and knowledge. The reason for this is that technological development is moving so quickly that it is argued that heuristic learning in collaborative peer-to-peer networked economies of information may be diminishing the historical advantage of inherited cultural or economic capital. The above definition provides the means of putting Education at the service of economic development through the supposed provision of pathways to work; that is, as long as students treat their experience of their education as an entrepreneurial enterprise where they work upon the self to create *homo economicus* or economic man.

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[14] The reference Becker Ewald and Harcourt (2012) refers to a seminar. In this instance, as throughout the thesis, it is only Becker who is quoted. Ewald was Becker's adversary in this discussion and Harcourt chaired the discussion.

[15] There is not the scope in this investigation to outline the history of the development of the theory of human capital (Becker, Ewald & Harcourt, 2012), in either its historical or contemporary lines of thinking (Becker, in Becker, Ewald & Harcourt, 2012) or to discuss human capital in terms of social capital, cultural capital and intellectual capital as does Bourdieu (1986). It would seem noteworthy to make the point that there has been little new research on human capital theory during the last 10 years. The theory of human capital is an applied theory where most of the emphasis has been on changes in how knowledge and skills are understood, and how these can be best developed to the end of economic development. For example, the authors of *The New Zealand Curriculum* (2007) and their more recent text *Key competencies for the future* (Hipkins et al., 2014) make no mention of the theory of human capital.

The theory of endogenous growth "holds that economic growth is primarily the result of endogenous and not external forces" ('Endogenous Growth Theory', 2017), as against holding that economic growth is primarily the result of exogenous and not internal forces. Endogenous growth therefore refers to all internal activities (within the institution) that can be measured as contributing to the macro equation of what equates to economic growth. In Education, this means "investment in human capital, innovation and knowledge", among others. The theory of endogenous growth is therefore, on the one hand, broader and more complex than that of human capital, in that it is not limited to identifiable skills and knowledge and, as such, is more open in that it does not specify what type of innovation or knowledge should contribute to economic growth. To elucidate further, when capitalism's fundamental categories or factors of production are no longer thought of as "land, labor and capital" but as "people, ideas and things" (Romer, as cited in Peters, 2008, p. 79), then this change in the epistemological framework must be thought to change the conditions of economic growth. The presence of people and ideas as categories will have the effect of humanizing the old category of labour, in that it must now be understood that new ideas require expansion of the role of creativity.

On the other hand, when the theory of endogenous growth is applied to Education, it focuses on the collective performance of the populace of the institution. In as much as the theory of endogenous growth refers to a marco-representation of the internal activities that produce economic growth – for example the activities of a centre, a school or a university ('Endogenous Growth Theory', 2017) – it does not refer to how distinctive subjectivities contribute at the micro-level. This is to say, although the categorization of the internal forces of an institution might refer to the presence of people as a fundamental category, these internal forces do not refer to the internal forces that people themselves exert or the "animal spirit" (Akerlof & Shiller, 2009) that drives them to be entrepreneurial, to be innovative or to be creative. Surely, the entrepreneurship requires the activation of internal forces within the very individual for there to be any *change in meaning* or *practice*, Peters and Besley (2009). Just as the innovative subject is yet to be theorized, so too is this aspect of the theory of endogenous growth is yet to be theorized.

The question might be, why has endogenous growth theory not been theorized in relation to change in meaning and practice in activities involving people, ideas and things in a way that recognizes individual forces? The simple answer is that economics has no intention of developing models that recognize distinctive individual efforts to *change meanings and practices* and that maybe economics does not see this as its task. Whatever the case, this question can only be posed here in relation to the significance of "endogenous necessity" (Boudon, 2014, p. 1) to the heuristic individual and already innovative student. It is the individual who is able to be entrepreneurial and/or innovative, who draws from their endogenous sense of necessity. What is evident is that there is a paradox here that has not been made explicit: the means by which the politics of education seeks to make Education accountable to economic development cannot measure the activities that result from individual endogenous necessity and produce student innovation.

If the theory of endogenous growth uniquely provides a framework for the creation of macro-models, it is difficult to see how people could be a category capable of creating or combining new ideas. In other words, this creation and innovation would need to be begun or initiated by others, by those who govern these processes. If the endogenous growth of an institution functions in this way, this growth is *directed* growth, which can only be an exogenous experience of what growth requires to the people who populate these processes. Here, endogenous necessity is an expression of management's will *to be*, the internal forces of which do not extend to include those who execute that which has already been decided by management. If this paradox is not made explicit, it ambiguates the process of further theorization with respect to how internal and external forces interact and, ostensibly, how the individual subject might initiate something new and unanticipated from below.

As suggested, it would seem that this ambiguity enables the reverence for human capital theory to inhibit how individual creativity and innovation are to be understood. If, for example, human capital theory supposes that the individual should treat their education as an enterprise that requires them to work upon the self, such that they fashion the self as the producer of human capital that is in accordance with the politics of education and the Education that is therefore provided them, then this action would seem tantamount to accepting a prescription

of the sort of consumer and producer he or she should be? In these circumstances, and completely apart from the fact that economics does not intend that it should deal with individual necessity informed by subjective diversity, the individual will be unable to appeal to their own endogenous necessity without also being politically disruptive. The application of human capital theory requires that students should defer from referring to the self in the moment of accepting to be being governed by the politics of education in that they must accept to be governed by such politics *without* referring to the relationship they have with the self. This precludes any possibility of an expression of endogenous necessity.

A colleague at another university recently recounted the following anecdote. At a Faculty meeting of course leaders, staff were asked to watch out for particular student behaviours, in particular the behaviour of students who provided evidence that they had become radicalized. Having clarified that radicalized did not refer to an act of violence against fellow students, staff or the institution; my colleague proceeded to question what radicalized meant. He was led to understand that such radicalized behaviour refers to behaviour that cannot be anticipated and that is of a nature that can be thought to challenge the politics of education. The question is, while radicalized behaviour, as it is being called here, may not be welcomed by the institution, it may be the only means of identifying endogenous necessity in students and therefore their innovative capacities. While such student behaviour may be regarded by the institution as disruptive and negative in nature, it may also be regarded as challenging convention and tradition, and that this indicates the institution is no longer concerned with the education of its students – that the defence of tradition is more important than questions concerning education and innovation. One way of interpreting this scenario is to say that the institution is concerned that students should not stray from the path that guarantees the importance credited to the production function through which human capital should be acquired. This is to say; the institutional production function that does not require more from students than that they should be content with populating this function. Accordingly, it could be said that teachers are being asked to repress endogenous necessity in individuals when this *will* expresses itself in heuristic student learning and in the production of political subjectivities that questions the politics of innovation.

This above scenario is an easy one to become caught up in, in the sense that it is possible to become trapped in the ideological semantics what radicalized means in a given context, forgetting that the politics of the reactionary or conservative is itself working through economic interest. This is to say, neoliberal politics works for neoliberal economics. Without analyzing such a scenario, theoretical progress is not possible without also analyzing the commercial interests of the institution and how it realizes its intentions. Put in simple terms, the starting point needs to be that the creation of human capital is the principal mechanism by which these intentions are realized in Education. To this effect, the mechanism of human capital creation conditions all institutional thinking and activities. The question is how much does human capital creation have to do with Education, if it is this same mechanism that stifles endogenous necessity.

This question is addressed in the next section.

5.5
Endogenous necessity

In this section, the intention is to take up the question posed in the last section: how much does human capital creation have to do with education, if it is this same mechanism that stifles endogenous necessity? Furthermore, the intention is to theorize how this question might be addressed in the face of Becker's (Becker, 1964; Becker et al., 2012) assertion that all human activities are a form of economic activity. As Becker puts it, "[t]he economic approach provides a valuable unified framework for understanding all human behaviour" (as cited in Dardot & Laval, 2014, p. 167). Elaborating, he says:

> The heart of my argument is that human behaviour is not compartmentalized, sometimes based on maximizing, sometimes not, sometimes motivated by stable preferences, sometimes by volatile ones, sometimes resulting in optimal accumulation of information, sometimes not. Rather, all human behaviour can be viewed as involving participants who maximize their utility from a stable set of preferences and accumulate and optimal amount of information and other inputs in a variety of markets. If this argument is correct, the economic approach provides a united framework for understanding that has long been sought by and eluded Bentham, Comte, Marx, and others (Becker, as cited in Besley & Peters, 2007, p. 153).

It is curious how human capital theory has come to fill what must have been a gap in neo-classical economic thinking with respect to how Education could be put at the service of economic development. It would seem that there is something missing in the historical analysis of what it is that human capital theory is supposed reconcile. While it is not possible to engage this point in depth in this discussion, it might be noted that this framework has the effect of doing two things that need to be briefly commented on here.

The first is that, Becker's (1976) framework creates the effect of providing a solution irrespective of the fact that the solution itself does not apply to the problem that it pretends to address. Godin (2015a) remarks, as iterated elsewhere in this discussion, that innovation has become the spontaneous solution irrespective of its relationship to the problem it addresses. This is to say that while a solution can be thought of as a response to a problem, it only need relate to the problem in as much as it is thought that a solution of any kind might be supplied. Of course, in the neoliberal ambit, an explanation is provided that justifies the logic of the application but the logic itself is rarely d. This latter pathology is possibly the product of popular media analyzing the relationship between solutions and problems without objectifying the ontology of either, which itself might suppose that the popular media should lead the action in addressing problems, which of course they do not see as their task.

The second is that, while Becker provides a "unified framework for understanding all human behaviour" (as cited in Dardot & Laval, 2014, p. 167), he only provides the macro solution for how human behaviour can be described. This is a Cartesian picture that objectifies the individual only in as much as the individual's attributes can be made useful to the macro account. It is argued here that not only does this form of diagnosis not create a picture of the whole individual, but it sells the story to students, through Education's adoption of human capital theory, that their education experiences comprise what it is they are provided: that the positioning of the student at the centre of economic life (see Becker, in Becker et al., 2012) might in fact have the effect of disenfranchising the student. Lemke (2001) comments, when speaking of the demise of the category of labour as a category in economic theory, that "labour has remained under-illuminated in the role of a *passive* production factor" (p. 198, emphasis in original). Labour here is a proxy for the student, where the student pays to learn

until they are sufficiently qualified that they might be paid to learn. Paraphrasing Lemke, students can be said to have been "neutralized and construed only using quantitative concepts and in temporary forms". As Dardot and Laval (2014) put it, "*man as capital* – which is the real meaning of the concept of 'human capital' – has proved incapable of producing the mass of subjective changes we observe today" (p. 168, emphasis in original).

As a final word, this above analysis can be related back to the paradoxical situation of the already innovative subject in the following manner. If it was Becker's (Becker et al., 2012) intention to have the individual thought of as not only a consumer but also as a producer (Dardot & Laval, 2014), then it must not have been his intention that they become conscious of their capacity to produce. This is to say, if to be a producer means to produce the self as human capital, then the economic systems that enframe Education make no requirement that Education inculcate this productive capacity in students through either encouraging them to pursue their own innovative processes or to particulate as conscious contributors to institutional innovative processes. In this way, human capital theory provides the nexus for the absenting of students from active participation in innovation *per se*.

Conclusion

Perhaps it is too early to be ambitious for the already innovative subject but in light of the recent roll-out of innovative learning environments (see OECD, 2013), it might not be long before innovative students become protagonists in the transformation of their own institutions. While the politics of innovative learning environments are yet to be worked out with respect a pedagogical engagement with students[16], the situation of the student has already been, in part, liberated from the politics that govern traditional teacher-student relations. This development alone should open up a new area of inquiry. If the introduction of ICTs supposes a new autonomy for students in their learning, then after a point it is argued that the student's relationship with the self must begin to inform their

[16] The education that student-teachers have not has not included the experience of learning in innovative learning environments and, as such, it should not be expected that there would be any innate understanding of such a different learning experience, which will in the meantime inhibit the development of appropriate pedagogies. Pedagogy may not even me the appropriate discipline for what is required in these spaces.

learning in a manner that reflects this autonomy. To make the point succinctly, if innovative learning environments change the ratios of teachers to students from say 1:30 to 1:40 or 1:50 for example, then students in these spaces cannot be expected to continue to be beholden to teachers as they once were. This supposed shift in ratios implies both a transformation in power relations and the protagonism student innovation within teacher-student engagements. With this development in mind, the next chapter will seek to provide the foundation for a reflection upon the idea that the theorization of technology in Education would benefit from an engagement with Foucault's (1997a) explication of his understanding of how pragmatic reason comprises an interplay of four technologies: "the technologies of production", "the technologies of sign systems", "the technologies of power", and "technologies of the self" (p. 117).

CHAPTER SIX

A Question Concerning (Foucault's) Technologies

Introduction

If the discussion thus far has challenged the manner in which innovation is understood, this challenge has to do with Godin's (2015b) idea that innovation is *something more than* just technological innovation. The argument that follows seeks to convince its reader that understanding that innovation is *something more than* just technological innovation becomes crucial to the problem of understanding how society is implicated in the role innovation is made to assume in realising the transformation of society (see Drucker, 1959). Technological innovation to this effect asks the question, what is the nature of society's genealogical protagonism in its transformation that might otherwise just be called the technological transformation of society? This broader question had to be asked first in order to ask the question specific to the subject of this chapter: what is the nature of the innovative subject's protagonism in this technological transformation of society? The argument is that, to understand the innovative subject's protagonism, it becomes necessary to reconceptualize the relationship between the will to innovate and the problem(s) innovation is said to address.

Following this, the discussion moves to address how technological innovation is understood in Education. Drawing on the analysis done by Godin (2010a, 2010b, 2015b, 2015c), the influence of American and European traditions are examined with respect to how both commercial management and researchers think about technological innovation in the educational institution. These contrasting influences are further complicated by a brief analysis of Foucault's (1997a) understanding of technology, with a view to highlighting the role technologies of the self have in the formation of innovative subjectivities.

6.1
History and scholarship

While the concept of technological innovation has been in use since the early 20th century, as can be seen in the work of anthropologists, historians, management,

policy-makers, economists, and sociologists, it is only in the last two decades that this concept has become the unique specialty of management, policy-makers, and economists (Godin, 2010a, 2010b). As Godin explains, the use of technological innovation has come about on account of these actors responding to the development of a new tradition with respect to how innovation is understood. There already existed the economic tradition that follows the idea that "technological change" is concerned with "innovation *as* technological invention", which is then used or introduced into an industrial production process (Godin, 2010b, p. 6, emphasis added). This tradition has its origin in the United States.

The second tradition, that has its origins in Europe in the 1970s is, according to Godin (2010b), more concerned with "the commercialization of technological inventions". This tradition emerges as the deliberate product of the scholarship of Chris Freeman, not simply in the form of an investigation of the existing American tradition, but in the form of an invention of a new tradition. While this second articulation may seem like a semantic obfuscation of the first, its characteristics are quite distinctive (see Section 6.1.2).

The relevance of engaging with these two traditions is that their understandings of innovation are brought to bear on Education in different ways, meaning any deconstruction of the politics of innovation in Education needs to be thought of in terms of the interests of these two traditions. In the following section, the American tradition of *technological change* will be explained, following which there will be an explanation of the European tradition of *technological innovation*.

In order to avoid unnecessary ambiguity, it becomes necessary to highlight, before beginning, the fact that historical use of the terminology *technological innovation* has not been universal. While, a century ago, technological innovation was an object of investigation for anthropologists, sociologists, historians, and economists, and then, in the 1940s, economic historians, it has only been since the 1970s that economics has dominated our understanding of technological innovation (Godin, 2010b). This later development, which emerges from the European tradition, provides an initial understanding of the influence that this tradition has had in the commercial development of educational institutions. Of particular relevance is this tradition's

approach to the "research-intensive" economy and the adaptive character of educational institutions to the diffusion of policy that has come out of the OECD.

6.1.1
Technological change: The American tradition

Godin's (2010a) thesis on the American tradition is that innovation, as a category, acquires the terminology *technological innovation* through a series of developments that take place in the aftermath of the Second World War. This process begins with economists borrowing and adopting the category "invention" (p. 6), from which the "disciplinary matrix … technological change" is invented. This latter articulation leads economists to focus on "technological innovation as commercialized invention". In short-hand, this development moves from *invention* to *change* to *innovation*.

This series of developments began with the US National Bureau of Economic Research (NBER) Conference on *The Rate and Direction of Economic Activity*. According to Godin (2010a), this was one of the first conferences to be devoted entirely to "the study of science, technology and innovation" (p. 4). Technological innovation is not discussed at this conference – this comes later. Rather, this was a gathering of minds, which initiated a study that moved thinking in this direction.

What should be noted is that economists "borrowed and adapted an existing category" (Godin, 2010a) – invention, a category conceptualized by other fields – and adapted its use "to their own purposes" (p. 6). What also needs to be noted is that, if terminology can be borrowed and adapted in this manner, the actors who borrow and adapt are setting the rules, or at least an example to others, and, as such, should permit like behaviour. The researcher is not taking the moral ground here, but merely saying that there should be transparency, and equal freedom to others to do the same. This is, in part, the purpose of this investigation: to give meaning to the student as an innovative subject and that, through the adoption of this language, existing problems around student innovative activity can be understood in new ways.

Continuing on, according to Godin (2010a), the focus of the study of invention by these early researchers was "efficiency" (p. 6), an objective that

could easily be associated with today's triangulation of science, technology and innovation, with the difference being that neoliberal economics now requires efficiency to work for the goal of "performativity" (Dardot & Laval, 2013). Proceeding studies of technological change focused on the tool adopted – "the production function" – to measure this form of change (Godin, 2010a). The last phase of this conceptual development that produces what we now know as technological innovation is, according to Godin (2010a), associated with a process of catch-up being played out by mainstream economists who seek to compensate for their neglect of technological innovation as a category – technological innovation in America, eventually taking its lead from the researchers who do innovation studies and the neo-Schumpeterians (Godin, 2010b). This fact may not be self-evident, that is, until it is discovered that the university Reader on economics carries no content on technological innovation –an ironic fact, given that innovation is understood in policy to be a driver of economic development.

With respect to how innovation might be understood in Education, what then can be taken from this explanation of the development of the concept of innovation as one that passes from being thought of as technological change to being thought of as technological innovation? Godin's (2010a) genealogy of technological innovation draws out a problem, with respect to the significance of the concept of the production function. While Rosenberg (1976, as cited in Godin, 2010a), thinks the production function is a fiction, with respect to its capacity to affirm the quantitative basis for the conviction that investment in science produces economic development, and, while Machlup (1962, as cited in Godin, 2010a) thinks that the production function is a mere abstract concept, this fiction and abstraction might be just what is needed to understand how the educational institution functions to make students create human capital in a manner that both includes some students and excludes others.

To elaborate, it would be best to go back to Schumpeter's (1964) definition of the production function, which he describes in the following way,

> This function, known as the production function, tells us all we need to know for the purposes of economic analysis about the technological processes of production. Production, in the sense relevant to economics, is nothing but combining quantities of factors, and it is, for economic purposes, exhaustively described by such a combination (productive combination). (p. 15)

What are the factors that combine to make up the production function of an educational institution? The only factors that can be used to define the production function are factors that produce an economic decision, meaning only teaching and learning activities that are quantifiable in economic terms can be included in this function,[1] which, of course, excludes the making part of the teaching and learning experience. Such an economic analysis would enable the abstraction of a concept of operations from the "life", "work", and "action" (Arendt, 1998) of the institution and an articulation of the real purpose of service apparatus, from which the "life" and "action" teaching, learning, and research must be thought of in terms of being a fiction, as something too subjective to quantify economically and therefore something that must be black-boxed. This is to say that, while commercial management knows that this articulation of the real purpose of the service apparatus is itself responsible for facilitating the production of the human capital that students invest in, this human capital cannot be included in this abstracted articulation, because it cannot be quantified economically within the operational work of the service apparatus. As such, student fees can be counted in defining the economic purpose of the institution, but student creation of human capital cannot be, which is to say, students are respectively included and excluded from the "life", "work", and "action" of the institution.

While this explanation is crude in the sense that it removes all ambiguities, it helps explain the purpose of technological innovation in Education. Within this framework, technological innovation can be accredited with ascribing an economic purpose to science and therefore facilitating student and teacher implication in personal, political, and economic goals that orient teaching, learning, and research towards the economic purpose in the proprietary domain. This also helps explain how technological innovation can be put beyond reproach: social innovation cannot be incorporated into the production function of the institution; unlike new technologies associated with technological innovation, social innovation has no cost that contributes to the identification of economic purpose.

[1] This might include the percentage of assessment or exam passes in relation to the cost of paying teachers and other utilities against income from fees and other forms of financial support from stakeholders and the state.

