The Foundations of Conceptual Engineering

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Short abstract. We use concepts all the time to make sense of reality. Our conceptual repertoires thereby determine not only what we can say, think or know, but also what we can do and how we can live. Examples for this are all around us every day, from the more mundane household task to the most advanced scientific research. The purpose of conceptual engineering is to provide a method to criticize and improve our concepts working as such cognitive devices. But conceptual engineering is still a young research field and little has been said so far to settle how concepts and cognition are to be understood/modeled for the purposes of conceptual engineering — in particular, no attempt has been made yet to capitalize on and make sense of the vast literature on cognition and concepts in philosophy and cognitive sciences. And without such prior understanding of its subject matter, conceptual engineering is bound to remain useless. This project aims to overcome this knowledge gap by setting up the epistemological background that will support the systematic unified framework needed to effectively implement conceptual engineering. To this end, it will draw form a combination of philosophy of cognitive sciences and analytic philosophies of mind and language in order to: (i) design the concept of 'cognitive engineering' as an enculturated cognitive practice, (ii) re-engineer the concept of 'concept' as functional, multiply realizable bodies of information, (iii) construct the method of conceptual engineering as a template set of step-by-step instructions. And in doing so, the expected outcome is to develop conceptual engineering as a widely applicable method for the cognitive optimization of any conceptual device.

Keywords. Conceptual engineering, Philosophical methodology, Theory of cognition, Theory of concepts.

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Topic Introduction From the more mundane household task to the most sophisticated scientific research, we use concepts all the time to make sense of reality (that of foodstuff types to put the groceries away, of GDP metrics to measure the country's economic progress, of 'force' to explain the falling of bodies in Newtonian mechanics, etc.). Here the quality of our cognition — its congruity and usefulness — crucially depends on the quality of our concepts, so that: the better our concepts are, the better our cognitive activity will be (think of the percentage of waste you can recycle thanks to good concepts of selective sorting). Conceptual engineering is the fast-moving research field (Burgess, Cappelen, and Plunkett forthcoming; Cappelen forthcoming; *ConceptLab Research Project*) that means to provide a method to assess, criticize, and improve any of our concepts working as such cognitive devices (Allo 2017; Blackburn 1999; Burgess and Plunkett 2013a; Cappelen forthcoming; Floridi 2011; Löwe and Müller 2011 [see also Eklund 2014, 2015]), that is: to identify conceptual deficiencies, elaborate ameliorative strategies, and prescribe normative guidelines as to whether and how to use a concept (Brun 2016; Burgess and Plunkett 2013a,b; Cappelen 2017, forthcoming; Simion 2017 [see also Eklund 2015; Scharp 2013]). But conceptual engineering still lacks an account its two basic theoretical components, that is: of what engineering is (in the case of cognition) and of what concepts are (as cognitive devices) — in particular, no attempt has been made yet to capitalize on the vast literature on cognition and concepts in philosophy and cognitive sciences for the purposes of conceptual engineering. (cf. Allo 2017; Floridi 2011, 2013, 2017; Löwe and Müller 2011), and no attempt has been made yet to capitalize on the vast literature on concepts and cognition in philosophy and psychology for the purposes of conceptual engineering. And without any such prior characterization of its subject matter, or so it is claimed here, conceptual engineering is bound to remain helpless, merely operating as a piecemeal approach (e.g. Allo 2017; Scharp 2013; Tanswell 2017), with no overall grip on

its target domain (cf. Cappelen 2017, forthcoming; *ConceptLab Research Project*). The purpose of this programmatic talk is to overcome this knowledge gap by setting up the epistemological background that will support the systematic unified framework needed to effectively implement conceptual engineering.

First Part In the first part of the talk, drawing from an embodied-embedded-enacted-extended (4E) approach to cognition (more specifically, that of the 'cognitive integration' framework [Menary 2007]), I will develop the concept of 'cognitive engineering' as the enculturated 'cognitive practice' (Menary 2007, 2012, 2013): (i) of designing semantic artifacts (Floridi 2011, 2017), and (ii) of using these artifacts as cognitive devices to shape and edit our understanding of reality so as to make it intelligible (Floridi 2011) — in sum, as the 'information modeling process' (Floridi 2011, 2017) of our 'cognitive niche construction' (Clark 2005, 2006). In doing so, the expected outcome is to theoretically secure and justify the maximum impact for the method of conceptual engineering on our worldviews.

Second Part Then, in the second part of the tale, I will draw from a psychological approach to concepts (more specifically, that of an hybrid conception of conceptual plurality [Gelman 2004; Keil 1989; Keil et al. 1998; Piccinini and Scott 2006; Weiskopf 2009]) in order to re-engineer the concept of 'concept' as 'body of information' (Machery 2009): (i) that performs some specific causal/explanatory functions in our higher cognitive processes (e.g. abstraction, induction, etc.) (Machery 2009, 2010), and (ii) that is realizable by several different basic kinds (e.g. exemplars (Medin and Schaffer 1978; Smith and Medin 1981), prototypes (Rosch 1973, 1975; Rosch and Mervis 1975), and theories (Carey 1985, 2009; Gopnik and Meltzoff 1997)) (cf. Machery 2009; Weiskopf 2009) — in short, to re-engineer the concept of 'concept' as 'multiply realizable functional kinds' (Lalumera 2010). In doing so, the expected outcome is to theoretically secure and justify the maximum scope for the method of conceptual engineering on the world of our everyday life.

Third Part Finally, in the third and last part of the talk, I will assume an early analytic approach to philosophical methodology (namely, that of Carnap's method of explication (Carnap 1950: Chap. 1)) in order to design the method of conceptual engineering as an adaptable set of step-by-step instructions. With this in mind, I will provide a fully recast 'recipe for explicating' concepts (Brun 2016: Sect. 3): (i) upgraded with other complementary template procedural methods for (re-)engineering concepts (such as 'conceptual modeling' [Löwe and Müller 2011] or the method of 'levels of abstraction' [Floridi 2008]), and (ii) grounded on the theorization of its subject matter (as provided by the development of its epistemological background [Parts I, II]). And in doing so, the expected outcome is to deliver a highly transferable and optimally implementable technique for the cognitive optimization of any of our conceptual devices, both in ordinary and scientific thinking.

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