Extending the Research Agenda: Towards an Integration of Normative Economics and Innovation Ethics

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In their call for papers the track chairs identify "several under-researched areas" in the context of responsible innovation. They refer to the concept of Responsible Research and Innovation as developed on a European policy level (Sutcliffe, 2011; Von Schomberg, 2013). This relates to previous calls (Blok & Lemmens, 2015) for more rigorous investigations of the concept of "innovation" as being used by the advocates of responsible innovation (cf. Owen, Bessant, & Heintz, 2013) as well as to the more recent attempt to develop a new research agenda of "philosophical reflection(s) on a concept of innovation that is able to address the grand challenges of our time" (Blok, 2018).
This paper greatly appreciates these efforts to engage in more elementary inquiries into the philosophical foundations of innovation. By taking up some of the particular questions raised by the call for papers it aims to contribute to establishing a new research agenda or perhaps even a new research field of *innovation ethics*. However, in this paper, we would like to develop a novel perspective that is yet missing from the issues currently being raised. As the track chairs set out themselves, new concepts of responsible innovation – and here one may add even further attempts beyond RRI as for example inclusive innovation (Schillo & Robinson, 2017), inclusive growth (George, Mcgahan, & Prabhu, 2012; Mazzucato, 2013), the Sustainable Development Goals (The General Assembly of the United Nations, 2015) or the Grand Challenges of our time (Wissenschaftsrat, 2015) – seek to introduce new objectives and standards based on which innovations may prove to be "socially desirable and ethically acceptable" which go beyond "the more traditional objectives of innovation like economic growth, profit maximization, competitive advantage etc." It is at this point that this paper aims at expanding the research agenda by investigating the normative core of the (economic) concept of innovation.[3]

We complement the research agenda of innovation ethics with a perspective of normative economics and a critique of its mainstream form of neoclassical welfare economics. Ever since J. Schumpeter's (1942) critical dictum of "creative destruction" it has been widely acknowledged that by introducing new products and services innovation not only entails increases in welfare, but it also implies adverse effects at least for some (other) members of society. Yet, as Schumpeter suggested that innovation raises the standard of living on average at least in the long term and this may have been proven true historically for most Western countries, a rather strong pro-innovation bias (Rogers, 1962) seems to prevail today (Godin, 2009). Thus, for much innovation (policy) the underlying reasoning seems to be that innovation is *per se* a good thing which does not require further justification as it somehow entails economic progress (Schubert, 2012; Witt, 1996). However, given the ambivalent effects of innovation and considering the increased demand for new normative alignments of innovation (policy), it seems urgent to (re-)assess the underpinning normative assumptions of neoclassical welfare economics in the context of innovation. What is the normative justification of innovation if the simple reference to economic progress and growth as measured in growth of GDP is insufficient? What may be a suitable normative criterion justifying innovation (policies)? To this end, this paper proposes to

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[3] This also includes the claim that currently most concepts and approaches of responsible innovation seem somewhat inchoate or at least incomplete with regard to their economic theory and foundation.

examine the normative rationale of standard welfare economics in the context of innovation in order to open up the black box of economics' normative assumptions regarding innovation. In a second step, we propose briefly a practical approach that helps giving an idea of how a normative approach to innovation may be salvaged. Instead of relying on normativity assumptions of conventional welfare economics, this approach would help provide a basis for individuals to form preferences and thus to develop an alternative innovation ethics.