6.1.2

Technological innovation: The European tradition

Distinguishing between Godin's (2010a) account of the American tradition of *technological change* and the following account of the European tradition of *technological innovation* would seem to be very important in that this distinction makes it possible to distinguish, if in a vague way at this stage, between how commercial enterprise thinks of innovation and how Education thinks of innovation. While both traditions contribute, as Godin (2010b) states, to "a shared representation among policy-makers and the public" (p. 36), it is argued here that these distinctive academic traditions remain in ignorance of one another. It is argued that commercial enterprise in the proprietary domain has the American mentality in that it has the pragmatism of technological change, focusing on "factors of production, market structure, economies of scale, etcetera" (p. 7). In this tradition and across this domain, there is, as Godin says, "no real interest in developing a distinctive and comprehensive theory of technological innovation". Furthermore, it can be expected that, when universities and school boards bring in entrepreneurs from the commercial world to run their educational institutions, they bring with them the thinking on innovation that sustains the American tradition and the pragmatist ethos of what technological change refers to.

Despite the influence of the American tradition and pragmatist thinking in commercial management of educational institutions, it is argued that these institutions, principally universities, are populated by researchers who draw on the European tradition of technological innovation. This is to be expected, in that the epistemological foundations of this understanding of innovation feed directly from the main influences from which tertiary education draws its understanding of how research should inform practice. This is to say, the figures responsible for the development and embedding of the European tradition – those working in Innovation Studies (Godin, 2010b) – have worked as academic researchers, collaborators with private enterprise, and policy-makers for the OECD.[2] This means academic researchers who have fostered the development of Innovation Studies and the influence of this tradition have been able to have a hands on

[2] Lundvall would be a good example of a contributor to this tradition. See https://en.wikipedia.org/wiki/Bengt-%C3%85ke_Lundvall

approach to overseeing the application of this tradition.[3] Of course, there is an implicit relationship between research fund provision and this overseeing of the process of the creation of a tradition; Innovation Studies is able to protect the agenda that is responsible for the orientation of the development of its tradition.

In the next section, the contrasting influences of these traditions will be examined with respect to how they impact upon the way the concept of innovation is understood in the university. The rest of this section will involve a selective engagement of Godin's (2010b) interpretation of the European tradition of technological innovation.

The European tradition of technological innovation is an invention (Godin, 2010b). Not all traditions are inventions: they emerge over time in response to a need. According to Godin (2010b), the tradition was initiated by the work of Chris Freeman.[4] The substance of this tradition has some important characteristics if the way innovation is researched is to be understood when it is researched independently of the American tradition. Furthermore, this European tradition was developed in relation to the American tradition, for example, through the study of both the way Schumpeter worked and the study of his thinking on innovation, which has led to a strong involvement of neo-Schumpeterians in the work of this tradition. However, the intention was also to develop a tradition that pursued a distinctive role in how innovation should be understood. Freeman understood innovation by drawing a clear distinction between invention and innovation:

> An *invention* is an idea, a sketch or a model for a new or improved device, product, process or system (…). An *innovation* in the economic sense is accomplished only with the first commercial transaction. (Freeman, 1974, as cited in Godin, 2010b, p. 10, emphasis in original)

It is not uncommon to define innovation against invention: a tradition that certainly began with Schumpeter (1934/1911) and probably earlier. This said, what is important here is the idea that innovation might be defined other than in the economic sense. This openness lends itself to discussion of how innovation could be understood in Education, in relation to this commercial understanding,

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[3] Innovation Studies refers to the next generation of researchers following the development of the Science Policy Research Unit (SPRU) at Sussex University by Chris Freeman (See https://en.wikipedia.org/wiki/Science_Policy_Research_Unit)

[4] The principal text Godin uses to study the development of this tradition is *The economics of industrial innovation* (Freeman, 1982).

and, furthermore, Education being a hub of new knowledge and ideation, which this thesis argues is what Education currently needs most.

Godin goes on to make the interesting observation that, to Freeman, "invention and innovation are 'outside the framework of economic models'" (as cited in 2010b, p. 9). He adds that "Freemans's objective is to open the black box and look at the technological innovation 'process'" (p. 10). The idea that the economist Freeman sees innovation as being outside the framework of economic models, while at the same time making it his objective to open the black box and look at the technological innovation process, is promising.

As for technological innovation, Freeman understood it as "an essential condition of economic progress and a critical element in the competitive struggle of enterprises and non-nation states" (1974, as cited in Godin, 2010b, p. 8). Furthermore he understood technological innovation to be important for "improving the quality of life".

6.1.3

Technological innovation in the university

Godin's (2010a, 2010b) contrasting of technological change and technological innovation has interesting implications for how the concept of innovation is understood in Education, in particular, in tertiary education. Because these traditions involve different foci on innovation, where each focus has a distinctive set of interests, it is not obvious how these traditions interact to the benefit of a single institution. There is probably no model for how these two traditions can be thought to work together, apart from the hospital, with respect how doctors do research while at the same time meeting work-related service provider outcomes.

In order to understand the relationship that these traditions have assumed in the educational institution – comfortable or uncomfortable as it is – two questions immediately arise.

(1) In what contexts do these traditions influence how the university thinks of innovation?

(2) How does this configuration of influences affect the situation of the already innovative subject in Education?

The first question will only be able to be addressed very briefly in this investigation. Such questions suppose the need for a broad discussion on how innovation is understood by both the institution and its society, not to mention, how it conducts its politics of innovation in the educational institution. Addressing the first question needs to be limited to that which becomes useful in answering the second question.

So to the first question: In what contexts do these traditions influence how the university thinks of innovation? The simple answer is that the tradition of thinking of innovation as involving *technological change* can be seen in the approach commercial management in the educational institution has to innovation. This is because of the way personnel in commercial management already understand innovation in that critical roles in the hierarchy are often filled by people with experience in the business world, where innovation is understood as involving *technological change*.

Because of the decisive influence commercial management has in the management and on day-to-day institutional activities relating to service provision, the influence of this tradition can be seen at various strata of activity in the hierarchy (see Christensen & Eyring, 2011). The orientation of this form of thinking, towards performative outcomes and outcomes that do not require more knowledge of the innovation process than is important to improve that which the institution already does, means actions required to fulfil strategic plan initiatives do not need any more justification than the commercial results they deliver. As such, there is no institutional theory of how change takes place, partly because this exercise would be in excess to performance requirements and partly because it might imply the need to invite participation of students and teachers who would not normally be valued as important to commercial decision-making.

Here is it possible to see the influence of standard economics and how this form of economic thinking underpins neoliberal economics in that the process of innovation is black-boxed and ambiguated for the rest of the university community. Furthermore, the legitimacy of this tactic is assumed to be irrefutable in that its actions bring closure, such that there is no need of an explanation for why the ends should justify the means.

The European tradition of *technological innovation*, on the other hand, occupies the thinking of a different sector of the institutional society, evidence of

which is more easily explained in relation to how this tradition is played out in the institution of the university than in the school. In the university, understanding of innovation by senior and junior researchers is influenced by how the theory of innovation is understood by those working in Innovation Studies (Godin, 2010a, 2010b), which is to say, among other things, they are more interested in the significance of the innovation process. In the bigger picture, the scenario is circular in that the academics who work in Innovation Studies and who write policy for the OECD and other international institutions have the effect of designing the role they believe innovation should have in educational institutions, the economy and society and, as such, influence other researchers in how they understand innovation. Therefore, while it may seem that the American tradition holds the higher ground in the university, the European tradition provides a stronger voice for innovation in that it writes a good deal more. While business commentators, business and management school academics and the occasional business and management theorists may write on *technological change*, they leave a vacuum through their neglect of the process of innovation, which those of the European tradition end up filling by default.

In summary, the American tradition of thinking of innovation as *technological change* is that which influences the way in which the institution thinks of the problem of increasing its production of human capital, of improving its ranking, the number of foreign students and its external funding streams. This thinking is logically delimited to the actions of commercial management, as this sector of the institution's society assumes the prerogative to taking initiatives that correspond to these objectives. On the other hand, the European tradition of thinking of innovation as technological innovation is not limited to just those researchers who engage theoretically with the concept of innovation that is promoted by Innovation Studies. The reason for this does not have to do with the political protagonism of researchers within the institution. Rather, it is a case of neoliberal thinking of commercial management making use of ground-breaking research to promote its own project – that is, the American tradition.[5] It is argued here that there is both a significant ignorance of the difference between these two

[5] This is to say, when you see the home pages and faculty pages of the institution's website promoting academic performance and research successes, what you are seeing is the American tradition in action.

forms of thinking – a situation fostered by the institution itself – and an ongoing conflict between the two at the tacit level of engagement. The reason for this conflict will be addressed later in this section.

As to the second question: How does this configuration of influence affect the situation of the already innovative subject in Education? The American and European traditions of thinking on innovation, as explained by Godin (2010a, 2010b) are in themselves kinds of thinking. These different kinds of thinking are influential in the two distinctive spheres that comprise the already innovative subject's experience of their education. There is the sphere in which the institution exercises its commercial interests in the student's education through administering their acquisition of human capital and in the sphere in which there exists discursive activity engaged in the problem of understanding innovation. While the already innovative subject is subjected to both these kinds of thinking, they are also independent from them in as much as they act upon the Education that is provided them and innovate in relation in their own learning needs. Being innovative always supposes the possibility that it is necessary to be politically subjective when this behaviour is not anticipated. So the already innovative subject can furthermore be thought of as being capable of breaking with any kind of thinking, including the European tradition, which, because of its focus, might be thought to be more sympathetic with student interests. It is argued that Innovation Studies is always in danger of fostering the formation of a closed kind of thinking for reason of its interest in its own system of thought (Godin, 2010b).

There is one further point to make. This has to do with how Godin (2015c) separates these traditions according to the subject's relationship with knowledge. He says the following:

> Yet, over time (technological) innovation has become a concept competing with technological change in the vocabulary, even THE concept *par excellence*. A contrast is often made in the literature, particularly by evolutionary economists, between the study of or tradition on technological change and that on technological innovation. The former treats technology as exogenous, so it is said, while the latter considers it as endogenous and study the process or generation of technology. This paper suggested that a fundamental contrast is between the 'agent' studied. From the very beginning, the study of technological change was concerned with the effects of technology on *people*'s lives (unemployment, jobs deskilling,

> etc.), and continued to be studied as such much later (e.g. Freeman & Soete, 1987). (p. 27, emphasis in original)

While this text has the potential to create a confusing picture, a careful reading suggests that it explains why researchers and commercial managers within universities are not likely to understand why they do not each speak the same language. According to Godin (2015c), those who think of innovation as *technological change* think of technological innovation as being exogenous, while those who think of innovation as *technological innovation* think of technological innovation as being endogenous. It should be argued that contrary examples could be found in both camps and that this ambiguity is in fact logical in that the will to be open and innovative or closed and conservative does not depend on the sphere of the institution in which one works and/or studies. The more important question relates to Godin's last point, where becoming an agent of these forms of thinking benefits people's lives.

6.2
Foucault's technologies

Technology is not just a method of producing and using goods and services through scientific thinking and pragmatic use: technology can refer to the existence of a methodology within the process through which an innovation is produced. It seems our capacity to use technology no longer requires us to understand our relationship to how and why a particular thing is produced. Just as we do not make a hammer, we buy one when we need one, likewise with a mobile phone, we buy one rather than make one if we need one. This fact has long been culturally embedded. Yet to understand the value of technology as a method of production, we need to understand more than just *how* we produce; we also need to understand *how* we organize, *how* we communicate, and *how* we express ourselves. What is being stated here is not the suggestion that these latter suggestions are optional when needing to understand how innovation supposes change. Rather, it is being argued that engagement with innovation, as the means of providing goods and services, presumes the need for a limited understanding of the elements of experience that contribute to its realisation. For the process of innovation to be rehabilitated and for the *already innovative subject* in Education

(and elsewhere) to be made contingent to this process, the ontology of the process needs to be deconstructed such that it becomes possible to identify the distinctive spectrums of knowledge that are implicit to the evolution of the innovation process.

To do this, it becomes necessary to understand *what* that which is produced, expressed, organized, and communicated refers to as a means of understanding whether these actions are coordinated with one another or whether they are subjugating one another. Furthermore, for this exercise to be of educational value, we need to have some affirming experiences that technology, as a methodological approach to producing innovations, functions to produce an organic and global interrelation that binds our actions as if this binding affirms an organic interrelation of individual and collective concerns. To achieve this latter theoretical objective and in order to formally induct the already innovative subject into the incumbent theoretical engagement with the concept of innovation, there needs to be a break in how our understanding of technology merely refers to the means as a method and to innovation's realisation as a Cartesian object of knowledge. There need to be new concepts of how technology informs the development of knowledge about ourselves and how we inform our relationship with technology. Few such breaks have been made in theoretical developments that inform how innovation in Education might be understood.

Conventionally, the study of innovation does not engage the precept that the process of innovation must serve a need to develop knowledge about ourselves. However, because the student, as a subject of innovation (see Chapter Seven) and/or as an innovative subject (see Chapters Three and Seven), is made out to be theoretically integral to the innovation process, then the role of technology in the innovation process automatically becomes a field of experience where individuals and the collective develop knowledge about themselves. To ignore this fact is tantamount to ignoring the relationship of humanity to the problems it tries to address, which is furthermore tantamount to problematic to the notion that the university does not considers itself to be implicated in the formation of such problems. Likewise, the capacity of humanity to address problems will always be inhibited, meaning change will occur in limited fields – mostly as a consequence of the impact of new and novel production techniques

and products achieve in orienting our focus towards their importance. Change in this sense is occurring in a narrow field of experience.

Returning to the concerns of the penultimate paragraph, one such theoretical example of a new concept of how technologies might be used in the process of innovation can be extrapolated from Foucault's explication of how technologies enable humans to develop knowledge about themselves. Foucault (1997a) writes:

> My objective for more than twenty-five years has been to sketch out a history of different ways in our culture that humans develop knowledge about themselves: economics, biology, psychiatry, medicine, and penology. The main point is not to accept this knowledge at face value but to these so-called sciences as very specific "truth games" related to specific techniques that human beings use to understand themselves. (p. 224)

To contextualize this analysis as a form of inquiry, the truth game in this investigation would refer to standard economics' theory of innovation, which admits neither the value of the innovation process, nor the significance of the innovative subject in this process and therefore being party to how the concept of innovation is understood.

Foucault goes on:

> As a context, we must understand that there are four major types of these "technologies", each a matrix of practical reason: (1) technologies of production, which permit us to produce, transform, or manipulate things; (2) technologies of sign systems, which permits us to use sign, meanings, symbols, or signification; (3) technologies of power, which determine the conduct of individuals and submit them to certain ends or domination, an objectivising of the subject [as in the subject of innovation described in Chapter Seven]; (4) technologies of the self, which permit individuals to effect by their own means, or with the help of others, a certain number of operations on their own bodies and souls, thoughts, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection or mortality. (pp. 224-225)

Of these four types of technologies, it is argued here that innovative activity, as that which drives economic development, is dominated by the first and the third categories: technologies of production and technologies of power. This is not to say that the other two technologies are not important. The important detail is,

rather, that the interests of technologies of production and technologies of power dominate the interests of technologies of sign systems and technologies of the self to the point of radically limiting their protagonism in the process of innovation. Of course, in acknowledging the importance of economic activity, as that which provides a structure of human behaviour associated with the problem of survival, sustainability and development, observers of this discussion might presume that, for there to be political stability, technologies of production and technologies of power should always dominate the use of technologies of sign systems and technologies of the self. However, the dominance of technologies of sign systems and technologies of the self by technologies of production and power should become a question of concern when such a hierarchy of technologies is contextualized within the production function of the educational institution. The reason for this concern is this privileging of technologies of production and power, while supporting the ever-present need to increase the productivity of the institution has the effect of centering student learning within this regime of productivity. The danger of this is that the dominance of technologies of production and power can be such that students never come to understand the importance of giving protagonism to technologies of sign systems and technologies of the self and, therefore, accept to be formed without knowledge of the importance of affirming their political subjectivities.

It might be asked, what are the special significances of technologies of sign systems and technologies of the self? As will be explained in Chapter Ten, the introduction of ICTs to learning in the form of networked information economies supposes new forms of peer-to-peer collaboration and learning that themselves presume the development of new forms of writing (see Lévy, 1997) and the development of new human qualities (see Lévy, 1997). It is argued that these new forms of writing and new human qualities do not come automatically; that for students to identify that the balance of risk and responsibility should be necessary to be entrepreneurial, they also need to feel they can challenge the politics of innovation and its orientation towards its sole role of making the institution more productive.

Conclusion

So, while the technological may be thought of as defining the appropriate response to that which may be considered to be important and in relation to the future, it is argued here that the critical capacity effecting valuable change will not be technological, that is, in terms of how technology is understood by either the American or the European traditions. Both these traditions exclude the value of technologies of the self on account of their attitude towards the innovation process. While the European tradition may pretend to open this black box (Freeman, 1974, as cited in Godin, 2010b), this desire has not been fully embraced since Freeman's expression of his intention to do as much. How is it possible to say this? Apart from there being no evidence of this commitment in the Innovation Studies' literature, this tradition of thought not achieved a bringing together of these two traditions within Education. If they had been able to do so, the value of technologies of the self would have become critical to proceeding with a concern for how innovation might serve the way we collectively address problems. Furthermore, there would have been an interest in the theorization of not only how the innovative subject *of education* experiences this black box, but how the innovative subject in the *proprietary domain* experiences this black box. As will be seen in Chapter Ten, Lévy manages to bypass this resistance to the significance of the individual subject to processes of innovation, by reframing the anthropological space in which innovation takes place.

CHAPTER SEVEN

The Subject of Innovation/The Innovative Subject

Introduction

In Chapter Three, the *innovator* and the *entrepreneur* were theorized with a view to identifying their practical relations to the process of innovation. The purpose of this comparative examination was to prepare the way for a closer look at the *subject of innovation* and the *innovative subject* – two distinctive actors with respect to how the individual actor's relationship to the process of innovation is most usefully understood in the context of this discussion.

In this chapter, the *subject of innovation* and the *innovative subject* are thought of in terms of how they form themselves as subjects in Education. These two actors are not identities as such, although it might be possible to profile them in such a manner. The *subject of innovation* provides the means of speaking to the individual's implication in the institution's processes of innovation; meaning those activities that correspond to the institution's realization of its commercial strategic plan. As iterated earlier in the discussion, this application of innovation processes is achieved through, among other things, focusing academic performance the improvement of an assessments oriented culture of learning. While this supposedly proves student acquisition of human capital, it also doubles as logistical participation in the processes that meet the institution's outcomes.

The *innovative subject* on the other hand provides a way of speaking about innovative actions that highlight the student's break with the form in which their Education is provided them. This involves a recognition, on the one hand, of what it is that the institution requires of the student while, on the other, a realization that their learning would be both more easily achieved and richer in its implication if the subject followed their own interpretation of what the best course of action should be. This behaviour might be seen in the way an individual combines different forms of learning in the same moment so as to bring about a unique result. In Chapter Ten, it will be theorized how these innovative activities can occupy multiple individuals in collective peer-to-peer engagement. In describing these two subjectivities, there is no intention to juxtapose them. Rather

it is argued that that they are interchangeable dispositions. The question is more one that concerns understanding practices that are considered to be formative.

It is argued in this chapter that it is only when these two subjectivities are theorized that it is possible to see how *responsibility* must be understood in terms of *risk* and *vice versa*; that there is no responsibility without assuming risk and *vice versa*.

7.1

The governance of innovation as governance of subjectivities

According to Drucker (1959), the function of innovation is the embedding of society into a new universal vision. How does Education do this? In other words, through what *action* does Education succeed in stifling that which already exists, so as to embed students, as re-engineered others, such that they should identify *en masse* with a vision that they are never invited to act upon or change? Actually, there is no act of oppression here. The institution does not need to act within the governance of students as individuals or as a collective to achieve this effect. The effect of the action that stifles students' already existing innovative subjectivities is achieved as a consequence of the way in which the student's relationship with the institution is a prefabrication. It might be assumed that the reason for this prefabrication is the primacy that both Education and society give human capital theory as that theory which should explain the purpose of education. As long as human capital theory is not questioned, challenged and called to account, the already innovative student might very well have the sensation that their innovative subjectivity has been *automatically overlooked*. In order to see this *automatic overlooking* of multiple innovative subjectivities across the student cohort, the education sector and its stakeholders, including policy-makers, would only need to give Bingham and Biesta's *Jacques Rancière: Education, truth, emancipation* (2010) a serious reading. Speaking explicitly, once it is recognized that the progressive education model comes up short in its capacity to include students, with respect to student need to explain their learning in their own voices, then it can be assumed that, by implication, student innovative subjectivities are automatically overlooked. In such circumstances, the illusion is that students are

de-schooled and re-schooled – and this probably, as previously iterated, without knowing what they have volunteered for.

