# Two Kinds of Conceptual Engineering

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**Abstract**

The last decade has seen an explosion of meta-philosophical work on 'conceptual engineering'. Beyond simple analysis of concepts, conceptual engineering allows for evaluation and improvement of concepts according to the purposes to which they will be used. This paper sketches a pluralist account of conceptual engineering and provides a distinction between two different and often conflicting kinds of conceptual engineering: *naturalist conceptual engineering* **(NCE)** and *moral conceptual engineering* **(MCE)**, distinguished not by their methods, but by their roles, functions, and purposes. Using the example of animal welfare, we demonstrate the application of both **MCE** and **NCE** and show how the different contexts in which a concept is used can create conflicting demands but also how concordance between these demands can strengthen a concept.

***Keywords:*** conceptual engineering; explication; ameliorative analysis; animal welfare; ethics; naturalism

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> "We are as sailors who are forced to rebuild their ship on the open sea, without ever being able to start fresh from the bottom up. Wherever a beam is taken away, immediately a new one must take its place, and while this is done, the rest of the ship is used as support. In this way, the ship may be completely rebuilt like new with the help of the old beams and driftwood—but only through gradual rebuilding."
>
> – Otto Neurath (1921, pp. 75-76)

# 1 Introduction

The last decade has seen a surprising resurgence of methodological debates about the tools and methods of philosophy itself.[1] Largely due to Sally Haslanger's influential work on ameliorative analysis (Haslanger 2005), 'conceptual engineering' has become one of the most prominent subjects of recent philosophical debate. Yet, while conceptual engineering has arguably been practiced for as long as philosophy itself (see Burgess et al. 2020 for an overview), philosophers have only recently started to take a meta-philosophical perspective on this 'way of doing philosophy'.

One simple (though not entirely accurate) way to introduce conceptual engineering is as a reply to 'conceptual analysis', i.e. the analytical dissection of concepts.[2] Historically - at least in the Western analytical tradition of philosophy - conceptual analysis has played a dominant role, and perhaps still dominates today, as a "comfortable" a priori armchair methodology that seeks to clarify and illuminate the meaning of concepts used in both ordinary language and science. Much of the literature that criticizes the dominance of conceptual analysis in philosophy highlights the limitations and deficiencies of this intuitionist approach to concepts (see Devitt 1981; Kornblith 2002; Papineau 2013; Machery 2016; Veit 2019a). Primarily, when a concept is deficient in various respects, we may wonder how much sense it makes to try and analyse its use, rather than improve or replace the concept with a better one. With the initial roadblock out of the way, we can try to understand conceptual engineering as a philosophical method or practice that is opposed to 'mere' conceptual analysis.

[1] For overviews see Sytsma and Buckwalter (2016) and Cappelen et al. (2016).

[2] Rudolf Carnap (1950), for instance, was an early proponent of conceptual engineering by promoting what he called 'explication'.

There is little consensus, however, on how conceptual engineering and its method should be defined (see Burgess et al. 2020 for the first edited volume on conceptual engineering).[3] Indeed, if there is any consensus, then it is an implicit agreement that one should actively resist the temptation to find any precise definitions, for this kind of conceptual analysis stands opposed to very the goals of conceptual engineering. This might perhaps be considered an unpromising start for a meta-philosophical paper on conceptual engineering. However, we do not intend to suggest that the excitement of many participants in the debate is misplaced. Indeed, we are confident that there is room to clear up some conceptual confusions and clarify the foundations of conceptual engineering – and thereby philosophy itself. While care must be taken not to overestimate what may be achieved, we believe that this paper will offer us the necessary space to improve (i.e. conceptually engineer) conceptual engineering itself by drawing an important distinction between two different and often conflicting kinds of conceptual engineering: *naturalist conceptual engineering* **(NCE)** and *moral conceptual engineering* **(MCE)**.