The ultimate challenge thus is to find a suitable normative criterion that is able to provide justification for innovation and its welfare-related effects. Conventional welfare economics takes the satisfaction of individual preferences as revealed in peoples' choices as normative criterion (Hausman, McPherson, & Satz, 2017; Reiss, 2013). Thereby, it relies on neoclassical assumptions of rationality according to which people have stable and coherent preferences (Hausman, 2012). It therefore relies on axioms of ordinal utility (Mas-Colell, Whinston, & Green, 1995) according to which preferences are complete, transitive and context-independent as well as revealed-preference theory (Samuelson, 1938) based on which standard economic theory identifies preferences with choices and ultimately treats the terms 'utility maximisation' and 'choice' synonymously. However, in the context of innovation there are at least two objections which may be raised against such a normative foundation. The first is an epistemic argument. By definition, innovation involves novelty, that is whether a product, service or something else, innovation is something which has not been known or at least considered before (Binder & Witt, 2011; Witt, 1996). Taking this epistemic dimension of innovation seriously, it no longer seems reasonable to rely on a normative account which requires people to have stable and coherent preferences. How should individuals have well-formed preferences towards something which is necessarily unknown and thus not assessable? The epistemic dimension of novelty as essential feature of innovation therefore makes the normative approach of conventional welfare economics based on preference satisfaction at least inconsistent. Moreover, as Binder and Witt (2011, p. 6) argue, it might even be the case that individual preferences are contingent on past innovations and thus, preferences are systematically affected by innovations: "The major difficulty is that preferences tend to become endogenous to the process of innovative change in the economy: the preferences by which individual well-being is assessed are shaped through the very processes whose welfare effect they are supposed to evaluate." In short, innovation that requires novelty and thus genuine uncertainty is incompatible with conventional welfare economics which takes the satisfaction of given and perfectly consistent preferences (as revealed in people's choices) as normative criterion (Schubert, 2012). The second problem with a conventional welfare economics approach to normativity in the context of innovation is a methodological one. Somewhat related to the first concern, the objection is that not least by the insights of behavioural economics since the 1970s neoclassical assumptions of rationality have been strongly challenged, if not dismissed (Kahneman, Slovic, & Tversky, 1982; cf. Tversky & Kahneman, 1974). As behavioural economics challenges the validity of neoclassical axioms of rationality as adequate positive description of human behaviour, people's behaviour may no longer provide reliable evidence about their welfare. Thus, as behavioural economics shows people (often) lack stable and coherent preferences. While adhering to conventional welfare economics within a behavioural context may lead to a reconciliation problem of normative and behavioural economics (McQuillin & Sugden, 2012), a normative approach of preference satisfaction needs to assume some sort of "true" preferences which people would have if they were free from behavioural biases. Such an account of "preference purification" thus relies on an inner rational agent which is capable of generating consistent and context-independent preferences (Infante, Lecouteux, & Sugden, 2016). However, as there is no evidence that people do in fact have some sort of "true preferences", such a view is ungrounded (Sugden, 2015). What this means for the relevant context is that it is simply not reasonable to assume that people would have stable and coherent preferences towards innovations based on which they may be evaluated. Instead, in a context of constant economic and technological change, welfare cannot be defined by some given preferences but new normative criteria and a new measuring rod need to be developed which take account of the specific conditions of innovation (Binder, 2013; Binder & Witt, 2011; Schubert, 2012).

Both objections highlight that the application of a normative perspective of conventional welfare economics in the context of innovation is highly problematic. It is without the scope of this paper to develop an own well-founded approach of normative economics to the issue of innovation (policy). Nevertheless, following Schubert (2012, 2015) who emphasises the role of learning in an innovation-based, evolving economy as capacity "to engage in the ongoing learning of instrumentally effective preferences", we briefly outline a practical approach which helps giving an idea of how a normative approach to innovation may be salvaged. In short, by using a distinctive set of interdisciplinary methods of design (research) as well as social sciences one may be able to make innovations, that is possible and necessarily unknown future scenarios visible and tangible. Such speculative prototypes may then provide a basis for individuals to form preferences and establish common ground to enable interpersonal exchange or even social debate (M. Heidingsfelder, Kimpel, Best, & Schraudner, 2015; M. L. Heidingsfelder, Schütz, & Kaiser, 2016). Thereby, spaces can be created that envision innovations and allow normative assessment. However, note that we do not claim to provide a solid theoretical answer to the questions raised above, at this point we merely wish to hint at possible practical approaches which may be able to address the discussed complexities.

Finally, this paper points out that the standard economic approach to innovation is highly problematic with regard to its normative underpinning and instead, it illustrates a practical approach that might be able to deal with the normative complexities of innovation. Subsequent investigations may seek to develop a valid normative approach and measuring rod that meets the normative challenges of innovation. Further research may also explore possibilities to integrate normative economics into concepts of responsible innovation more precisely and propose corresponding amendments.
As a result, one may be able to better steer innovation (policy) and align technological and economic change with societal and individual preferences. Innovation (policy) then is not merely the promotion of (inevitable) technological and economic progress but the active shaping of society to increase welfare. *(1609 words)*

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