7.2
The function of history

From the above description of student-institution power relations, it would seem time to ask the question, how is this subject to be thought of, this subject who is both *the subject of innovation* and *the innovative subject*? In this investigation, the subject has been given a theoretical role and status that has no conventional place in the broader discourse on innovation. The innovator *per se* is hardly spoken about as someone who provides us with a portrait of the contemporary individual, of the role they play in augmenting the status of the current political economic project. Because the innovator can be regarded as interchangeable with other innovators who may equally be capable of realizing the same innovation, because the innovative process itself is not generalizable, because workers are thought of as being logistically fundamental to the realization of an innovation and yet not credible as authors for they are only workers, and because consumers are only regarded as producers in the theoretical sense – for example, students investing in and producing their own human capital – there appears to be no need to employ the theoretical figure of the subject as a means of speaking of the individual who constitutes him or herself as an innovative subject. However, the story of the student as a subject of innovation is both untold and a story that portrays the acquisition of human capital in a new way – one that should change our thinking on how Education serves the need to capacitate society to be innovative. Speaking of the student as a subject of innovation should therefore pave the way for a discussion on the student as someone who is formed to be the contemporary individual. To this effect, the discussion will now address the question of how the subject of innovation should be distinguished from the innovative subject.

If the function of innovation has the aim of embedding society into a new universal vision (Drucker, 1959), the exercising of power, with respect to the carrying out of this master plan, is something that cannot be achieved without the implication of the individual and, as such, society itself. In as much as this individual willingly remakes him or herself as someone capacitated to fulfil such a

vision, they make the self a subject of this vision; which is to say, they make the self a subject of the means of its realization: innovation.

Before moving on to discuss both *the subject* and *subjectivity*, the question of what this vision might comprise should be addressed. The idea that the function of innovation is to embed society into a new universal vision supposes a predetermined and collective transformation of society such that it is possible to anticipate the implication of society as a whole in the process of change, right down to the last individual. Crucial to the value of innovation is that it functions as a political economic mechanism in making this transformation possible, which in turn becomes the premise for the idea that society should always live as if *the end should always define the means*. What does this mean that the means can only be what it is through always and only being defined by an end that is neither anticipated nor engaged with?

For this project to guarantee the social cohesion that it supposes to achieve, the mechanism of innovation needs to be inclusive in such a manner that this inclusiveness can at once deny all alternative approaches to this unspecified future while, at the same time, coercing all radical alternatives in a form that would restrict the individual from expressing strategies for transforming this vision of the future; the former objective being achieved through a form of *educational discipline*, the latter being achieved through a mechanism of *discipline* and *punishment* (see Foucault, 1990).

While a conservative view might speculate that the latter aspect of this mechanism is less important than the former, the latter provides an insight into the seriousness with which innovation is adopted as the mechanism through which society is to subjectivize itself as a whole. It would seem difficult to understand the significance of this statement without grappling with the problem of understanding why it would seem impossible to identify, in the democratic and commercial state, a contemporary equivalent to Agamben's (1998) explication of the subject who lived in "a state of exception" in Roman Antiquity. [1] However, while there is not the space for such an inquiry here, it should be said that a degree of political danger accompanies the implication of all individuals

[1] The form that this individual discipline takes with respect to the purpose of its collective healing depends on the political system according to which society is made to be operational.

and, therefore, society itself when accepting to constitute a self through identifying both with the metaphysical *role* given to innovation – as the mechanism of change and the production of the novelty of the new – and through also identifying with the *purpose* of the vision that this mechanism was designed to fulfil.

7.3
The subject

Since the mostly silent and consensual death of the subject as a philosophical concept (Heartfield, 2002) – an event that could be intuited to accompany the impact of Cartesian thought on capitalism after the Second World War – there has been little attention given to the theorization of the subject and its relevance to understanding what is produced in the act of the individual constituting the self. The most prominent exceptions are Foucault (1977, 1990), Negri (2003), Touraine (2001), Agamben (1998), Žižek (1999), and Badiou (2010, 2011).

The fact that it becomes necessary to posit the individual's constitution as a subject is itself indicative of the aspiration held in this research project for the student who is already innovative and, as such, that he or she can be thought of as a *positive* subject of innovation; which is not to mean a positivist subject of innovation. Badiou (2010) provides an example of how such a subject might be thought of in relation to both the above discussion and education's implication in the project of fleshing out the universal vision that Drucker (1959) equates with the purpose of innovation. In describing thought as "the proper medium of the universal" (p. 26), Badiou (2010) goes on to say:

> By 'thought', I mean the subject insofar as it is constituted through a process that cuts through the totality of established knowledge. Or, as Lacan puts it, the subject insofar as it makes a hole in knowledge. (p. 26)

The points that can be made about this description of the subject that are significant to the discussion at hand are the following: firstly, and most importantly to the thesis argument, the constitution of the subject is a consequence of a process of thought that can be understood to involve an *innovative process*. This is not an innovative process that gives primacy to the use of the ecology of technologies of power, production and/or sign systems (Foucault, 1997a) at the

exclusion of the thinking subject and their use of technologies of the self: the subject is in fact constituted through both remaining party to this said ecology and through being the protagonist who employs technologies of the self according to the primacy of their individual interest. By primacy, what is meant is not that these technologies of power, production and sign systems are not implicated in the process of thought that cuts through the totality of established knowledge, but that there exists the premise that the individual must act in order to participate in the constitution of oneself through giving primacy to the use of technologies of the self.

This is to say that the *positive* object of innovation can be understood to be innovative on account of the purpose of the individual's engagement with the associated ecology of knowledge(s). This is not to say that the individual is an innovative subject because they are singularly a political subject, a productive subject, a communicative subject or the self as a consciously constituted subject; this is the *negative* subject of innovation, which will be discussed in Section 7.3.2. What is more important here, is understanding the significance of what it is to act in order to participate in the constitution of oneself such that one is compelled to give primacy to the use of technologies of the self within the ecology of technologies that serve the political, the productive and the communicative.

Secondly, when student innovation is considered in the context of their education, a red herring emerges. Stating that the subject constitutes the self through thought cutting through "the totality of established knowledge" is not to suggest that established knowledge must be constructed by each individual in its totality before this "cutting through" (Badiou, 2010, p. 26), "making a hole in" (Lacan, as cited in Badiou, 2010, p. 26) or breaking with (Foucault, 1989)[2] becomes possible. The totality of established knowledge is not an object as in it cannot be constructed as an explicit body knowledge: what can be known also requires the use of tacit knowledge (Polanyi, 1966) and intuition (Badiou, 2004). This is to say, an individual does not have to reach a point of cumulative knowledge of all fields to think in order that the process of their thought permit them to *cut with*, *make a hole in* or *break with*. In other words, the individual who

[2] The actual language used by Foucault (1989) in the translation of the interview *On Literature* is "breaks". *Breaking with* or *breaks with* is a better use of the language in this instance. Foucault's notion of *breaking with* is outlined in Chapter Four, Section 4.4.

thinks does not have to be an expert let alone a teacher for reason that established knowledge cannot be objectified; it exceeds its capacity for objectification for those who populate its field of interest. A student may cut with, make a hole in or break with the totality of what is known to them as established knowledge and, as such, constitute him or herself as a subject.

The latter point is crucial to the argument of this investigation in that the student does not have to be awarded a qualification to be considered innovative in their capacity to constitute him or herself as a subject of innovation, or in the form of a degree that states they have acquired the requisite skills and knowledge. The idea that the purpose of education should be to equip students with a capacity to be innovative upon graduation is misguided if students are already considered to be thinking individuals capable of differentiating their understanding from that which established knowledge would have them believe. In as much as students are capable of acting in relation to their own and others' interests, they must also be considered to be already innovative subjects with respect to their employment of technologies of the self. The most accessible example of this form of innovation can be seen in learning techniques developed by students because the way they are taught to learn proves to be limited in relation to the aspirations they have for themselves (see, for example, Clay & Phillips, 2015; Davis, 2016).

Having established the protagonism of student thinking as determinant of student innovation, there is a series of questions that have to do with the complexity of the paradoxical situation of the student, which require philosophical thought on the part of the student. The first concerns the question of whether all students can be considered to be innovative subjects given that all students think when it appears equally obvious that not all students are already innovative. Another way of asking this question might be to ask, do students prioritize the use of technologies of the self with the intention of being innovative? And how should the student cohort be thought of, with respect to the need to say that there are innovative subjects because all students think? One way to bring clarity to this question might be to begin with the premise that all student-learning is initially subject to being governed by a teacher or lecturer, and more generally by the institution and the politics of education.

There are only two ways to act in such circumstances: either the student can accept to be governed or they can act according to their thinking such that they *cut*

with, *make* a *hole in* or *break with* that which can be said to characterize power relations in that moment. At least this is how it must look. It might be argued that it is also possible for the student to not accept to be governed in the way that the teacher hoped they might while at the same time not giving any impression of *cutting with*, *making* a *hole in* or *breaking with* that which is taking place. The overriding problem for the student is that there is a need for compliance. This achieves the effect of acceding to the manner in which the purpose of innovation is governed by the institution because not everyone can speak at once. This in turn can be said to have the effect of embedding students into the universal vision that the institution can be said to identifying with, as an objective of the service it offers (see Chapters Four and Five).

While the choice of having to act or not act is the simple fact that confronts the student in the context of referring to the self when accepting to be governed in their learning; no situation replicates another and furthermore there is no limit to the reasons why a student might choose or be required to not act when their will is to differentiate their thinking from that of others and in particular the institutional hierarchy. How should the problem of student strategy be understood in this situation?

7.3.1

The subject of innovation

The value in being able to theorize and in turn critique the subject of innovation is based on the idea that Education is oriented towards producing skills and knowledge that enable students to contribute to economic development through being innovative. While, as iterated in the Introduction to this investigation, there is no such theoretical entity, in either Education or economic discourse, it seems undignified to the researcher to speak of the above political project without also speaking to the problems associated with student participation when a student's will to be innovative differs from the institution's strategy for commercial development. For the sake of this discussion, a dichotomy has been drawn between the *subject of innovation* and the *innovative subject*. These entities do not need to be treated as if installed in a theoretical binary but it is useful to the discussion if the logical outcomes of the above definitions can be explored. One

of these outcomes is theorized as resulting in the formation of a subject of innovation.

In theorizing and critiquing the subject of innovation it becomes important to speak to how this particular subject is related to contemporary conceptions of *homo economicus* (economic man) as the ambiguities are strong. It might be noted before I provide an account of the *homo economicus* (see Section 7.3.2) that the principal differences, and therefore in their differences in educational possibilities, have to do with how each of these subjects is d; that is to say it has to do with the methodology used. The *homo economicus* is understood here to be a product of the critique of neoliberalism (Besley & Peters, 2007) – and before it, classical economics (Besley & Peters, 2007; Foucault, 2008; von Mises, 1949/1940).

On the other hand, the subject of innovation is understood as a product of how the politics of innovation impact upon the already existing innovative capacities that students begin school with. Firstly, it is argued that the subject of innovation is not just a product of the politics of education: they are also a subject with a relationship with the self that supposes possibilities to challenge the power relations that are the operant of the politics of innovation. In other words, it needs to be assumed that the subject of innovation can also be an innovative subject – that they have within them an innovative capacity that can be directed towards the self as a subject.

Use of the concept of the subject of innovation is therefore merely a way of speaking to the individual's implication in the institution's processes of innovation. As iterated earlier in the discussion, the subject of innovation constitutes him or herself through exclusively focusing their academic performance on realizing the highest possible assessment grades. While this supposedly proves student acquisition of human capital, it also doubles as expression of their logistical participation in the production function of the institution that links assessment numbers to commercial outcomes.

7.3.2

Homo economicus

In this section, the discussion will address the problem of how to think about *homo economicus* (economic man) in the context of the thesis discussion. The

initial issue is that while *homo economicus* and the subject of innovation share ambiguities, there is no literature on *homo economicus* that also engages the idea that the influence of economics on Education can be said to have resulted in the formation of subjects of innovation. In positing the theoretical value of the subject of innovation as a subject of the current system of education, it will not be argued that *homo economicus* should be thought of as a subject of innovation. The reason for this is that the concept of innovation itself is not stable. As argued in the previous section, the subject of innovation can at any time choose to act upon the relationship they have with the self, so as to break with the Education that is provided them in order to be innovative in their own learning. After all, who is going to say to the most compliant student that they do not have it within them to begin thinking for him or herself?

In as much as it is argued in this investigation that students begin their education with already existing innovative capacities, students enter an *a priori* situation. In as much as it is argued that the subject of innovation, as an individual who is formed by the institution's own processes of innovation, should be thought of as also being able to be thought of as an innovative subject in their own right, all students learn in a system that functions according to an already established project. During this discussion, this aforementioned project has been spoken of in terms of Drucker's (1959) explanation of the function of innovation: that the intention of innovation is to bed society into a new universal vision.

While this explanation could be broadened to include an analysis of what economics makes of students, independently of this investigation, when Margaret Thatcher said: "Economics are (sic) the method. The object is to change the soul" (as cited in Dardot & Laval, 2013, p. 263), the question becomes, depending on your politics, from what perspective should such a statement be understood? But first, these words need to be put in context. On the one hand, nearly 30 years have passed since Thatcher's proclamation, meaning economics as a method has proved its formative capacity to have individuals constitute the self according to the interests of economics. There have been significant critiques of this pathology, of which Dardot and Laval (2013), Foucault (2010), Marshall (1999), Peters (2011), Touraine (2001) are just a few. On the other hand, Thatcher's words in 1988 were also followed by a series of events that, it is argued here, have collectively led to the possibility of challenging the grip of economics as a

method. There has been the advent of the World Wide Web (Berners-Lee, 1989), Lévy's book *Collective Intelligence: Mankind's emerging world of cyberspace* (1997), the advent of social media platforms (Six Degrees, 1997), to name just a few developments.

Conclusion

In naming *the subject of innovation* and *the innovative subject* as two distinctive theoretical notions of the individual who is innovative, and in promoting the notion that the best way to understand the situation of the already innovative subject is to think of their paradox experience as being best understood through use of the metaphor of the blacked-out theatre, it is not argued here that the subject of innovation in Education cannot be thought of as merely an object of scientific thinking. To enter the black box of the blacked-out theatre, the scientist will find the pathology of their thinking blacked-out as the lights go down on before the drama itself begins. To hold onto one's thinking in this moment is tantamount to an expression of denial of the event of the present and in effect signifies the closedness of the subject to the event. This is to say, to understand the nature of drama, thought should begin in innocence and with the commencement of the drama. In effect the individual's incapacity of forget represents a resistance to embrace the conflict that comes with the simultaneous integration of the subjectivization of the individual with the subjectivization of the collective; the experience of this black box being always collective and populated by those both present in the audience and on the stage. In the darkness of the blacked-out theatre, what precedes the fall of the lights collapses the relationship between science and aesthetic experience. In such a moment, maybe it becomes possible to understand that the subject of innovation cannot be about abstracting the individual from their experience of this ambit: that it is rather a question of understanding the conditions under which *risk* and *responsibility* facilitate the possibility of bringing up the lights on what is ultimately a collective experience. How are risk and responsibility to be understood in the context of this discussion?

If the most valuable learning experience now is to develop a capacity to be a protagonist of collective change, whether this is as an entrepreneur or just as someone who needs to be a collaborator in affecting the realization of collective

change, understanding of what is meant by risk and responsibility becomes important. The risk of engaging danger is not what risk refers to here. This danger is addressed in the way that one's sense of responsibility addresses the need to measure the factors concerning danger after having already assumed the risk. Risk, can also be thought of as implying a responsibility to leap. As such, it is a responsibility to leap, individually and collectively. Responsibility has to do with how the leap is measured *during* the leap and what we learned having found ourselves in the space to which this leap delivered us. To enter the blacked-out theatre is to take a leap, to practice leaping, as it can never be known what is going to happen next.

CHAPTER EIGHT

Open Innovation (in Theory)

Introduction

Open innovation presumes an overcoming of the idea that innovation *per se* is only possible in the proprietary domain. Not only is open innovation not specific to the interests of private enterprise, it has no specific domain.

While open innovation and social innovation can be considered to be implicitly related, they are rarely theorized in relation to one another.[1] Treating open innovation as a stand-alone form of innovation is challenged in this chapter from the perspective that open innovation, as an ideal, is understood here to be ontologically a social experience, where innovation that is occurring is regarded as a collective achievement. The aim of this examination is not so much to reconcile why these concepts have to be considered together, but to create the theoretical foundations for why this conceptual coupling can be most usefully understood when collective action is thought to arise from educational experience.

Because the student's experience of open innovation is not formally recognized, the chapter begins with a brief exposition of the problem of understanding openness. From here the investigation proceeds to an examination of the French philosopher Bergson's (1935) explanation of how open and closed societies are theoretically and practically co-dependent. This discussion provides the framework for a brief critique of the theories of open innovation promoted by Chesbrough, von Hippel and Nonaka, utilizing the work of Tuomi. During the course of this investigation, it becomes evident that economics has become complicit in the marginalizing of *the social* from *the open* on account of its interest in treating tacit knowledge as explicit knowledge; an observation that provides the basis for the final chapter in this investigation.[2]

Chapter Eight examines open innovation. After a discussion on openness, an explanation of Bergson's (1935) understanding of static and dynamic societies is

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[1] Peters, M. A., & Heraud, R. (2015). A rare example!

[2] This is a poignant irony given the importance of the personality of the entrepreneur to economic development and the extent to which entrepreneurs rely upon tacit knowledge (See Drucker, 1997).

provided with the intention of highlighting the situation of the already innovative subject when the educational institution is closed to the student's desire to take new initiatives. This chapter finishes by highlighting the importance of tacit knowledge as being fundamental to the student's innovative processes.

8.1
Openness

The intention in this section is to briefly engage with the question concerning openness; the purpose being to initiate the theoretical coupling of *the open* and *the social* in student innovative activities.

Openness is such an overarching term. It is not an easy term to understand. Is openness, for instance, the antithesis of closedness? If openness is a virtue, can closedness also be a virtue! It could be argued that closedness is every bit as much of a virtue as openness – that the choice of disposition depends upon the sustainability of the space in which the action takes place. For example, when a culture is in recovery from an event that threatened its survival, its people might close themselves off from others in order to seek recourse to their traditions, world-view and to reflect upon their relative preparedness for the future. Openness seems to suppose the radical crossing of a threshold, as if it had previously been an instinctive response to a phenomenon, event or trend of a nihilistic nature. If we accept the relevance and necessity of this radical leap, the idea of openness continues to be relative to the situation in which it is experienced and, as such, is subjective. For this reason it is difficult to speak of the openness of something or somebody without also qualifying what this means from another perspective. Perhaps neoliberalism has provoked such closure on a personal level that we do not know how closed we have become and therefore how to identify with an interest in openness (Peters, 2010).

Peters (2010) identifies four twentieth-century thinkers who have contributed to the "the politics of openness" (p. 250): the French philosopher Bergson, Popper, von Hayek (both Austrians) and Soros, the Hungarian American businessman and philanthropist. I will engage with the work of Bergson, in particular, because his conceptual understanding of openness is not extrapolated without correlative attention given to his conceptual understanding of closedness.

8.2

Henri Bergson

Firstly, in the broader sense, Bergson (1859-1941) is relevant to the problem of thinking about openness for reasons that may not be immediately apparent. While his book *The two sources of morality and religion* (1935) compares two forms of both religions and moral life – subjects that are not the focus of this inquiry – his exploration of these subjects informs various epistemological aspects of how innovation is understood and engaged with elsewhere in this investigation. These aspects include: the history of religious innovation; as something that influences how we think about innovation today (Godin, 2015b), the market as that which replaced the church as the arbiter of moral formation of society (Sandel, 2013), and the methodological contrasting of static and dynamic economic s that can be applied to the educational institution (see Chapter Five).

What is particularly valuable in Bergson's (1935) analysis of open and closed societies is his description of the relationship between what he calls the *dynamic* society and the *static* society; the former being thought of as an *open* society and the latter as a *closed* society. In order to make use of this thinking, it is necessary to think of the concept of society in a different manner from that which has made it less popular in recent decades.[3] In this chapter, the concept of society will be thought of as referring to social groups that distinguish themselves from one another through constituting themselves according to distinctive rationalities and practices. For example, in an educational institution the student and teaching cohort constitutes itself through a distinctive set of rationalities and practices from those according to which commercial managers and administrators can be said to constitute themselves. As will be seen from Bergson's analysis, the teacher and student cohort are more inclined to be an open and dynamic society while the commercial and administrative cohorts are more inclined to be closed and static societies. Bergson's understanding of the relations between such societies becomes interesting when considering the concept of the educational institution

[3] While a genealogical analysis would suggest that the concept of society has been losing its conceptual leverage over some time, Prime Minister Margaret Thatcher's (*The Sunday Times*, 1987) statement that "there is no such thing as society" is regarded as divisive, especially given her and President Reagan's role in the construction of the neoliberal paradigm where the symbolic social unit becomes the autonomous individual (Roberts & Peters, 2008).

and the manner in which these distinctive rationalities and practices contribute to a particular idea of the role and scope of innovation.

Bergson (1935) summarises his thesis on the closed society in the following way:

> The closed society is that whose members hold together, caring nothing for the rest of humanity, on the alert for attack or defence, bound, in fact, to the perpetual readiness for battle. Such is human society fresh from the hands of nature. Man was made for this society… (p. 266).

Given Bergson's explanation of the closed society in the context of this discussion, the question must be, if the spirit of entrepreneurship is to be understood as involving the balancing responsibility and risk as impulses (Drucker 1959, 1997), then it is not difficult to appreciate that the educational institution's approach to innovation is going to be guided by the notion that the continuity of the institution depends upon the capacity for responsibility to be alert to the dangers of risk. So, while it might initially be tempting to draw a derogatory inference from the idea that the commercial management and administration comprise a symbolically closed society, this is not the intention. Rather, a more valuable strategy might be to identify where the threshold for change exists in relations between these so-called open and closed societies in the educational institution – the will to be an open society most clearly seen in the student cohort and its interest in risk-taking. It needs to be remembered here, that an open dynamic society can never overthrow a closed static society (Bergson, 1935), without destroying the institution itself. This said, the argument in this investigation, with respect to how these power relations should be addressed, has been one of proposing that the present politics of innovation needs the call for a transformation of the institution by those forces that are open and dynamic, by the forces that are capable of pressing and challenging – as discussed in Chapter Six, when the question of technology was explored – with the purpose of creating a problematic that obliges the institution to address the productive interests of the teacher and student cohort, rather than merely their presumed consumer interests.

Considering, in such circumstances, the potential for impasse, Bergson (1935) has the following to say:

> Never shall we pass from the closed society to the open society, from the city to humanity, by *mere broadening out*. The two things are not of the same essence. The open society is the

> society which is deemed in principle to embrace all humanity. A dream dreamt, now and again, by chosen souls, it embodies on every occasion something of itself in creations, each of which, through a more or less far-reaching transformation of man, conquers difficulties hitherto unconquerable. But after each occasion, the circle that has momentarily opened closes again. Part of the new has flowed into the mould of the old; individual aspiration has become social pressure; and obligation covers the whole. (p. 267, emphasis added)

Hence it is never a question of choosing between an open society and a closed society but rather it is one of how each might be thought to transform the other and thereby benefit from the other.

Bergson (1935) asks, "[d]o these advances take place in the same direction?" Responding to his own question, he says, "[w]e can take it for granted that the direction is the same, the moment that we agree [that] there are advances" (p. 267). To which the response might be that collaboration between these so-called open and closed societies in the contemporary educational institution is not so straightforward in that, agreement between the subjects of these societies requires the political implication of all subjects, as free individuals in the same dynamic. This is to say, it not only requires the implication of the commercial managers and administrative staff but also the implication of teachers and students.

As such, it is becomes difficult to argue that innovation will produce an advance in the same direction in the neoliberal educational institution for reason that the educational institution does not anticipated the value of "the new has flowed into the mould of the old" (Bergson, 1935, p. 267). Such an invitation on the part of the institution would be symbolic of a political contradiction: if students must first acquire the requisite skills and knowledge before being permitted to be innovative, the invitation for the new to flow into the mould of the old cannot be genuine in its expression. The situation is there such that students must bring, without invitation, their new thinking to the old mould. Here there is the image of the student, as the uninvited guest, described by Derrida in *Of hospitality* (2000). The already innovative subject must be welcomed even though they are uninvited. What is more, the old mould, the pedagogy, the institution, the politics of innovation must, by insinuation, open themselves to student innovation for if the commercialized educational model wishes to be thought of as a moral

project that seeks to serve the whole of society, then it must open its closed and static mould to that "which is deemed in principle to embrace all humanity" – the innovative student who seeks to transform for the understanding of a problem that the institution is not ready, a problem that it cannot see coming.

In such circumstances, the advances are in many instances independent and even unsighted by the other: where innovation that is based on "the *organization* of ignorance" (Drucker, 1959, p. 13, emphasis added), as it will be in an open society, can be of no interest to those who base their concept of innovation on the organization "of the known facts", as innovation needs to be in a closed society[4]. In saying this, it must be remembered that the social demographics that characterize each society are fluid and will take in populations that might normally be associated with the other society; for example, a teacher may have management and/or administrative ambitions and, as such, may assume a conservative disposition with the intention of preserving existing practices such that they identify with the opposing society – that of commercial management and administration. These tensions affirm their presence at the said threshold of the open and the closed, and in the experience of the subject in different ways. Bergson (1935) addresses this problem in the following manner:

> In the insect world, the diversity of social function is bound up with a difference of organization; you have "polymorphism". Shall we then say that in human societies we have "dimorphism", no longer both physical and psychical as in the insect, but psychical only? We think so, though it must be understood that this dimorphism does not separate men into two hard and fast categories, those that are born leaders and those that are born subjects. … The truth is that dimorphism generally makes of each of us both a leader with the instinct to command and a subject ready to obey, although the second tendency predominates to the extent of being the only one apparent in most men. (p. 278)

As can be seen, it would be hypocritical to stigmatize the intentions of the teacher with hypothetical ambitions, as according to Bergson (1935), we are all ontologically constituted as subjects with this potential. What is more relevant is the notion that this dimorphism supposes distinctive responses to two different

[4] Innovation, as the organization of ignorance, can be interpreted to give greater precedence to risk in relation to the need to be responsible, while innovation as the organization of the known facts intends to have the contrary effect. See Conclusion to Chapter Ten.

paradigms of understanding of what the philosophical scope and the political role of innovation is.[5]

Before moving on to the next section, there remains something outstanding in the penultimate Bergson quote that cannot be left unaddressed. Bergson refers to (1935): "A dream dreamt, now and again, by *chosen souls* …" (p. 267, emphasis added). How should we think about what Bergson might mean today when he says the dream (of the invention which sets in motion the possibility of innovation) dreamt by *chosen souls*, if this cannot be the providence of all in the same moment? Perhaps it is easier to understand how this idea might assume its meaning in the contemporary paradigm if we think of the formation of "We-Think" in the way Leadbeater (2008) describes the formation of collective intelligence as something that begins with a "good core [that] starts a creative conversation, and invites people to contribute" (p. 69). The idea will itself choose those who are ready to initiate its realization, which itself is not the rhetoric of exclusion.

8.3

Open innovation and business management studies

While theorizing both innovation, beginning with Schumpeter's (1934/1911), and the formation of the concept of the open society is a pre-Second World War development, beginning with Bergson's (1935), followed by Popper, Hayek and Soros, it is surprising that we should have had to wait until the first decade of the 21st century for Business Management Studies to develop a theory of open innovation (see Chesbrough, 2003). There were prior events such as the Marshall Plan that created relations between commercial interests in Europe and the United States (Hogan, 2002), the development of the post-war economy in Japan that involved the incorporation of foreign ideas used in new ways ('Quebec Agreement', 2015), the formation of the European Union that encouraged intra-European commercial collaboration ('Maastricht Treaty', 2015), and the fall of the Berlin Wall which opened the gates for east-west commercial collaboration in Europe ('German Reunification', 2015) just to name a few of the more obvious

[5] The significance of this dimorphism is discussed in Chapter Two, with respect to innovation and entrepreneurship and in Chapter Seven, with respect to the neoliberal innovator and the innovator who understands that innovation also supposes an expression of political subjectivity.

events. It appears that these large scale events were not interpreted by the economic interests such that the events themselves might have spoken to the theoretical problem that open innovation supposes.

This disjuncture between experience and theoretical development also speaks to the fragmentation that exists between the various fields of economic thought. Drucker, also an expert in the area of business management, proclaims, in *The landmarks of tomorrow* (1959), the coming of the importance of the "knowledge worker" as an economic value; an assertion that is followed in quick succession by a series of theoretical developments beginning in the early 1960s; all contributing to the current understanding of the knowledge-based economy (see Peters, 2009). The difference between these two strands of economic thought – that which produced Chesbrough's (2003) retrospective identification of a change in paradigm and that which following Drucker's assertion of the economic importance of knowledge – can be distinguished by the latter's acknowledgement of the importance of social innovation. While a theory of innovation does not enter into Chesbrough's (2003) thinking, let alone a sense of social responsibility, Drucker (1959) goes as far as saying that "[w]e need social innovation rather than we need technological innovation" (p. 33), a belief that is put in clearer perspective when it is understood that Drucker considered "[the] two major areas of innovation to be: the created universe of nature, and man's own society" (p. 23), an idea that should be unsurprisingly congruent with Schumpeter's concern for the human mind and society (Shionoya, 2004); something that is clearly tracked in neo-Schumpeterian economics (Hanusch & Pyka, 2007).

Interpreting this difference from the perspective of Schumpeter's framework, it could be surmised that the business management school theorization of economic behaviour does not always succeed in finding a balance between the importance of "historical analysis of industries, … industrial monographs and biographies of business leaders"; the three elements that Schumpeter considered to be so important to giving innovation its proper focus (Godin, 2008, p. 7). This is important, because the use of Chesbrough's theory of open innovation needs to acknowledge, in the researcher's opinion, the obstacle this imbalance creates in relation to (1) how open innovation might imply an implicit experience of social innovation, and (2) how an understanding of open and social innovation can be facilitated in student learning.

This section will now engage with the contributions Chesbrough, von Hippel, Nonaka and Tuomi, with respect to how open innovation is understood in business. The choice of these four thinkers has to do with an interest in bringing Tuomi's critique to bear on the thinking of the first three. Although the work of von Hippel (1998) precedes that of Chesbrough (2003) by 15 years, I will begin with Chesbrough because it is he who gives the concept its names.

8.3.1

Henry Chesbrough

Chesbrough (2003) addresses the situation of the firm that competes in the *global* market. To Chesbrough, survival in the global market means cross-evaluating knowledge that informs the firm's innovative process against knowledge that can only be accessed by going outside what the firm already knows. Chesbrough theorizes the firm as a global enterprise from the perspective that it can only be thought to optimize its possibilities of competing through being open to the use of the knowledge that underpins the actions of its competitors across the global horizon. This means the problem of innovating is no longer about competing with known commercial actors within the delimited domain of, for example, a national market: innovation is about competing with new commercial actors who innovate within distinctive systems of innovation that utilize methodologies that draw on knowledge that is locally embedded. This disposition towards the external is what the *open* of open innovation refers to when innovating in accordance with the framework that Chesbrough uses. What this cross-evaluation of knowledge implies is that the firm will be open to critiquing its existing knowledge for its limitations and with respect to how these limitations construct a closed disposition to the innovation process. Such a brief description of Chesbrough's theory of open innovation cannot be made without adding that he supposes his theory to indicate a change of paradigm; meaning that to be competitive, the firm must move from the paradigm of closed innovation to the paradigm of open innovation[6].

The point of referring to Chesbrough's (2003) theory of open innovation is not simply because he gives open innovation its name: the point of referring to

[6] See Appendix F for Chesbrough's (2003) comparison of the open and closed paradigms of innovation.

Chesbrough's theory of open innovation is that his thinking can be seen to inform how educational institutions think of innovation. To this effect, it is possible to use Chesbrough's thinking to highlight the further development of two themes of thought with which this investigation has been preoccupied: (1) the idea that the most critically informative way to think of the educational institution is to think of it as a firm and (2) the idea that it is the educational institution, as a firm, that constructs a *dimorphic* subject of innovation. The rest of this section will focus on how Tuomi's (2009) critique of Chesbrough's thinking contributes to how these themes might be better understood.

Chesbrough's (2003) theory of open innovation (not to be mistaken for a theory of innovation) is paradoxical in that while it supposes an openness to the value of exogenous knowledge, this openness uniquely focuses on how knowledge might serve the firm's "business strategy" (Tuomi, 2009, p. 16)[7]. In other words, Chesbrough's theory of open innovation does not imply the possibility of a broader notion of what it means *to be innovative*. As Tuomi indicates, "[t]here is no real discussion of innovation theories", which leaves innovation "in a black box" (p. 17). The illusion might be that Chesbrough understands innovation according to some older theoretical model to which he adds knowledge without making reference to the "social basis" through which this knowledge comes to constitute change. In other words, Chesbrough does not look at how new ideas and new knowledge are generated. Such an approach to open innovation supposes a static analysis in a dynamic domain; snapshot of the problem of being open. The illusion that Chesbrough's methodology is constructed according to the function of an older theoretical model is furthermore highlighted by his notion of the open innovator as "heroic innovator" (as cited in Tuomi, 2009, p. 17). The basic obstacle to Chesbrough's theory of open innovation informing an understanding of student innovative activity as both open and social is that it ignores the problem of the relationship between the collaborators and the actor who leads the production of the innovation.

[7] Openness to Tuomi (2009) means "open interfaces" and "interoperability" in the "technical" sphere and "open access to resources …, open source …, access to decision-making …, [and] open boundaries" (p. 20); the latter referring to "legitimate peripheral participation", which would seem critical to understanding how non-proprietary innovation becomes the source of economic innovation. These ideas of openness will be further extrapolated later in the chapter and also in the next chapter.

On the other hand, it is possible to say that Chesbrough's (2003) model of open innovation would work very well in the instance of needing to explain the innovative activity of the educational institution. This said this investigation is not one that intends to explain how business strategy models describe institutional application of a theory of open innovation when competing as a commercial institution with other providers. While a critique of this market behaviour is relevant to the creation of a broader understanding of open innovation in Education, there is now room for such a critique in the context of this investigation.

To conclude, Chesbrough's (2003) interest is in explaining the problem of open innovation of the firm that competes in the global market to produce goods for personal financial gain. The only way this thinking might be used to better understand the paradox of the student's situation would be to regard the student as the producer of their human capital. In other words, an analysis could be done in relation to how students cross-evaluate their existing knowledge of the service their institution offers with knowledge gained from other institutions with respect to what they offer their students, such that they might make their human capital more valuable upon entry into the job market. To do this is to treat the intrinsic nature of the student as *homo economicus* who forms him or herself as a private good (Dardot & Laval, 2013). The intention here is rather to treat students as both non-proprietary and proprietary *dimorphic* subjects while imagining that there are other ways of thinking about innovation besides those that conform to defending this dichotomy.

8.3.2

Eric von Hippel

Tuomi (2009) thinks of von Hippel as someone who theorizes open innovation. Von Hippel (2013) himself distinguishes between user innovation and open innovation as different approaches to innovation that should not be mistaken for one another. Von Hippel makes this distinction in the following manner:

> Typically open innovation leverages Bill Joy's insight that there are many more smart people outside the firm than inside it who might solve a problem. … We don't have to develop all our new

> products or processes for ourselves. We can 'open' our company up to the idea of buying innovations from the outside. …
> Acquiring and benefitting from user innovation on a systematic basis involves much more than just being 'open' to acquiring outside ideas and intellectual property. It involves actually understanding the user innovation ecosystem and developing processes to work with lead users and user innovation communities in a way that is beneficial to both the users and your firm. Users and user communities also represent more than a source of innovations for a company – they represent a potential market. So as a firm, you want to treat them as not only innovators, but as customers. You have to learn to deal with them respectfully. (p. 17)

Von Hippel (2013) regards open innovation as a kind of harvesting of exogenically produced innovations and innovators that exist or work in the domain of the competitor. What emerges from von Hippel's (2013; see also, 1988, 2014) thinking on user innovation is his understanding that relations in the commercial world need to address the problem of ethics in commercial relations. In this sense, von Hippel can be thought to exhibit sensitivity to the more complex meaning of openness that can be associated with open innovation, even though he himself supposes open innovation to not involve this sensitivity. Von Hippel's distinction between open and user innovation might be questions in relation to the following two points. Firstly, there is as yet no single theory of open innovation that holds sway across the diverse attempts to say what open innovation refers to. The theories of Chesbrough, von Hippel, Nonaka and Tuomi are but four contrasting examples. Secondly, it would appear more important to highlight that while von Hippel (2013) appears to restrict his interest in user innovation to the proprietary domain; his thinking lends itself to the speculation of how his concept for democratization of innovation might inform student participation in open and social innovation – his interest in ethics being particularly relevant to the latter form of innovation. Alluding to the allegorical value of such thinking, von Hippel (2014) observes:

> When innovation becomes democratized, many traditional assumptions about innovation and the best ways to innovate are upended. For example, the advantages that the traditional assumptions firms have in place with respect to innovation come into question. When innovation resources are cheap and well diffused, what firms ought to do is let a thousand flowers blossom, as they say, and then select the best flower. (p. 2)

As much as this thinking promises the possibility of a development that would include students and educational institutions in open and social innovation, this possibility is not sufficiently extrapolated in the discourse in Education on user innovation. From the perspective to the educational institution, user innovation is very much controlled by commercial and administrative interests. This is to say, that despite neoliberalism casting students as consumers in their project, students are in fact excluded from participation in the user innovation. Yes, they might be participants in the process but they have no voice in the design of user innovation; user innovations usually being used only to affirm the value of the existing provision of Education as a service. This may be contrary to the impression educational institutions like to give when including students in, for example, surveys of course value, and teaching performance and professionality etc. These exercises are largely instrumental and, as such, fail to involve the democratic participation of the users (students) in the way the education service is changed. In underlying this point, it might be asked, who is innovating in the context of implementing change in response to received survey data? Only commercial management and administration get to innovate in this instance – certainly not students and probably not teachers either. The thousand flowers that blossom in the classroom are driven past by commercial and administrative rationalities as if they are not deemed to be of productive value; that is, other than in the creation of human capital.

The latter should not be surprising because the concept of innovation applied in Education does not embrace student participation. Student innovation is black-boxed by educational institutions, except in selective instances where, for example, there is collaboration between R&D in universities and commercial interests. It would seem that the application the politics of innovation in Education is accompanied by a fear that the formation of student capacities to be innovative, on account of the idea that student practical reason might become associated with a process of innovation that is both open and social. Student open and social innovation might bring into question the politics of their own formation and affirm that when they are innovative, “many traditional assumptions about [institutional] innovation and the best ways to innovate are upended” (von Hippel, 2014, p. 2), leading students to challenge the closed vision that economic innovation employs in the objectification of its self-interest.

In the face of this ever-present possibility of such a challenge from students to the neo-conservatism that results from economic innovation, the educational institution embeds the student cohort within the fold of its own static model and *modus operandi*. Students are coerced into identifying with the manner in which the institution utilizes open and user innovation to its own ends. This philosophy of innovation – if we can call it that – with respect to both the work of the above theorists and to how the institution mediates the relationship between "open innovation" and "closed innovation" (Chesbrough, 2003) can be seen most transparently in the practices educational institutions use to capture student talent from outside their immediate catchments or from competing institutions. Instead of challenging the endogenous capacity of the institution to be innovative, innovation becomes a commercial and exogenous process of talent acquisition (Tuomi, 2009). As von Hippel's (2013) iterates:

> … companies don't like uncertainty, so they often stop radical innovations, whether they are developed inside or outside. That's why established companies tend to acquire rather than innovate: they want to acquire the whole package of knowledge about the market, knowledge about the product, knowledge about the technology, and not have to deal with bringing it in against resistance. (p. 20)

In this way, educational institutions are always in danger of making themselves servants of the market, instead of trying to change the terrain of the market through being innovative in a manner that would include teacher and student participation. Such an approach stifles student innovation, sending it underground, putting the rationalities of commercial, administrative and Education interests in conflict; a conflict that is swept under the carpet in order to uphold the closed, static and commercial model, which must compete, ironically in an open, dynamic and non-proprietary/proprietary world.

8.3.3

Ikujiro Nonaka

As intimated above, there are limits to which open innovation can be discussed as something that takes place in Education and includes students as active participants without theoretically coupling open and social innovation. Open

source, open access and open publishing, for instance, can be explored from the perspective of what they offer technologically to the possibility of open innovation, but the implications of this exploration are limited as long as the *a priori* existence of the social context, in which Education takes place goes unacknowledged. To discuss the merits of student innovation therefore requires *openness* to be thought of in *social* terms. Without doing this, knowledge made available by open source, open access, open publishing technologies can be treated as mere information without any consideration of what students might do with this knowledge; with respect to how they interpret problems that might be the objects of their learning. In this way, knowledge presumes the presence of a social actor. In saying this, if knowledge is to be something more than the form in which technology makes it available or disseminates it in Education, it presumes students should reshape, rework, reconstitute, and recreate the ideas they engage with. To this effect the aim of studying open and social innovation could be considered to be one of studying not only how ideation occurs in the classroom and lecture theatre, but also it could also be about how this process acquires transcendence in the proprietary domain. Another way of stating the same problem is to say that collective intelligence cannot be thought of purely in terms of open innovation. An aberration of collective intelligence limited to open innovation is likely to both speak to (1) the notion of a top-down instrumental use of open technologies for economic gain and to (2) the notion that such political application supposes the creation of a "fetishized and hypostatized" teacher and student cohort, as Pierre Lévy (1997, p. 13) would call it.

While open and social innovation as a single concept is not explicitly dealt with until the following chapter, what will be attempted in the remainder of this chapter is an outlining of the metaphysical context in which open innovation and social innovation can be said to ontologically constitute one another.

Tuomi (2009) uses the work of Nonaka to "open the black box of innovation" (p. 22) with the intention of asking how "new ideas and new knowledge are generated". To do this, he explains how Nonaka, Toyama and Hirata's (2008) use the idea of how knowledge is created in a spiral of process

which these Japanese researchers call a SECI Spiral[8]. Essentially, this model of knowledge creation describes the shared action that takes place through knowledge being tacitly and explicitly and tacitly experienced, as an individual, when shared with the group, when systemized and when experienced in practice (see Appendix E). To Nonaka (2008, as cited in Tuomi, 2009),[9] "the SECI process does not happen in a vacuum", rather it "occurs in a specific context", which is to say, "knowledge is contextual" and that this is "why it has meaning" (p. 25). This makes understanding open innovation dependent upon understanding the specificity of the context in which the open innovation process takes place, the problem it is addressing, the relations with stakeholders, etcetera. Nonaka describes this context as "Ba", which refers to a "shared context in motion". Citing Nonaka, Tuomi (2009) puts it like this:

> Knowledge needs context. Without context to specify time, place and relationship with others [meaning other contexts] it's just information. *Ba* is a context that is shared by participants to create meanings. Participants understand the context of others and oneself and through interaction create the context. Hence it is constantly moving.
> The key to understand the context is interaction. It does not reside in one's mind, contexts are shared and created through interaction. (p. 25, emphasis added)
> [This is a] constantly evolving context of interaction with others and with the world. (p. 27)

The concept of Ba has its foundation in the concept Basho (Tuomi, 2009, p. 39).[10] According to Tuomi, Basho is "the place where pure experience occurs. … It is the space of interaction, where the world and consciousness meet" (p. 40).[11] In developing the concept of Basho, the Japanese philosopher begins with a critique of "Wilhelm Wundt's philosophy of direct experience and William James' radical

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[8] SECI refers to Social, Externalization, Combination, and Internalization (as cited in Tuomi, 2009, p. 24).
[9] Taken from an unpublished interview Tuomi did with Nonaka (2001).
[10] The concept of Basho was developed "by the Japanese philosopher Kitaro Nishida (1870-1945) and was further developed by Hiroshi Shimizu in the context of innovation research and "holonics" in the 1980s and 1990s" (Tuomi, 2009, p. 39).
[11] Other philosophers describe this same incommensurability in different ways. To Albert Camus (1975), this conflict produces an experience of "the absurd"; to Alain Badiou (2010), the relationship is "paradoxical" and requires philosophical thought if its incommensurability is to be thought through. To Nonaka, this relationship requires the continued use of "tacit knowledge" (as cited in Tuomi, 2009); something, that according to Tuomi, must be "a contextual frame for interpretation, peripheral (no-focal), socially shared [and] non-conceptual" (p. 46).

empiricism" (Nishida, 1911, as cited in Tuomi, 2009, p. 40) which brought him to state that "the world is not "out there"; instead, the knowing subject is simultaneously constructed by the same reality that the knower perceives". As Nishida goes onto say, the world and consciousness have a "contradictory identity". From this, Nishida builds "an alternative epistemology, based on pragmatism (James, Dewey), phenomenology (Bergson, Husserl, Heidegger) and existentialism (Kierkegaard, Nietzsche)", which he integrates using "Buddhist philosophical thinking". Basho, as the knowing subject who is simultaneously constructed by the same reality he perceives, can be found in the words of other philosophers, including those of Michael Polanyi:

> … the functional structure of from-to knowing includes jointly a subsidiary 'from' and the focal 'to'. But this pair is not linked together on their own accord. The relation of a subsidiary to a focus is formed by *the act of a person* who integrated one to the other. The from-to relation lasts only so long as a person, the knower, sustains this integration.
> … Such integration cannot be replaced by any explicit mechanical procedure … It can only be lived, can only be dwelt in. (Polanyi & Prosch, 1975, as cited in Tuomi, 2009, p. 49, emphasis in original)

For such a process of integration of this from-to functional structure to resist being systemized and reproduced as a mechanical procedure, the relationship of subject and object must be collapsed such that the relationships between invented subjects and objects would require open innovation to also be social.

The discussion from Chapter One might be recalled here, in that it was argued that the flight recorder ('Flight Recorder', 2017) is a poor metaphor for the black box that innovation and the innovative subject have been condemned to by economics. Rather the black box needs to be thought of as the blacked-out theatre just before the commencement of a play. Here the audience and actors are brought together in a way that consciousness meets the world: that is, when the lights come on. As such, perhaps open and social innovation in Education begins in darkness as in when the regimes of rationality are for a moment suspended and momentarily incapacitated in their will to systemize.

Conclusion

An educational institution is never entirely open or closed, dynamic or static. Educational institutions wish to portray themselves as open and dynamic – look at their websites – but this can also be a marketing strategy that is, depending on the institution, seldom commensurate with the reality of the learner. If institutional criticism is that it is up to the student to be entrepreneurial in new ways, this is not a very rational criticism of the situation of the already innovative subject. To the already innovative subject it is not enough to just contribute to incremental innovation that increases institutional productivity. This on its own only contributes to the neoliberal institution to assuming a more conservative disposition and losing its capacity to be critically self-conscious of its function as an educational institution. It may be that the already innovative subject is wise enough to understand that paying the cost of one's education supposes, in the present operational format, the need for students to anonymously populate the instutiton's production function. However, such an individual will also want to initiate new actions, not only in their learning but in the work and life of the institution. It is only in this moment that it is known whether or not the institution is actually open and dynamic. In such moments, this nexus between the student and their institution is very important because all education tradition comes into question. Students are already choosing to abandon formal education because that which they want to learn can be learned more quickly, more effectively and with more interesting consequences outside the traditional institution. This is the positive implication of the introduction of new technologies to Education: heuristic student learning through interest in maintaining agile relations with the role of new technologies, results in students, not only wishing to benefit their own learning as something that can be *acquired* in relation to the promise of a future, but they also want to *transform* the conditions under which they learn. This in effect means that their learning implicates them in wanting to change institutional operations from being closed and static to being open and dynamic operations, and therefore that they should be receptive to their own individual and/or collective initiatives.

CHAPTER NINE

Social Innovation: A Political and Historical Problem of the Present

Introduction

Just as there have been periods when innovation has been understood to be something other than technological innovation, so too there has been a period when social innovation was understood as something different from how it is understood today. During the 19th century, innovation was thought of as social innovation, not technological innovation. During this period, social innovation was thought of in terms of social reform or in terms of social systems, in particular, it took the form of socialism (Godin, 2015b).

Since the mid-19th century and before social innovation re-emerged in 1960s and 1970s (Godin, 2012), philosophy has given way to the social sciences as the favoured form of social inquiry (Lévy, as cited in Peters, 2015b). It is speculated in this chapter that socialism and social reform were not extant but were correlated forms of thinking about the place social value had in relation to political economy. With this idea in mind, it is theorized that the epistemological foundations that provided the possibility for rebellion in the 19th century continue to inform the impetus for social innovation today.

This chapter will begin with an examination of Godin's (2012, 2015a, 2015b) 19th century concept of social innovation. this discussion s Roberto Unger's (2013) proposal for a maximalist social innovation movement. Unger's project has been chosen because he presents one of the strongest political challenges to the neoliberal governance of social innovation. In taking this approach, a wider body of literature is ignored because it does not go back to Godin's study of socialism and social reform, appearing, as such, to 'blackbox' the epistemological problem of understanding the genealogical nature of social innovation.

9.1

Benoît Godin (The history of social innovation as a category)

For many people today social innovation represents "a remedy or an adjustment to technological innovation" (Godin, 2015b, p. 133). Social innovation is also considered to be a recent development and is thought to have emerged after technological innovation. However, the concept of social innovation actually precedes our use of technological innovation. According to Godin, "social innovation entered the vocabulary in the aftermath of the French Revolution (1789-1799) and was used regularly in the 1860s" (p. 127), whereas technological innovation only came to be used following the Second World War (Godin, 2008). Understanding why and how this confusion developed becomes important to understanding why social innovation languishes today, for the most part, in the theoretical realm.

In reading 'Social innovation: From Scheme to Utopia' (Godin, 2015b, pp. 122-133), the aforementioned task would seem to be one of needing to understand how social innovation was dismantled as a practical response. Two aspects of social innovation's genealogy need to be considered: (1) the effect of the French Revolution on how social innovation has come to be valued today, and (2) the scope for transformation that social innovation presumes, on account of the scale and duration of the French Revolution – not discounting the terror, destruction, and executions associated with this event. While the French Revolution was not thought of at the time as a social innovation – it only came to be retrospectively described as such in the early 19th century (Godin, 2015b) – it played a divisive role in stigmatizing social innovation and, in so doing, putting contemporary capitalism beyond reproach.

As iterated above, it is not only important to know why this debilitation of the social value of social innovation occurred but how this was achieved. During the 19th century, both "socialism" and "social reform" were thought of as social innovations (Godin, 2015b). Godin tracks these two distinctive social developments in a manner that creates the illusion of they were entirely independent of one another and, as such, developed in parallel as extant social preoccupations. A genealogical interpretation of these developments might be better served if they were theorized as if they were always in tension with one

another, as if each were implicit to all power relations conditioned by both economic and social interests. In this way, it is possible to see how neoliberal capitalism has stifled social innovation in all circumstances that do not serve its own ends. The objective in the remainder of this section will be to speak to social innovation in both 19th century forms – socialism and social reform – while holding each in tension with one another.

William Lucas Sargant (1858, as cited in Godin, 2015),[1] critiquing socialism (as social innovation), wrote that "health of body and mind" are "obtained not by ease [read excessive wealth], not by indulgence [read welfare], but by active participation" (as cited in Godin, 2015b, p. 123). While this may be a liberal truth procedure that seeks to gain society's implication as a whole – both capitalist and socialist alike – by appealing to its moral appreciation of that which benefits all, the intention is to give social innovation the effect of a pejorative connotation. The best way to cut across this criticism might be say that while Sargant was writing in the vein of English Idealism, when "a belief in an Absolute (a single all-encompassing reality that in some sense formed a coherent and all-inclusive system)" ('British Idealism', 2015)[2], has the intention of putting capitalism beyond reproach with respect to its role as moral arbiter, that Sargant was able obfuscate the limits and possibilities of *active participation*. For example, did active participation presume the right to question the capitalist project, to challenge it, to transform it, or did active participation merely refer to good behaviour as an expression of acceptance of one's ascribed economic role? To be more precise, did active participation refer to anything beyond effective performance as *homo economicus*? The inability to address these questions at the time and in the form of a problematic (Foucault, 1997d) can be understood to have contributed to the incapacity of social innovators to constitute themselves such that they could challenge capitalism on its own terms; which is to say in

[1] "Will Lucas Sargant (1809-1889) [was] an English businessman, political economist and educational reformer", published *Social innovators and their schemes*" (1858) (as citied in Godin, 2015, p. 123), would appear to be one of the major influences in Godin's thinking on social innovation in the 19th century.

[2] British idealism was generally marked by several broad tendencies: a belief in an Absolute (a single all-encompassing reality that in some sense formed a coherent and all-inclusive system); the assignment of a high place to reason as both the faculty by which the Absolute's structure is grasped and as that structure itself; and a fundamental unwillingness to accept a dichotomy between thought and object, reality consisting of thought-and-object together in a strongly coherent unity ('British Idealism', 2015).

relation to the interests of both the individual and private property. To succeed, socialism as a social innovation had to find a way to break away from capitalism's particular governance of political economy – as the political project instigated by the Russian Revolution in 1917 proved to be the case.

Sargant (1858, as cited in Godin, 2015) illustrates how this drama came to be played out. Capitalism was able to produce conditions for giving socialism, as social innovation, a pejorative connotation by highlighting that socialists (as social innovators) hated having to subject themselves to (1) the role "capital" played and (2) the necessity for "competition" (p. 123), and that this negativity existed on account of their "profound ignorance … of political economy" (p. 124). This chastisement was compounded by the observation that socialists (as social innovators) did not act alone – that they worked in "sect[s]" (p. 127). Furthermore, the social innovator was thought to be "a revolutionary" (Guizot, 1859, as cited in Godin, 2015b, p. 125). ""[P]olitical and social innovation" are frequently put together in the same phrase to highlight this characteristic" (Godin, 2015c, p. 126); the coupling of which can be understood to facilitate the negative echo that continued to reverberate from the historical memory of the French Revolution. The perception of neo-classical or Liberal thinkers was therefore one of regarding social innovators, in the guise of socialists, to be both intellectually impotent and revolutionary without proper cause. "What they propose", wrote one anonymous writer "is not to improve our present system of society, but to *abolish* it entirely, and to construct a new one in its stead" (Anonymous, 1845, as cited in Godin, 2015c, p. 128, emphasis added). What is evident here is that the art of self-government was not yet something that social innovators understood. This is to say, these more radical social innovators were unable to accept to be governed by the other and refer to the relationship with the self (Foucault, 2000) in such a way that would enable them to differentiate both themselves and their actions both from and within the existing system of governance. It is through the negotiation of accepting to be governed by the other that new strategies are formed and the work that transformation will require becomes visible. I will return to the abhorrence that socialists (as social innovators) had towards capital and competition at the end of the next section.

9.2

Social innovation (institutional)

While socialism (as social innovation) has been spoken of above in radically political terms, in that socialists (as social innovators) were supposed to have had revolution as their objective (Godin, 2015c), it may not be clear how this attitude to social change might have been in tension with the attitude of the social reformers (also social innovators). Identifying this tension is important to understanding the problem of social innovation today. When speaking specifically to this tension – something Godin does not speak to – there are two theoretical points to make. Firstly, there is the issue of how governmentality functions when there is conflict relating to the belief that there can be an Absolute all-inclusive system – capitalism. Secondly, there is the methodological question relating to the idea that if the pejorative connotation of social innovation is succeeded by a positive connation of social innovation, as it turned out to be the case (Godin, 2015c), then do the epistemological features of political and social thought that underpinned the historical disposition to which the pejorative connotation referred to – that of the revolutionary – still inform the will to social innovation? Such epistemological influences – they will not be the same influences as those of the 19th century – must still be considered to condition self-governance of the thought that produces the need for social innovation. After all, social reform (as social innovation) cannot be relied on to provide the rigour of self-critique that it should be required to show.

Beginning with the first point, in the latter part of the 19th century, according to Godin (2015c), social innovation takes on a positive connotation. Because there is not the space to extensively explore this transition in language from the pejorative connotation to the positive one[3], this could be summarized by the idea that "improving society "without aspiring to reconstruct it"" (Anonymous, 1959, as cited in Godin, 2015c, p. 128) gained ascendency over the idea of abolishing the present system as it stands, and constructing a new one in its place (Godin, 2015c). With respect to how governmentality is understood (Foucault, 2000), power relations between the social reformer (as social innovator) and the advocates of the existing system can be understood to be

[3] Godin deals with this question at length (2015a, 2015b).

characterized by a commensurability in values that defend the individual and private property as sacrosanct. It would therefore be assumed that there only needed to be corroboration with respect to how small differences would not be vetoed by the captains of industry. In this way, what was feared in social innovation; that it risked leading "to uncontrollable consequences" (p. 128), could be coerced into conforming to a desire for "reform", such that the integrity of the existing system would continue to endure. As Godin puts it, "[t]his positive connotation applies to any program, particularly if, initiated by governments for improving the social condition of mankind" (p. 129). In this way, governments could be thought to have stood-in for social reformers (as social innovators) in their power relations with socialists. Hence, social innovation, when thought of strictly in the language of social reform, becomes the unique prerogative of the Absolute and all-inclusive system of capitalism. In this context, the system is able to self-reform without analyzing the foundation of what otherwise might give rise to social innovation as a response to a critique of the system itself.

The second point has to do with the aforementioned methodological consideration: that the positive connotation of that which social innovation refers to should not presume the disappearance of the epistemological features of political and social thought that underpin that which the pejorative connotation refers to. While social innovation today does not occur without first being both state sanctioned or institutionally sanctioned, this does not mean that the impetus for social innovation that challenges the foundations of the capitalist system should have disappeared. Absolute inclusion itself implies that social innovation must be occurring on the inside; something that becomes recognizable in the next chapter, when open source in education is theorized in relation to the provision of possibilities for the formation of collective intelligence.

The continued possibility of social innovation in a more radical form must be considered inevitable if the forces of static and dynamic societies are examined. Returning to Bergson's (1935) description of these societies, it is possible in part to equate the sustainability of the Absolute and all inclusive system of capitalism with "[t]he closed society … whose members hold together … on the alert for attack or defence, bound … to the perpetual readiness for battle" (p. 266). The paradox is, according to Bergson, one where man is made for this society because it is understood to be the closest thing, for now, to what

nature itself would create in *our* name. The phrase that is most incommensurable with this image, expresses the idea that this Absolute all inclusive society "[cares] nothing for the rest of humanity" (p. 266). This incommensurability can be explained however in that it is the very idea of the Absolute, as all inclusive system, that is itself ontologically underdeveloped in that it does not as yet include the idea of "collective subjectification" (Lévy, 1997, p. 139). According to Lévy, what we see in contemporary economic activity are new "forms of self-organization and sociability … [that] tend toward the production of subjectivity" (p. 141); the effect of which is the continuous production of diversity and by insinuation, the development of the creative implications these diversities suppose. Furthermore, Lévy claims that this "continuous production of subjectivity will most likely be considered the major economic activity throughout the next century" (p. 4); meaning during the 21st century. It might therefore be prematurely concluded that subjectivities become the means by which capitalism will be transformed.

So when Godin (2015c) asks, "[w]hat is it in social innovation that gives rise to such disparate representations?" (p. 127), it might be assumed that social innovations should be, by definition, disparate. While various global problems implicate the participation of all humanity, ultimately such problems must be addressed locally. This is to say, while it might be desirable that there be a collective intelligence acted on in addressing such problems (for example, poverty, the health of nature's ecosystem, conflict, education), the scope of this collectivity will be geopolitical in nature and, as such, result in social innovations that assume the special character that can only be defined by the way in which multiple subjectivities are given to working together in the context in which they can affirm the practical value of their relations. To this effect, social innovation, in the first instance, does not need to be a representation that challenges and competes with the absolute nature of the capitalist system: it might rather achieve the effect of transforming the way global behaviour is systemized through projects of a smaller scope on account of these projects being educative in nature.

In the following section, the question of the scope of social innovation will be examined.

9.3

Theorizing social innovation (Roberto Unger)

> The fundamental problems of … contemporary societies cannot be resolved with the restraints of the limited repertory of the available institutional options. The multitude of small scale innovation arises from below as a pre-figurement of larger possibilities. The world remains restless under the dictatorship of no alternatives. Let this restless world find an unexpected ally in the social innovation movement. (Unger, 2013, p. 5)

It would seem important to clarify what Unger (2013) means when he speaks of "the available institutional options" (p. 1). According to Unger, the authors of these options, the rich and governing elite of the North Atlantic seek to reconcile "American style economic flexibility with European style social protection within the limits of an institutional and ideological compromise" that is incapable of addressing this challenge in a way that benefits all. Because engagement with diversity is always, or should be, a moral imperative in Education, Unger's analysis of this tyranny of political economy should likewise suppose the need to scrutinize whether or not educational institutions use social innovation as a strategic solution that, like in the case of the North American and the European Union, may bear little relationship to the problems they suppose to address. Paraphrasing Godin (2015b), it can be said that "innovation" has come to be thought of as "the *a priori* solution", irrespective of "society's problems" (p. 15). While there are various ways of examining the idea that social innovation could be applied as a solution, irrespective of the nature of the problem it addresses, any instrumental abuse of this power would need to be examined from the point of view of how social innovation is governed.

In the hands of the institution, social innovation can be understood to exemplify the extent to which economic interests define the purpose of political practice, meaning the purpose of social innovation can be understood as one of enhancing or extending existing economic benefits. Foucault, in his article 'Governmentality' (Foucault, 2000), underlines the nature of this privileging of the role of economics in power relations, when he says that "the essential issue in the establishment of the art of government [is the] introduction of economy into

political practice" (p. 207)[4]; in other words, while economics is an issue when it privileges profit over and above the creation of all other goods, it has to be said that economics is also responsible for the establishment of these power relations in the first place.

Nevertheless, the purpose of scrutinizing institutional use of social innovation as a strategic solution is not to just to show the extent to which institutions – governments, NGOs, city councils and universities – incorporate social innovation into their programs of governance as a means of ameliorating public concern about a social problem, but to show how their subjects (employees, customers, the electorate and students) are being constituted as subjects who understand political practice as an economic practice and therefore social innovation as an economic innovation. Curiously this interpretation of the political use of social innovation is the reverse of what Drucker (1959) – "the father of modern management" (Beatty, 1998, as cited in Kiessling, 2004, p. 85) – appeared to be proposing when he said "we need social innovation more than we need technological innovation" (p. 33), but perhaps this is because Drucker's notion of social innovation has already been seconded by economics, whereby the *Zeitgeist* becomes obliged to hide its hand. It is therefore not hard to understand why social innovation in Education might be reinterpreted as social enterprise and social entrepreneurship, and social economy with the objective being the economic value they bring to the institution.

Unger (2013), for his part, seeks to intervene with a method that exposes both the weaknesses and possibilities of social innovation with the intention of illustrating how the existing "dictatorship of no alternatives" (p. 1) should be transformed through resistance and subversion[5]. Unger makes his case at the 2013 NESTA Conference of Social Frontiers[6] by beginning with a comparison of what

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[4] Foucault's (2000) statement of belief is made in the context of tracking the introduction of economy into political practice between the 16th and 18th centuries. The deepening, complexity and subtly of this embedding of economy in political practice has become such that in the 21st century, the political can be thought of as economic practice; something perhaps best exemplified by the fact that in many instances the prime ministers and presidents of many countries are elected on account of their wealth and economic acumen – no examples needed.

[5] Roberto Unger is a Brazilian academic and is clearly sensitive to the desire of ordinary Brazilians to participate in the global relations and development – something clearly seen in his empathy for the "multitude of small scale innovation" that is arising from below "as a pre-figurement of larger possibilities" (2013, p. 5).

[6] See 2013 NESTA Conference of Social Frontiers http://www.nesta.org.uk/event/social-frontiers

he calls “the minimalist” and “the maximalist” approaches to social innovation. In Unger’s words, the minimalist approach to social innovation

> …is a movement within civil society and about civil society. It does not directly engage in the politics of state power and it renounces the hope of proposing a comprehensive project for society. The minimalist approach to social innovation has the attraction of modesty and apparent realism. (p. 1)

This approach resonates with Bergson’s (1935) idea of the closed society (see previous chapter). Clearly identification with the system means that the logic of the very same system must be that which defines the parameters within which change occurs. Habitus would seem to play a significant role in ensuring the culture of this identification.

The maximalist view of socialist innovation, on the other hand, is that

> … although headquartered in civil society, is not simply about civil society, but about everything, and therefore, must engage the politics of state power and must have a comprehensive proposal for society. (Unger, 2013, p. 1)

Unger’s (2013) comprehensive proposal can only be a proposal that signals the possibility of a genuine alternative if it puts consciousness in conflict with the world (see Camus, 2000), if it elicits the absurdity of the way we have made ourselves such that it has become difficult to imagine an alternative response to the world. Metaphysically, Unger appears to be meeting the spirit of competition with a strategy that is of equal force to the will to compete. Cut back to its barest fundamentals, he would appear to be using *strategy* to confront *operational efficiency,* which as Porter (1998) reminds us, are not the same thing. Central to this investigation is the notion that when innovation is only thought of in terms of cumulative profits, the art of strategy with respect to creative development of the institution can be compromised and in effect be replaced by operational efficiency. Strategy in a closed society can only be used to maintain the traditions that have given it continuity. On the other hand, strategy in an open society becomes a positive force for change, through temporarily opening the closed society mould.

The question that Unger (2013) raises, in relation to the intentions of this investigation is, what kind of proposal would contribute to students being openly and socially innovative in a way that would implicate them in having to better

understand their relationship to the significant problems of the world? Reiterating the argument made in Chapter Eight, the intention is not to see Education as a subset of paid-employment but to see it as the experience which transforms the domain of paid-employment through initiating new creative responses to the conflict between consciousness and the world, through an engagement with what could be called a *limited number of universally accepted problems.*[7] Lévy's (1997, 2013, 2015) work with collective intelligence would be a good example of the type of change this question refers to. To this effect, there is a need to be discerning in responding to Unger's proposal; to not take everything literally and to argue every point. During the rest of this section, I will lay out the key elements in Unger's proposal that are relevant to the above question.

Unger's (2013) proposal comprises the following elements: (1) an analysis of the current "situation" of social innovation; (2) the "task"; (3) the "direction"; and (4) the "methods" (p. 1) by which such a transformation is to be achieved.

According to Unger (2013), the current situation of the social innovation movement is characterized by a series of problems, including: "the hierarchical segmentation of the economy"; "the disconnection of finance from the economy" (Unger, 2013, p. 1); "the non-existence of any promising way to enhance the quality of the provision of public services"; "the absence in these societies of an adequate basis of social solidarity"; and "the flawed and relatively impotent character of democratic politics" (p. 2). The question is, how does this articulation of problems implicate students in innovation that connects them with a limited number of universally accepted problems? The simple way of addressing this question might be to ask, how might the first two problems be related to the last two problems?

Thomas Piketty's research on wealth creation, published under the title of *Capital in the Twenty-First Century* (2014), makes an interesting contribution to understanding Unger's (2013) description of the economic situation which the latter's proposal addresses. How, for example, should the politics of education *inform student understanding* of their relationship with the world, with respect to the fact that, while they are led to believe they are being formed with the capacity to be innovative, their participation in paid employment is likely to involve little

[7] This articulation of problems will be explained in more detail in the following chapter.

more than (Sennett, 2006) executing the innovations initiated by others. It is those who initiate and execute who have the possibility of accruing the capital that in turn makes it possible to invest in *non-productive* more rewarding investments. The following three things are likely to happen if students are misled with respect to how Education contributes to the creation of wealth: (1) both the pedagogy and the curriculum continue to work in function of what can now be considered, in light of Piketty's (2014) research, an obsolete theoretical model for how innovation results in wealth; (2) the complexity of the profit motive that is said to drive innovation and entrepreneurship (Procter, 2008; Hanusch & Pyka, 2007b; Fagerberg, Mowery & Nelson, 2005) will be misunderstood[8] and/or (3) which in turn will undermine student trust in the education system in general.

In relation to the first, Piketty's rationale supposes that Education prepares students with two distinctive and unrelated futures in play: for those who will work in the productive sector and for those who will increase their wealth through not having to invest in the productive sector. The assumption might be that all students who begin by working in paid-employment have equal opportunity of accruing wealth through non-productive investment, but this assumption collapses in the context of doing a more dynamic analysis.

The second element of Unger's (2013) proposal cannot be addressed in relation to the problem of social innovation, as it might otherwise be thought to take place in Education, without first addressing issues (1) and (2). In other words, the question of how the quality of Education, as provision of a public service, cannot be enhanced without first providing transparency with respect to how the politics of education addresses Piketty's claims on how wealth is accrued in productive and non-productive forms. Likewise with the question of how democracy might become a more vital contributor to collaborative learning: the contribution that the unproductive accrual of wealth makes to the provision of technology (a capital cost) would need to be made transparent before it could be expected that democracy could become a more potent force in student relations. If this issue is not addressed, the intrinsic loyalties to cultural capital associated with either productive paid-employment or non-productive investments will be divisive in student relations in the context of open and social innovation.

[8] These texts are just three key examples of many that could be provided; the third one chosen for its local relevance.

The second element of Unger's (2013) proposal for transformation through social innovation involves "the task". Unger's strategy is one of mobilizing "the multitude of small-scale innovations" and the "little epiphanies that exist all around the world" (p. 2). Unger does not explicitly say that his proletariat is made up of all those who are without *the legitimate power to initiate* new actions under neoliberalism, by which he might have meant all those who do not have work in paid employment and all those who cannot get work but have a new idea. While there is no clear indication that this proletariat includes the subject of Education, it is evident from his articulation of tasks, that students are not considered to be primary actors.

Unger's task is to identify the "enabling conditions": "the vast array of small scale innovations coming from the grass roots"; "the functional imperative of success … [is] always the indeterminate in their social and institutional implications"; and "there are always alternative ways of defining or defending group or class interest" (p. 2). Such enabling conditions would need to be rewritten for Education in a way that recognizes the context in which open and social innovation is already producing these so-called small-scale innovations and little epiphanies.

Critical to the articulation of enabling conditions in Education would need to be an identification of the characteristics in "the knowledge space" (see Lévy, 1997, pp. 138-141) that enable open and social innovation. The knowledge space, as Lévy understands it, is not an extant space that can be characterized according to its unique characteristics without such an articulation containing within its expression a critique of "the commodity space" (see pp. 135-138). In effect, these two spaces need to be thought of as distinctive cultural paradigms. This distinction would need to acknowledge that the knowledge space, in as much as it is possible for *science to be philosophical and philosophy to be scientific* (personal communication, 2016), identifies on behalf of neoliberalism the limits of the commodity space as an end in itself. To provide an example, it would no longer be possible to think of students as consumers of research. The enabling conditions of the knowledge space will be addressed more specifically in the next chapter, where the focus is on the work of Lévy (1997, 2015a, 2015b; see also, Peters, 2015b).

Fundamental to Unger's (2013) proposal is the articulation of the "direction" this proposal should take. To clarify, Unger does not argue for a single programme of social innovation but rather for a space in which alternatives are able to "contest for ascendency" (p. 3). In order to realize the possibilities of such an ascendency of new ideas, Unger proposes the initiation of four converging projects. It is in the mechanism of these projects that social innovation can be understood to happen as a consequence of this innovative activity also involving open innovation. As will be seen later in this chapter, the articulations of these four projects intuit the contribution that Lévy (1997) is beginning to make with respect to how Education might come to be transformed; this, even though Lévy's publication precedes Unger's (2013) by 15 years[9].

Unger's (2013) four projects are as follows: (1) a "new form of production characterized by permanent experimentalism", that would no longer be limited to the who has political control of an exclusive sector of society and the economy (p. 3); (2) the radical transformation of "the character of education" which as such is aimed at changing "the content of consciousness"; (3) "innovating in the provision of public goods. The goods by which people make people, we make them bigger"; and (4) the "energizing and deepening of democracy, creating a high-energy democracy". Unger believes that these projects must be spiritually unified if they are to function in a manner that mutually supports their development and, as such, he proposes two ways of understanding this unifying force: there must be "structural ambition without structural dogmatism" (p. 4), achieved through "institutionalizing every area of social life, … in the form of a radical experimentation, … [which itself becomes] the unifying point of these initiatives [or projects]". Alternatively, "the spirit that animates this project is to emphasize its goal, rather than its method" … the goal being "a marginal increase in equality" (Unger, 2013, p. 4).

These articulations can be seen as being intrinsic to the general dynamic and orientation of progress within this movement of social innovation. In as much

[9] The reason for this is that technology has only more recently gained cultural and professional leverage through the exploitation of social media platforms. For example, Facebook was launched in 2004 ('History of Facebook', 2015). The research has not been done in this investigation on when social media reaches such critical mass of use that it can be considered to be significant as a platform for education and professional use, by both students and paid-employees. The question might be, when did it become the educational norm for classes to form their own Facebook pages for the purpose of discussion of a particular course.

as Unger's (2013) proposal is a complex one, it is a set of projects that should be understood as one that can only be gradually realized in practice. While these four projects are framed in a manner that speaks to the problem of transforming Education such that learning might take place through experimentalism in open and social innovation, optimism might be found in Unger's (2013) statement "[t]he goods by which people make people, we make them bigger" (2013, p. 3). These goods are formed in what calls "the knowledge space" (Lévy, 1997, pp. 138-141). If such a discussion as the aforementioned were centred in the development of "the commodity space", as it is understood by Lévy (1997, pp. 135-138), the goods that make people would be those that comprise the "[e]conomy of material and statistical goods" (p. 140), which is to say those that produce financial capital as their only end. To extrapolate, this refers to everything that makes the formation of human capital measurable; that is: all skills and knowledge acquired in particular courses and in particular institutions that have a particular commercial status and value. This is an industrial model of which many contemporary educational institutions are late-model exemplars.

While the knowledge space, as understood by Lévy (1997) did not yet exist at the time of writing, he thought of it as a "u-topia", a "no space" (p. 138) – there are new student drives, in the form of "[i]dentity; skill, nomadic cooperation, continuous hybridization" (p. 140), that produce new public goods and in this vein, there has been much development since 1997. The objective of the knowledge space is the formation of "human qualities" (p. 140) over and above the formation of human capital, in the form of skills and commodified knowledge. Capitalism remains and "there is always a commodity space" (p. 137). What has changed and what puts capitalism in perspective with respect to how Education begins to configure itself within the realm of cyberspace and the information economy network, is an "anthropological dimension", where it would seem that open innovation facilitates social innovation through deterritorializing the deterritorialization of the commodity space, where "the processes of individual and collective subjectivization come together" (p. 139). As such, to make the Unger's (2013) public goods (human qualities) bigger would be to enable students to bring the knowledge space from the virtual realm of understanding into a functioning educational ecology, where collective

intelligence, through the use of new open technologies, enables students to be actors to experiment with the problem of affecting change.

Lastly, Unger (2013) speaks of two methods. These methods will be treated very discretely, as it is Lévy (1997) who has more to contribute on this subject for reason that his research goes more deeply into the problem of describing the epistemology of the knowledge space. The first method involves "interpreted foreshadowings" (Unger, 2013, p. 4), where "[s]mall-scale projects" are worked from the bottom up to produce large-scale projects. The second method is referred to as the "exemplary insurgence"[10], which refers to the engagement of "every area of social life, although beginning from its seat within civil society". The seat from which students begin in the knowledge space, is the "core", as explained by Charles Leadbeater (2008), when describing how small collaborative initiatives produce the "we-think" experience – an essential element of open and social innovation that will be expanded on in the next chapter.

Conclusion

The discussion of social innovation will be continued in Chapter Ten, where Lévy's (1997, 2015a, 2015b; Peters, 2015b) description of *the knowledge space* will become a site for theorizing the open and social innovation that results from treating student knowledge as ubiquitous, constantly enhancing, co-ordinated in real time and resulting from an effective mobilization of skills (1997). These are characteristics that speak to the formation of a new theory of relationships between subjectivities and the collective community, where the institution comes to be defined by collaborative active and collective thinking; which is to say, not only by commercial and administrative managers but also by the teacher and student cohort. The non-proprietary aspect of the student's learning project enables open and social innovation to be developed from the bottom up, where students think the paradox of Education is such a way that the ideation that should come with learning itself promises the possibility of transforming Education as we know it.

[10] Unger (2013) wrote "incurgence" (sic) when I believe, given the text that follows, that he meant "insurgence" (p. 4).

CHAPTER TEN

Collective Intelligence: Collaborative Innovation in the Knowledge Space

Introduction

It is Lévy's (1997, 2015; Peters, 2015b) work with collective intelligence that makes it possible to think of open and social innovation as a concept for how students co-create in an open source learning environment. Is it possible to say such a thing – that innovation can be thought of as a form of co-creation? The merit of this initial statement falls on the necessary distinction Lévy makes between the commodity space and the knowledge space and the different goods – commercial goods and human qualities – that these learning spaces produce. This chapter explores how open and social innovation in student learning can be thought to produce human qualities and, in doing this, considers the implications for this development in Education. The discussion in this chapter explores a new approach to innovation and Education. Three issues are tackled: How Lévy's thinking overcomes Heidegger's with regard to the subject's relationship to technology; how collaboration and competition need to be reconsidered when Education is thought of in terms of the formation of collective intelligence; and how the commodity and knowledge spaces need to be thought with respect to rethinking innovation such that what is thought of as an individual activity (see Chapter Seven) can be rethought of as a collective activity.

10.1
Collective intelligence in education

The impetus to break with the present model of education expresses a desire to show how collective intelligence, as a conceptual context for learning, asks new questions about how significant problems facing the global community might be more effectively addressed.[11] Framing these questions requires the overcoming of

[11] As highlighted elsewhere in the thesis.

a methodological problem with respect to how Lévy's thinking might otherwise be interpreted. On the one hand, it might be tempting to describe Lévy's (1997, 2015a; Peters, 2015b) work as expressing a political and social innovation that theorizes and exposits the future challenges and benefits of collective intelligence. Lévy can be seen to do this through his drawing on an epistemology that explains the influence of neoliberal economics on contemporary Education. To draw this conclusion would be to interpret his work as representing an attempt to *reform* the present system; an interpretation that, on its own, would be unfair on Lévy.

On the other hand, Lévy's (1997, 2015a; Peters, 2015b) work also represents something more than mere political and social innovation for the reason that it *also* speaks to an anthropological collaboration that breaks with the fetishism with incremental models of innovative thinking that neoliberalism relies upon to further commercialize its interests in Education. This latter aspect of Lévy's thinking speaks to a need to create an *alternative* understanding of how collective intelligence might inform the purpose and process of education; one that, for example, acknowledges the value of the commodity space while theoretically and practically positioning this space in a subordinate role to the knowledge space.

What grounds these two above perspectives is the idea that Lévy's methodology neither seeks to *reform* the existing system being reliant upon the value of a commodity space nor seeks to propose an *alternative* to education being conducted in a commodity space. It would seem that what he proposes is something that involves an allegiance to both forms of thinking; "the break that is not a break" (see Foucault, 1989). To iterate, the commodity space continues to be relevant but sits beneath the knowledge space – the former maintaining its relevance in as much as it provides freedom for the latter to be responsible for setting the objectives of education.

It is with this concept of a relationship between the commodity space and the knowledge space that Lévy's concept of collective intelligence will be briefly examined. Since the publication of *Collective Intelligence: Mankind's emerging world of cyberspace* (1997), Lévy's research has progressed significantly with respect to how this development might be understood by stakeholders (see Lévy, 2015; Peters, 2015b). Lévy's understanding of collective intelligence has been

described in various ways. In *Collective Intelligence: Mankind's emerging world of cyberspace* (1997), Lévy defines collective intelligence as

> … a form of *universally distributed intelligence*, constantly enhances, coordinated in real time, and resulting from the effective mobility of skills. (p. 13, emphasis in original)

To this definition, Lévy (1997) highlights what he calls

> The basis and goal of collective intelligence is the mutual recognition and enrichment of individuals rather than the cult of fetishized or hypostatized communities. (p. 13)

On his institutional webpage, Lévy (2013) defines collective intelligence as

> … the capacity of human communities to co-operate intellectually in creation, innovation and invention. As our society becomes more and more knowledge-dependent, this collective ability becomes of fundamental importance. It is therefore vital to understand, among other things, how collective intelligence processes can be expanded by digital networks. It is one of the keys to success for modern societies.

In an interview with Peters (2015b), Lévy defines collective intelligence as:

> … scientific, technical and political project that aims to make people smarter with computers instead of trying to make computers smarter than people. So, *collective intelligence* is neither the opposite of collective stupidity nor the opposite of individual intelligence. It is the opposite of *artificial intelligence*. It is a way to grow a renewed human/cultural cognitive system by exploiting our increasing computing power and our ubiquitous memory. (p. 4, emphasis in original)[12]

The rest of this section will consider these descriptions of collective intelligence in relation to two factors that Lévy's (1997, 2015; Peters, 2015b) descriptions appear to overcome: (1) Heidegger's (1977) understanding that human beings are enframed by the essence of technology, and (2) a colloquial understanding that collective intelligence necessarily involves *competition* between individuals as a fundamental factor in collaborative behaviour (see, for example, 'Collective Intelligence', 2016).

[12] Further description by Lévy (2015) of collective intelligence and what this means in education will be provided in the last section of this chapter.

10.1.1

Collective intelligence and Heidegger's question concerning technology

To understand how Lévy appears to have deviated from Heidegger's analysis of our relationship with technology, it is first necessary to refer to what Heidegger (1977) means by enframing. Heidegger has the following to say:

> The essence of technology lies in Enframing. Its holding sway belongs within destining. Since destining at any given time starts man on a way of revealing, man, thus under way, is continually approaching the brink of the possibility of pursuing and pushing forward nothing but what is revealed in ordering, and of deriving all his standards on this basis. Through this, the other possibility is blocked, that man might be admitted more and sooner and ever more primally to the essence of that which is unconcealed and to its unconcealment, in order that he might experience as his essence his needed belonging to revealing.
>
> Placed between these possibilities, man is endangered from out of destining. The destining of revealing is as such, in every one of its modes, and therefore necessarily, *danger*.
>
> …
>
> The destining of revealing is no itself not just any danger, but danger as such. (1977, p. 26)
>
> …
>
> But Enframing does not simply endanger man in his relationship to himself and to everything that is. As a destining, it banishes man into that kind of revealing which is an ordering. Where his ordering holds sway, it drives out every other possibility of revealing. (1977, p. 27)
>
> …
>
> What is dangerous is not technology. There is no demonry of technology, but rather there is the mystery of its essence. The essence of technology, as a destining of revealing, is the danger. (1977, p. 28)

Heidegger (1977) clearly leads us to understand that there is no escape from the enframing that comes as a consequence of man's relationship with the mystery of the essence of technology. The consequence of this enframing is that all forms of revealing that do not have to do with the ordering, which technology so ably makes possible, are banished and made inaccessible. How then does Lévy

theoretically overcome this enframing, such that he is able to propose that collective intelligence should credibly be a project "that aims to make people smarter than computers" (Peters, 2015b, p. 4)? How is it possible that students can go beyond the limits of this self-enframing such that they are able to belong to their revealing (as does a dramatic actor) such that they draw from what might otherwise have been concealed from others? It would appear that the advent of the internet and the possibility of peer-to-peer relations across a dispersed network have facilitated the reversal of the resolution of an ancient political problem. To illustrate this point, it will be necessary to first explain how Arendt (1998) understands the nature of this ancient problem and then how Plato (2001) is said to have proposed the means to resolving it.

According to Arendt (1998), the problem of the plurality of society in Ancient Greece before the formation of the monarchy as a formation of governance was always brought to a head in the context of a calamity. It such situations, it was the temptation of "men of action" and "men of thought" … "to find a substitute for action in the hope that the realm of human affairs may escape the haphazardness and moral irresponsibility in a plurality of agents" (p. 220). This substitute was configured according to the following theoretical understanding:

> … Plato opens a gulf between the two modes of action, *archein* and *prattein* ("beginning" and "achieving"), which according to Greek understanding were interconnected. The problem, as Plato saw it, was to make sure that the beginner would remain the complete master of what he had begun, and not needing the help of others to carry it through. In the realm of action, this isolated mastership can be achieved only if the others are no longer needed to join the enterprise of their own accord, with their own motives and aims, but are used to execute orders, and if, on the other hand, the beginner who took the initiative does not permit himself to get involved in the action itself. To begin (*archein*) and to act (*prattein*) thus can become two altogether different activities, and the beginner has become the ruler (in the twofold sense of the word) who "does not have to act at all (*prattein*), but rules (*archein*) over those who are capable of execution". Under these circumstances, the essence of politics is "to know how to begin and rule in the gravest matter with regard to timeliness and untimeliness"; action as such is entirely eliminated and has become the mere "execution of orders". (Arendt, 1998, pp. 222-223)

According to Arendt (1998),

> Plato was the first to introduce the division between those who know and do not act and those who act and do not know, instead of the old articulation of action into beginning and achievement, so that knowing what to do and doing it became two altogether alternative performances. (p. 223)

What is significant about the separation of action into performative roles is that, irrespective of whether or not there was a calamity, this manner of governing action came to be adopted in all human activity. In the educational institution, this is such that students, in their day-to-day routines, hold teachers responsible for initiating activities such that students can transmit the impression that they believe they can only learn from by executing what has been initiated by the teacher and without asking the purpose of these activities.[13]

So, just taking the situation of the student, it might be tempting, with the introduction of the internet, to interpret this embedded tradition of insisting upon the division of roles as a tradition that should continue to be *manifest* in student peer-to-peer relations across the dispersed network – that there should be those "who know and do not act and those who act and do not know" (Arendt, 1998, p. 223). It would be logical that the student who has been historically constituted in a regime where action was implicitly understood as most meaningfully governed through a separation of the performative roles and that this tradition should continue irrespective of the context of the student's learning. However, Lévy's (1997, 2015) thinking presumes a sharp break with this tradition with a characterization which, in effect, supposes a reversal of Plato's resolution of the original problem. On reflection, this sharp break has in itself its own logic. In Peters' (2015b) interview of Lévy, Lévy alludes to his Masters' research when supervised by the Greek philosopher Cornelius Castoriadis, whose "thinking revolved around the idea of historical creation: the surprising emergence of new natural and cultural *forms* that could not be deduced from previous facts and logical thinking" (p. 3, emphasis in original).

So how does this new cultural form of collective intelligence manifest itself as a reversal of Plato's solution, in terms of how it could be said to address

[13] Bingham and Biesta's (2010) critique of progressive education can be seen to clearly articulate this delineation of roles.

the same problem? The plurality that was a problem in the moment of calamity in Ancient Greece (see Arendt, 1998) is a different sort of problem for the state today. While the contemporary subject can be considered to be over-governed (Arendt, 1998), as if morally responsible and rational behaviour, to paraphrase Arendt's words, can only be administered from above, democracy takes a new turn and one for the better with the advent and use of social media platforms and new ICTs in general. When democracy is administered from above, the timing of this administration – new developments, press releases, the management of conflicts, etcetera – are always when possible strategically admitted to the public domain; that is, to the benefit of the party in power. This strategic use of the way information is disseminated has the effect of excluding the plurality of citizens from democratic debate and participation in decision-making. What social media platforms and new ICTs (for example, Android and Mobile APPs) do is facilitate the mobility of democratic participation from below; from the public realm. This reversal of the resolution of the problem Plato addressed and the creation of "the division between those who know and do not act and those who act and do not know" is made possible in the context of the use of social media platforms through the collapse of this division of roles. Everyone who uses these technologies is free to both initiate and execute – to begin and achieve – for themselves and without reliance upon the directive of executive power.

This collapsing of the division of roles is much more radical than might immediately be obvious. The Internet, social media platforms, relations across a dispersed network, the use of APPs and other features associated with the habitus of new technologies do not oblige students to collapse the division between these roles – it is still possible to continue a default to this historical division of either initiating or executing but this would be entirely counter-intuitive to optimum use of the attributes of this new form of learning, social and professional engagement. It is more intuitive for the individual subject to not only initiate things for themselves, but also to carry out what they initiate and also potentially re-interpret what they initially decided to do and to continue but in a manner that was unanticipated. Likewise, on accepting a command initiated by another individual, it is not only more intuitive to reinterpret the command of the other, and, as such, to re-initiate the original act as if it were now an action that expresses the will of

the subject, but it is also more intuitive to consider the other a collaborator rather that an agent defined by the parameters of their position in the hierarchy.

In summary, the technological attributes that characterize the use of the Internet, social media platforms, the dispersed network, APPs etcetera, facilitate the development of a new relation with the essence of technology and hence possibilities for new forms of relations with all other subjects the student interacts with. This development represents a fundamental change in the subject's disposition such that their creativity and use of these technologies leaves the Cartesian separation of subject and object, making practice an action that needs to be theorized such that it becomes particular to the moment and the subjective interests of the individual. It is in this context that human qualities are said to develop in the way that Lévy (1997) describes as emergence. This will be discussed in more detail later in the chapter.

Before moving to the next section, it would seem useful to provide an historical example of how new technologies facilitate the expression of self-responsibility. This example involves the uncovering of an attempt by executive power to disguise the real nature of a real calamity and how collaboration and democratic participation changed the course of history. This example involves the use of mobile phone SMS (short messages service) technologies in the days running up to the Spanish elections in 2004 (Suárez, 2006). On March 11 that year, 192 people were killed and 1,800 were wounded in explosions set off in two trains approaching Atocha Railway Station, Madrid ('Atocha', 2016). The *Partido Popular* (the Popular Party or the PP) was seeking another term in office and promoted the notion that these explosions were terrorist acts perpetrated by the Basque separatist and terrorist organisation ETA (*Euskadi Ta Askatasuna* or Basque Country and Freedom) (Suárez, 2006). Without social media and the use of SMS, the PP might have gained another term in office. The PP was keen to leverage the idea that Spain's participation in the war in Iraq brought no danger to the Spain state, despite the fact that an informal public referendum had recorded that 90% of the Spanish public wanted its troops brought home. Those in favour of a change in power in Spain picked the PP's rouse, thinking that those responsible for the bombings were not in fact ETA but were terrorists sympathetic to Al Qaeda, which later proved to be the case. In order to swing public support behind the opposition's objections to PP's manipulation of public ignorance

through use of the press, young voters began to use mobile SMS as a means of telling a different story such that the PSOE (the *Partido Socialista Obrero Español* or the Spanish Socialist Labour Party) achieved an upset election victory. The critical factor here was that the explosions took place on March 10, which is to say only three days before the elections on March 14. This meant public participation had to be spontaneous such that democracy in Lévy's (1997) words would happen in "real time". This real time democratic participation could only happen in these circumstances through the use of such new technologies. Suárez (2006) suggests that without the use of SMS, there would not have been sufficient participation in the election to force a change of power and, as such, would not have overcome the "haphazardness and moral irresponsibility" of executive behaviour that the ancient Greeks associated with the plurality of agents.

10.1.2

Collective intelligence and competition in the education setting

Given the recent emergence of an interest in collective intelligence (see Peters & Heraud, 2015), it would seem reasonable to begin the critique of the role of competition in collective intelligence using a Wikipedia definition. The entry begins:

> Collective intelligence is shared or group intelligence that emerges from the collaboration, collective efforts, and competition of many individuals and appears in consensus. The term appears in socio-biology, political science and in context of mass peer review and crowd sourcing applications. It may involve consensus, social capital and formalisms such as voting systems, social media and other means of quantifying mass activity. Collective IQ is a measure of collective intelligence, although it is often used interchangeably with the term collective intelligence. Collective intelligence has also been attributed to bacteria and animals. ('Collective Intelligence', 2016)

If this is a *popular* definition, it becomes important to think in these terms for reason that if intelligence is ubiquitous, then the concept implies that collective intelligence must be considered as needing to embrace participation that takes its actions beyond the parameters of academic work. It is in this broader realm of thought that truth should be contested. There are two aspects of this definition that highlight the difference between how the authors of this Wikipedia entry (and by

association wider public) think about collective intelligence and Lévy's (1997, 2015; Peters, 2015b) own concept of collective intelligence. One is the idea that competition is important to collective intelligence and the other is the idea that collective intelligence is best understood through how it is exhibited in commercial behaviour in both the consumer and producer ('Collective Intelligence', 2016). Both these ideas are problematic.

Both these ideas will be dealt with together, as they are intrinsically related. If "collective intelligence is shared or group intelligence that emerges from the collaboration, collective efforts, and competition of many individuals" ('Collective Intelligence', 2016), it needs to be asked whether it is plausible that collective intelligence can be thought of as both collaborative and the consequence of competition. If collective intelligence cannot be thought of in this way, then how should these approaches to thinking and acting in collective settings be separated from one another so as not to be understood contradictory. Competition is thought of as an expression of will that "to improves the breed", [by] delivering more value to customers by forcing businesses to look for new ways of gaining competitive advantage" (Spender, 2014, p. 23). Equally, it could be argued that collaboration improves the breed, although it would not be surprising to find that competition is understood to be more effective in achieving this objective; an understanding that has its epistemological roots in Darwin's (2009) concept of the survival of the fittest. As such, competition would seem to offer limited value to collective intelligence in that the extent of its optimum value can only be expressed, according to Spender's definition, in terms of consumer satisfaction, which in itself cannot be thought of as an optimum expression of intelligence per se. Intelligence, when put at the service of being competitive, means being "strategic" (Porter, 1998), which furthermore implies a rivalry between competitors. This behaviour, in order to succeed must exclude interest in collaborating with others who have like interests – entering the same market at the same price – meaning that this behaviour cannot be collective and therefore collectively intelligent without compromising the business' competitive advantage.

Lévy (1997) discusses this issue – the distinction between competitive and collaborative action – in terms of power and strength. Lévy uses the terms power and strength to distinguish between the dynamic that is asserted from above,

which is “power over society” – a form of “totalitarianism” (p. 82) – and where collaboration involves “the communication of the community with itself, … [and] knowledge of the community’s self”, respectively. While, Foucault (1977, 1990), the most prominent contemporary philosopher of power, says that power does not only come from above, but from everywhere, Lévy (1997) seems to have further theorized power in forming his concept of strength. In as much as collective intelligence is thought to be “constantly enhanced” (p. 14), a “real-time co-ordination” and involve the “effective mobilization of skills” (p. 15), the facilitation of the subjective implication of other individuals in collective projects” forms a dynamic power of community.

The competitive and collaborative actions that occur as a consequence of the power and strength that characterize these two dynamics have their own distinctive forms of thinking about the value of knowledge. While it is at this point that the discussion needs to acknowledge how Lévy (1997) distinguishes between the commodity space and the knowledge space, this aspect of the discussion will be addressed in the next section. What remains to be discussed in this section is how Lévy thinks of *time* in relation to the dynamics of competition and collaboration.

Lévy (1997) understands time in terms of its capacity to facilitate democracy. Lévy understands that there is

> … [a] real-time mechanism for direct democracy in cyberspace [that] would allow everyone to help and refine shared problems on a continuous basis, introduce new questions, construct new arguments, and formulate independent positions on a wide range of topics. (p. 65)

Lévy (1997) is speaking about society in general and not the student cohort. However, his argument applies to students and their right to question existing and promoted notions of institutional innovation, commercial innovation, the institution’s notion of collective intelligence, and open and social innovation, let alone the problems upon which world events pivot and flounder. Cyberspace already includes students in as much as it makes their refinement of an understanding of problems possible, is as much as they are likely to introduce new questions, which in turn drive them to construct new arguments and formulate independent positions.

Lévy (1997) continues:

> Together citizens would elaborate a diverse political landscape that was not preconstrained by the gapping molar separation among different parties. (p. 65)[14]

Students can already be intuited to elaborate, as a cohort, their political landscape, if not by reacting with a specific political strategy then nevertheless through the way that governance invites individuals to consider being governed from the point of view of the extent to which their thinking diverges from the preconstrained tyranny of ideas; ideas that are mechanically re-explained in the pretence that knowledge is constructed in some concrete and assessable manner. The molar separation among different parties that Lévy (1997) refers to here would not refer to gapping political gaps in the student cohort but to gapping political gaps that separate student and teacher cohorts – a gap that can easily be glossed over, as if its absurdity does not also speak for the paradox that has been spoken about throughout this investigation: the paradox of the already innovative student.

Continuing with Lévy (1997),

> The political identity of the citizens would be defined by their contributions to the construction of a political landscape that was perpetually in flux and by their support for various problems … positions … and arguments. In this way everyone would have a completely unique political identity and role, distinct from any other individual, coupled with the possibility of working with others having similar or complementary positions of a given subject, at a given moment. (p. 65)

While the already innovative student might have an implicit appreciation of the value of being anticipated in their needs to be politically diverse as an individual within the cohort and in relation to the curriculum (both the how and the what)[15], for such an approach as Lévy's (1997) to work in Education, it would seem that the curriculum would need to both be interdisciplinary and assessed according to real-time problems upon which world events continue to pivot and flounder.

These are the conditions that can be said to provide the theoretical fabric for how Lévy (1997) might describe the development of democracy in Education. At

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[14] According to Lévy (1997), molar technologies, when operated in relation to the control of living species – in this context, students – refers to "Finalization", "Historic time" and "Operates on entire populations" (See Table, p. 41, The Major Technological Evolutions).

[15] See Egan (1978).

the heart of the problem of collective intelligence is what Lévy calls "real-time democracy" (pp. 76-82).

> As it is most commonly understood, democracy can be contrasted with the arbitrary nature of tyranny or the power of a minority; it posits a system of laws that are valid for everyone and determined by all (or at least by a majority). This implies that the goal of democracy is to realize and preserve the autonomy of a group of citizens: the polis establishes its own laws. (p. 78)

While Lévy is not specifically speaking about the politics of collective intelligence in Education, and even if the politics of education were such that students are *not* credited with comprising a polis in their own right, they are now working in conditions that anyway foster this orientation towards real-time democracy. While it is rare in this age of the commercial educational institution that students should even be permitted to express their voice on the institution's executive, they are consolidating a new form of political life. This brings the discussion to the question of autonomy, which is a topic that will be addressed in the Conclusion to the thesis.

10.2

Knowledge and human qualities

In Chapter Seven 'The Subject of innovation/The Innovative Subject, Lévy's (1997) concepts of the commodity space and the knowledge space were introduced to the thesis argument. These two learning spaces were examined at that moment in the discussion for how their distinctive ontologies make it possible to contrast the situation of the individual, as a *subject of innovation*, with the situation of the individual, as an *innovative subject*. Particular to that discussion was the question of what these two spaces of learning suppose for the subject as an individual; which is to say, how the student, as *homo economicus*, and how the student, as *an already innovative individual*, make use or do not make use of their possibilities to learn. In this section, these learning spaces are contrasted in relation to how they might be experienced in collaborative learning.

10.2.1

The commodity space and collaborative learning

Much of the problem of distinguishing between the commodity space and the knowledge space, as two learning spaces, rests on the status ascribed to knowledge, in each space, and what this means for the constitution of the innovative subject. The limits ascribed to knowledge in the commodity space are perhaps best understood when the commodity space is reverse-engineered. By beginning with a positive evaluation of knowledge and the possibility for the formation of innovative subjectivities, in the form that these values have been acquired in a study of the knowledge space, the merits of the commodity space as an *end* in itself have to be questioned. In fact, there are a series of questions that should trouble the argument that defends the commodity space as an end. For example, it might be asked: (1) what does collaboration refer to in the commodity space? (2) What would it mean to rely on the commodity space for the formation of human qualities? (3) What is the fate of the concept of innovation in the commodity space, if innovation is to serve addressing anything other than commercial interest, for example, a problem that is characterized by a lack of social implication in problems that become structural to the detriment of others? The is no adequate space here to address these questions in any depth.

Lévy (1997), begins with the statement that "[t]he information society is a trap" (p. 31), when speaking of human qualities in the economy of collective intelligence, Lévy is quick to highlight that, while it might be thought that all economic activity is driven by information processing, there is a limit to the extent to which society can be automated. He asks:

> What remains after we have mechanized agriculture, industry and messaging technologies? The economy will centre, as it does already, on that which can never be fully automated, on that which is irreducible: the production of the social bond, the relational. This implies not only an economy of knowledge but a more general, human economy, one that comprises the economy of knowledge as one of its subsystems. (1997, p. 31)

Collaboration and collaborative innovation in the commodity space might thus be examined from the perspective that all activity could be considered to being reducible to being fully automated. The end here is not "the human as an end in

itself" (Lévy, 1997, p. 32) – as the will towards collective intelligence supposes it should be. So when the end in itself is automation, what is collaboration between students on social media platforms and the dispersed network on the Internet? If the social cannot be relational between peers, the social bond cannot be with other students but must be between students and the institution.

Here, the subject is constituted according to his or her will to accept the institution's own strategic approach to innovation without differing to the self; the relation with the self is given up. As Lévy says, "[i]n the commodity space there is no longer any possibility of fixing positions … within the system. Everything is in circulation; everything is in a state of flux" (p. 189). "Individualities … [are] lumped together in a single mass" (p. 190). In this context, human qualities that result from "mutual recognition and the enrichment of individuals" (p. 13) are prescribed from above through the politics of education, the institution's management of its commercial interests and the curriculum itself. This would appear to be done in such a way as to protect a very specific understanding of what innovation should mean: that innovation is uniquely commercial and technological. As such, the key competencies are about fostering inclusion without *real* participation.

10.2.2

The knowledge space and collaborative learning

Lévy writes in 1997 – nearly 20 years ago – that the knowledge space does not yet exist, that it is "a u-topia", a "no-place" (1997, p. 138). However, today it can be argued here that the knowledge space can be seen to emerge in the use of social media platforms and dispersed networks in the education sector. Of course, as Lévy says, "the knowledge space is still subject to capital's need of competition and calculation, it is subordinate to the objectives of power and the bureaucratic management of the state" (in which we should include educational institutions), but the commodity space does not prevail in all contexts. Collective intelligence can be thought to be afoot for reason of the nature of social relations responsible for the development of new communities. A good example in education is the frequent setting up of Facebook web-pages by students to discuss course content. There discussions are not initiated or directed from above and can theoretically

only be thought to survive on account of the development of new human qualities; qualities that stand in for the obsolete hierarchical direction upon which dialogue previously depended. The quality that is initially most likely to dominate these collective interactions is likely to be "listening" (see Lévy, 1997, pp. 70-71).

This new horizon in the form of what Lévy (1997) calls the knowledge space, is new and will appear new in the covert interactions of students in three aspects of student learning:

> the rate of evolution of knowledge, the number of people who will be asked to learn and produce new forms of knowledge, and … the appearance of new tools (cyberspatial tools) capable of bring forth … unknown and distinct landscapes, singular identities characteristic of this space, new socio-historical figures. (1997, p. 8)

However rapidly the rate of the evolution of knowledge has developed since the writing of Lévy's (1997) text, in order to understand the situation of students and their impetus to collaborate in their own community, becomes "a knowledge-of-living, a living-in-knowledge" (p. 139). The reason for this is that ascribed knowledge frameworks, as promoted in the politics of education, are no longer sufficient in the situation of students confronting the absurdity of the relationship between consciousness and the concept of the world that Education teaches them. If this is hard to imagine and therefore not seemingly credible, one would only need to question the extent to which it is thought that students overcome what Lévy considers to be "the main problem of the knowledge space" (p. 190). Are students able to "organize the organizing, [to] objectivize the subjectivizing"? It is claimed here that the possibility of communities of collective intelligence sustaining their community and activities would not be possible if these provisos were not already mastered in some minimum manner.

Conclusion

So what of the innovative subject as collaborative student and actor in collective intelligence? As highlighted in Chapter Three, Innovator/Entrepreneur', the innovative individual who innovates is first described in significant detail in Drucker's *The landmarks of tomorrow* (1959), a text that is also significant for Drucker's early mention of the importance of knowledge to the innovation

process. This would seem an opportune moment to revisit Drucker's description of innovation with a view to exploring how collaborative innovation might be understood to occur in the knowledge space.

The first aspect of this description has to do with Drucker's (1959) notion that innovation involves the bedding in of a universal vision. What is significant about this idea of the purpose of innovation is that society as a whole has been asked to implicate itself in a vision and to form itself according to a purpose that has been predetermined by those few who drive political economy from above. This is to say, this vision for the purpose of innovation was not collectively designed. Collective intelligence cannot be directed from above (Lévy, 1997). To this effect, innovation is going to have a much broader and richer role in the knowledge space.

The second aspect of Drucker's (1959) description that is of particular importance to this investigation is captured in the following text:

> Innovation, as we now use the term, is based on the systematic, organized leap into the unknown. Its aim is to give us new power for action through a new capacity to see, a new vision. Its tools are scientific; but its process is of the imagination, its method the organization of ignorance rather than that of known facts. (1959, p. 13)

So, if innovation is not to be initiated and directed from above, if it can be both "initiated" and "achieved" (Arendt, 1998) by multiple collaborative subjects, then it is initiated and achieved through the organizing collective leaps; that is where the organizing of the organizing, as a problem of the knowledge space, becomes a collective strategy for addressing the unknown. This new power of action, as that which occurs through a new capacity, is not imbued in the individual by a fixed idea but is one that is discovered and critiqued by multiple collaborative innovators. Furthermore, in the knowledge space, the value of organizing ignorance is recovered such that the problem of the strategy of using scientific tools in a process that always requires imagination is problematized such that it becomes credible that innovation might address problems besides those that are addressed by commercial and technological change and novelty.

CONCLUSION

Making an argument for why the situation of the already innovative subject in Education needs to be understood to the benefit of the individual, Education and society required an investigation into how the concept of innovation itself is currently understood. Innovation is not merely technological innovation. In an age in which innovation is dominated by the protagonism of ideas, people, and things, innovation is also always in some way political. What this means in Education is that the formation of innovation subjectivities is always accompanied by the formation of political subjectivities – subjectivities that find their way to interacting across open social digitally mediated spaces. As such, the relationship between the formation of thought and the possibility of new actions in relation to real problems of the world is undergoing a profound process of transformation. The question in this investigation centred on the paradoxical of the situation of the innovative subject in Education. The purpose of examining this paradox was to identify how the domain of this subject's experience of their education – thought of here as a black box – might enable the theorization of the actor's role in the process of innovaton, such that students could be valued as not just participants in innovation, but as contributors to change. By contributors to change, it is meant that the ideation that characterizes their learning should be linked to, focused on and assessed in relation to real problems of the world. Students not only want to enjoy the freedom of engagement with the world afforded them by new ICTs, APPs and AI in the form of social platforms and networked information economies, their collective creativity in relation to existing historical problems supposes, new interpretations, new questions, new practices, new strategies and new forms of engagement. Leveraging this discussion around the theoretical significance of already innovative subject in Education supposes a series of questions across a broad domain of interest, principally because the application of innovation in Education is *ends* oriented and closed to new thinking. This challenge to how innovation is understood begs many questions across a broad domain of inquiry.

Many questions needed to be passed over; questions such as: whether the theory of human capital is only supporting innovation promoted by neo-conservative interests or whether it extends to capacitate students to create

innovations capable of disrupting and transforming the hypostasized foundations of Education; the role of endogenous necessity in the growth of heuristic learners; the relationship between politics and innovation at the level of subjective experience in the age of people, ideas and things; ideation in student innovation; how innovation might be thought of when its political, social and technological aspects contribute simultaneously rather than sequentially; the significance of entrepreneurship in collaborative networked information economies; the way invention and innovation might be thought of in these networks when roles frequently interchange; the value of the collective black box as a metaphor for addressing the significance of tacit knowledge and how this contributes to the formation of collective intelligence; the politics of innovation in education and the creation of the new worker; the politics of research in innovation and the conflict between interests in technological change and technological innovation; the usefulness of paradox as a means for analyzing closed institutional dispositions to the endogenous necessity of learning and being create; the divisive role STEM subjects play in stifling innovative thinking; and so on. The point is, once philosophical empathy is shown for the paradoxical situation of the student, let alone the already innovative subject, institutional practices, habits, conventions, traditions, protocols, regulations and so on, become secondary to the cost that these constraints impose on the student. If these phenomena stifle the formation of innovative subjectivities, then what is their collective purpose?

To take the question a little further, why is this the moment when we should see the above concerns in the light of the paradoxical situation of the already innovative subject in Education? Why does the experience of the already innovative student make this individual a key actor if not the key actor with respect to how Education will now need serve the future? The simple answer is that the student cohort's algorithmic understanding of their relationship to opportunities is better suited to the role that innovation is beginning to play in the development of the cognitive capitalism that will govern future economic activity.

In doing this investigation, it becomes important to speak of the future. The future will not involve an *enhancement* of what already exists and in this sense it will not be a product of *innovation as routine* as that which Schumpeter (as cited in Stinchcombe, 1990) was already speaking about in the 1940s. The foundations of such a fantasy have already eroded beyond possible recovery. The

future will comprise a series of opportunities that allude to the possibility of a whole new range of developments that will come through disruptive actions. In the theoretical sphere, these new developments will occur because existing problems will require new questions – the old ones, from the perspective of the already innovative student, have exhausted their value. In this way, the future is comprised of actions that address problems, actions that began their formation in an education system that is yet to understand the value of the knowledge space that enables students to work as individuals and as a collective, such that their learning contributes to the radical innovation processes that will now be required. The problems that students engage with do not need explaining. If we are already in the throws of the most monumental cultural shift in human experience (see Peters, 2016) on account of the our transition into the cyber-physical industrial revolution (Bloem, et al., 2014), the change in the big picture supposes questions relating to what is important to our collective survival. If, within 20 years, 50% of the population have lost their jobs to AI and a range of robots that are more capable than our species, the upheaval brought about by the first industrial revolution does not even come close to what will now unfold.

Put in other words, why of all questions that could have been asked about the importance of innovation to Education does the fate of the subject of innovation become the significant question that needs to be asked? Because if the use of new ICTs in schools facilitates the development of collective intelligence, as Lévy was already speaking about in the 1990s, then the power of collective intelligence depends upon an education system that encourages the development of innovative subjectivities. The danger is that the Education system instead forms subjects of innovation who end up being nothing more than a further mutation of *homo economicus*. While the latter might be thought of, in Thatcher's language (1988, as cited in Dardot & Laval, 2013), as the captured souls of neoliberal economics, in the context of this discussion every child and every young person is thought of as a subject ready to leap in response to the freedom of thought that new actions demand. The child and the young person may not be ready to leap, today or tomorrow, but this is not the point. The point is that they are thought of as *being ready* to leap. As such, every subject of innovation is an innovative subject and an individual with capabilities of taking new and unforeseen initiatives in their learning and in relation to real (local) problems in the world.

So what was learned during this investigation?

When standard economics treats the process of innovation as a black box, it creates a climate of theoretical confusion in Education for all innovative subjects who already have a wider understanding of the concept of innovation. A wider understanding of innovation supposes knowledge of the political and social aspects of the innovation process; aspects of innovation that are neither modeled by commercial management's innovative activities nor made explicit in the Innovation Studies literature that informs policy and how innovation is understood by students and researchers. In as much as this confusion is sustained, a paradox is produced in the situation of the already innovative subject. The reason for this paradox is that combinatory capacities in students that are expressed in their curiosity about the world, their newfound autonomy that comes from being answerable to their own ethics in networked information economies and their constitution of relations that are collective, problem-oriented and focused on new areas of ideation cannot be commensurable with institutional innovation. This incommensurability exists on account of the institution's micro-management of changes in its productive function, which as a practice prohibits student participation beyond their inactive populating of institutional processes of innovation. The already innovative subject has already broken with or will soon break with the institutional model and the tutelage that this closed model of learning offers. Yes the institution is open to bringing in academics, management and new knowledge from outside but while this seems like a positive initiative, it betrays the institution's bent towards exogenously stimulated growth. If the institution were open in a manner that recognized the extensive endogenous resources and new processes of ideation in student learning and student innovative activity, it might be hoped that it would also openly explore new forms of collaborative relations with students.

Without this initiative, educational institutions are prone to becoming homogenous, hypostasized, ever-more conservative, and enhancing in their practice of that which is already in decay. If this seems a strong criticism, it is intended to be, for reason that more than anything else, a thesis should use the fullness of the value of language to make its argument heard. If these implications are not heeded, the danger is that already innovative subjects in tertiary education will begin to think of the institution as pimping students, from the point of view

that the benefit of acquiring human capital can be seen as principally benefitting the institution. To students, such an operation is insidious and in particular when they consider the every greater possibility that unemployment awaits them in occupations that have historically been the conduit for career development.

The questions that remain unaddressed in this investigation are particularly important to the thesis argument in that the argument itself could never address all the features of the discussion. Such an approach was necessary because arguing for profound change and the need for both Education and society to address the role of the innovative subject in relation to future challenges. Some of these questions were highlighted in the range of topics identified in the second paragraph of this chapter. However, there are a range of questions and problems that specifically relate to the investigation that need to be elaborated upon here.

The history of ambiguation, with respect to how innovation is understood in society, Education and the proprietary domain needs to be genealogically engaged. To do this, the rhetoric of the major global institutions including that of Education, business and Treasury policy-makers needs to be analysed to explain the manner in which *the process of innovation*, as a concept, has been theoretically abandoned. This analysis needs to be done alongside a genealogical study of the conditions under which the innovative actor became absented from how the innovation process is presently conceptualized (Fagerberg, Mowery & Nelson, 2005; Hanusch & Pyka, 2007a). While Becker (Becker et al., 2012) argues that human capital theory puts the individual at the centre of economic activity (economic activity clearly not doubling for an innovation process), it is argued in this investigation that, while all human activity is described as economic activity, the individual who is put at the center of economic activity *cannot* be thought of as a mere descendant of *homo economicus*. He or she needs to be thought of as an individual who engages with questions and problems that concern the whole of humanity and permits them to be innovative in a manner that will be arbitrated according values that are not uniquely commercial.[1]

[1] The fear now might be that we have reached a stage where human disaster – for example, famine – can be completely ignored because it is not considered economically viable to save the lives of whole populations.

Another question concerns student participation in institutional processes of innovation. Once the development of human qualities is formally recognized as a consequence of student collaboration in the knowledge space, then research needs to be done on how student ideation might contribute to the transformation of educational institutions. If, as iterated earlier in this chapter, the student algorithmic understanding of opportunities is further advanced as a capacity than that of the rest of the population, then new types of relations need to be developed between students and teaching staff, administration and commercial management.

This question is intimately connected to how student innovative learning processes contribute to how Education and pedagogy need to be understood in the future and in relation to the image that was earlier described, re the role of AI. Post-Cartesian study needs to be done into how functions of the commodity space and the knowledge space are delineated by student thinking. In the current neoliberal model, the public good produced in the knowledge space that ontologically cannot be measured in purely commercial terms is any appropriated as if it were a product of the commercial management of Education. If student fidelity to the curriculum collapsed on account of the new autonomy students have in the context of the collaborative networked relations, then this aforementioned delineation of spaces is probably most easily seen in the innovative learning environment. It is here that many teachers have become anxious upon discovering that their notion of the teacher's role is no longer relevant to the learning processes taking place in these new spaces.

Of these questions and problems, the most important one would seem concern the need to address the manner in which human capital theory is inhibiting endogenous growth in the development of student capacities. This is largely because endogenous growth has not yet been theorized in relation to student heuristic learning. It is assumed that the paying of fees and the need for a qualifications in themselves reflect that the student's willingness to acknowledge the need to silently populate the production function of the educational institution. However, if this same student has learned to think for him or herself, then their thinking, by definition, must carry them beyond this role in improving the market status of the institution. The emergence of endogenous growth in students, of the capacity to think and do things for themselves and others, to act beyond the realm of mere work may now be associated with innovative learning environments. This

said this synergy of action and place is not made certain by the place itself or the pedagogies that they require. While, innovative learning environments presume a dramatic shift in the system of education and one that brings into question much of what contemporary Education means, there is also a need for transformation in the institution, for teachers, administrators and commercial managers such that they too become innovative subjects in the wider sense of how innovation is understood in this investigation. This development needs to be something that is horizontally and vertically networked, responsive the developments in "cognitive capitalism" (Peters & Bulut, 2011), open and social at the same time (not rhetorically open while closed in action), interdisciplinary and engaging in new disciplined forms of interaction. In effect, the task is to engage with what is required to free the knowledge space from the commodity space. The subject of innovation is a subject of the commodity space and without the possibility of being independent to be innovative in relation to the problems that are important to students, perhaps there will be no significant learning in these spaces. The already innovative subject is a subject of their own formation and the formation of their virtual and actual cohort, and one who knows how to differentiate the commercial interests from interests that require that they further develop their relations with themselves, with others and with the world.

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APPENDICES

Figures

Appendix A

Figure 1: Germany 1815

Figure sourced from
http://aandergermany.weebly.com/culture-and-social-development.html

Appendix B

Figure 2: The French national railway system based on the Legrand Star or a centralized network

Figure sourced from
https://en.wikipedia.org/wiki/History_of_rail_transport_in_France

Appendix C

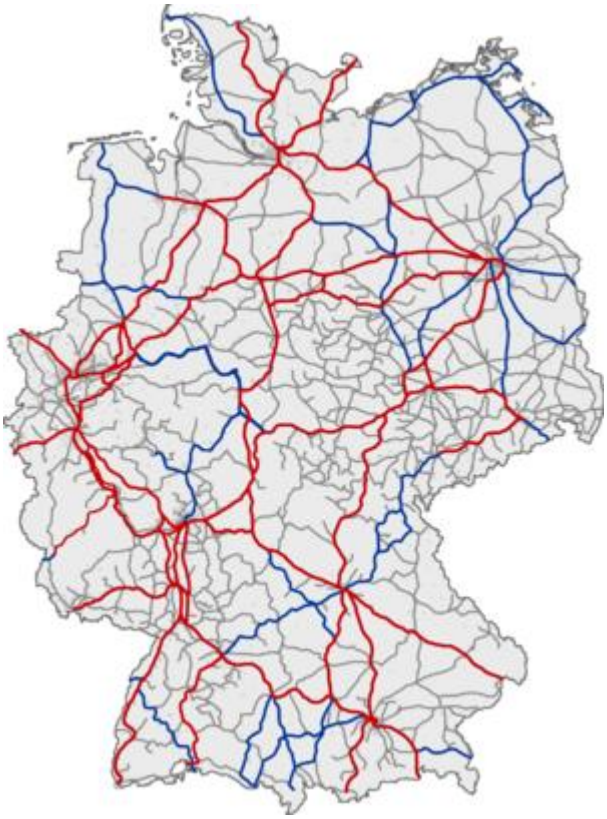

Figure 3: Germany's disconnected principalities and Prussia were connected by a national railway system that simulates the modern distributed network.

Figure sourced from
https://en.wikipedia.org/wiki/Rail_transport_in_Germany

Appendix D

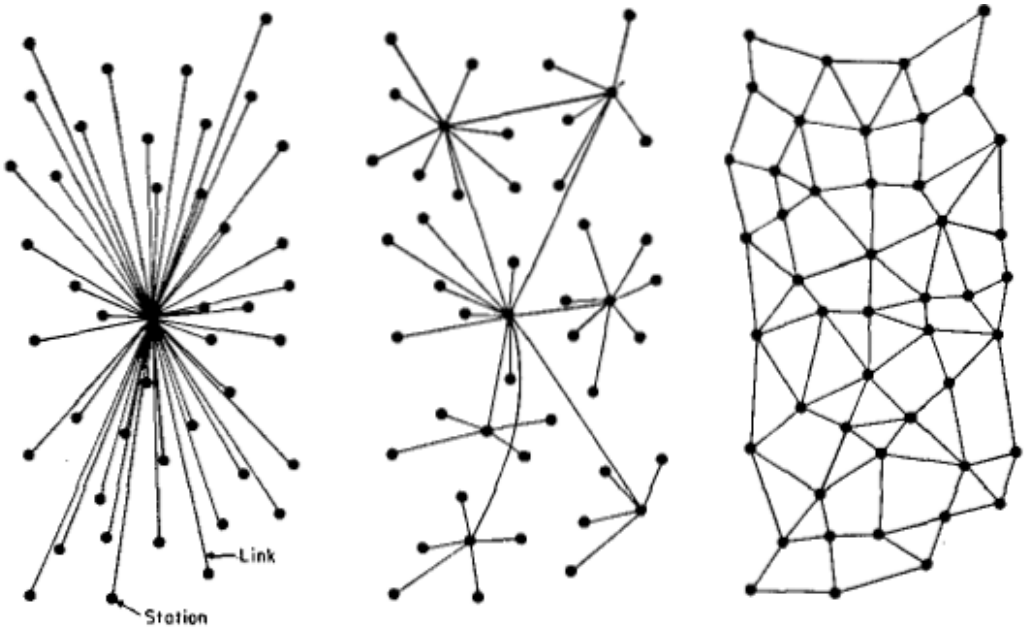

Fig. 1—(a) Centralized. (b) Decentralized. (c) Distributed networks.

Figure 4: (a) As in France's centralized railway system, and (b) as in Germany's distributed network of railways.

Figure sourced from
http://networkcultures.org/unlikeus/resources/articles/what-is-a-federated-network/

Appendix E

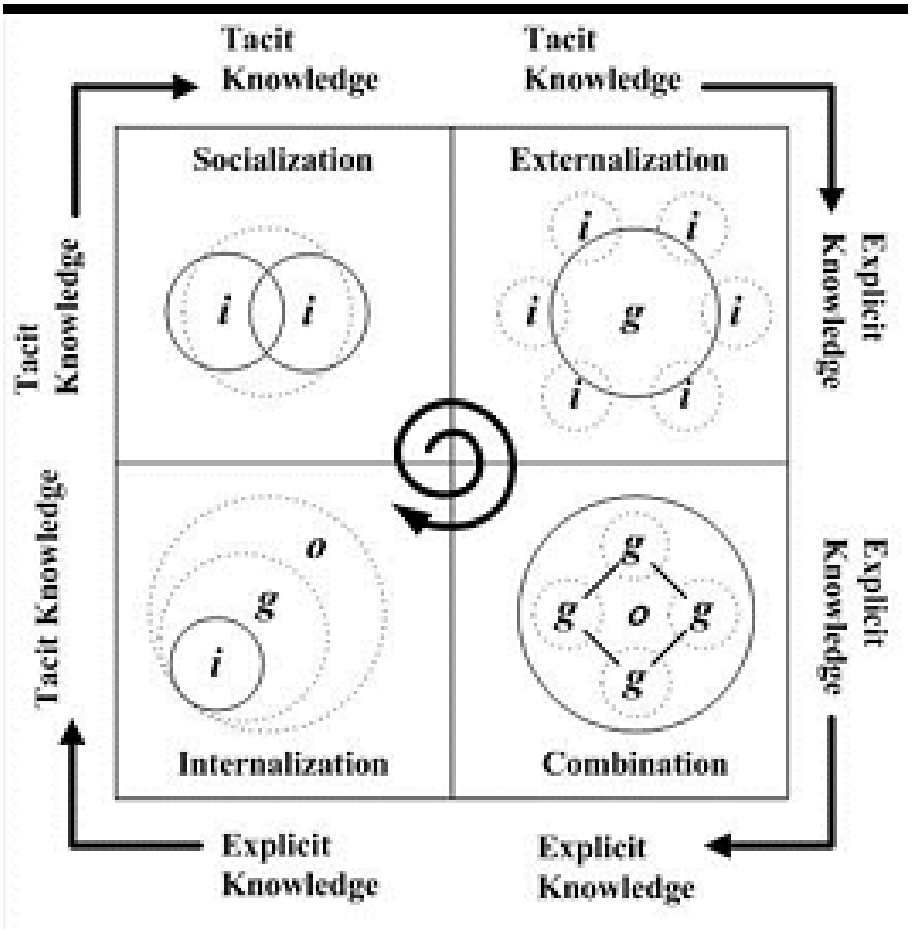

Figure 1. Knowledge Creation through SECI model.
(http://en.wikipedia.org/wiki/The_SECI_Model)

Figure 5: Ba

Tables

Appendix F

Table 1: Contrasting principles of closed and open innovation

Closed innovation Principles	Open innovation Principles
The smart people in our field work for us.	Not all the smart people work for us. We need to work with smart people inside and outside our company.
To profit from research and development (R&D), we must discover it, develop it and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research to profit from it.
The company that gets an innovation to market first will win.	Building a better business model is better than getting to market first.
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our innovation process, so that our competitors don't profit from our ideas.	We should profit from others' use of our innovation process, and we should buy others' intellectual property (IP) whenever it advances our own business model.

(Chesbrough, 2003, p. xxvi)