The paper is structured as follows. Firstly, we will remove some potential stumbling blocks and clarify how we intend to use several terms and concepts present in the debate. Furthermore, **Section 2** introduces the distinction between **NCE** and **MCE**, clarifying important differences to the groundwork by Rudolf Carnap on 'explication' and Sally Haslanger's work on 'ameliorative analysis'. Out of this picture a novel account of conceptual engineering emerges that is much closer to Otto Neurath than it is to Carnap. In **Section 3**, we illustrate how these two kinds of conceptual engineering can come into conflict by discussing the historical development of the concept of animal welfare. Finally, **Section 4** concludes the discussion and offers some suggestions for future meta-philosophical research on these two kinds of conceptual engineering and its potential use to untangle the philosophical and scientific debates on controversial concepts like race, gender, health, disability, and mental disorder.

[3]Cappelen and Plunkett (2020) in their editorial introduction to this very first collected volume on conceptual engineering suggest that it would have been impossible to play "editorial police" for standardisation of definitions amongst authors, deeming it a futile endeavour to attempt the development of collectively agreed upon definitions (p. 2).

## 2 What is, and why engage in, Conceptual Engineering?

The initial answer to the second question - why engage in conceptual engineering? - is a simple one. Philosophers and scientists alike have been engaged in conceptual engineering since the earliest days of their respective fields. Indeed, we deem it appropriate to consider conceptual engineering an all-too present phenomena within ordinary discourse. Let us illustrate the point with a thought experiment.

*Imagine* a newly engaged couple that are planning their wedding. They intend to invite their family and close friends. While Brian's list of invited family members includes distant relatives that live in close proximity of their home in New York, Alex does not consider his genealogically proximate relatives living across Europe as part of his family. Brian is appalled by this and tries to convince Alex to invite ALL the members of his family. Conversely, Alex criticizes Brian for inviting what he would consider to be random acquaintances to their wedding. Eventually, they are led to discuss the very definition of what it means to be a friend or family. Unfortunately for them, neither of these concepts allows for a straightforward conceptual analysis that would allow either to determine whether a particular individual that stands in a genealogical or social relationship to them should be classified under either extension of the respective concept. To settle their conflict, they must engage in conceptual engineering and thereby clarify the purposes to which the concepts of family and friends are put to use.

As our thought experiment hopefully illustrates, concepts are not free-floating entities. They serve a variety of (sometimes conflicting) purposes forming the basis on which to evaluate and improve them. As our distinction between **NCE** and **MCE** will show, the two kinds of conceptual engineering raise important questions of what to do when scientific desiderata and moral and political values come apart. Even when philosophers, scientists, or the public are engaged in what they merely consider the analysis of a concept, they will inevitably engage in at least a minor form of conceptual engineering. This will be contingent on the criteria they use to evaluate the very purposes of the concept they are employing and trying to explicate.[4]

[4]While we are skeptical about the possibility of such pure logical conceptual analysis without some evaluative component, considerations of space prevent us providing an extended argument for this position here.

Before we can introduce our distinction between **NCE** and **MCE** however, we are faced with the task of clarifying the way we intend to use several of the terms and concepts within the debate. While the rapid proliferation of different ways terms and concepts such as 'concepts', 'conceptual engineering', 'explication', 'revisionary analysis' and 'amelioration' have been defined and defended within the debate has led to a broad coverage of the conceptual space, philosophers in this debate have become faced with an almost damning criticism of the conceptual engineering method itself. As Cappelen and Plunkett (2020) allude to in their brief introduction to conceptual engineering, the improvement and change of existing concepts can lead to discontinuities in how a concept is understood and used by different individuals and groups. Rather than resolve conflict and improve our inherited concepts, we may end up with misunderstandings and merely verbal disputes, a problem that has indeed received much attention in the history, sociology, and philosophy of science not only since Kuhn (1962), but also the Vienna Circle, who were concerned with eliminating vagueness from scientific concepts and language (see Uebel 2019).[5] Perhaps most interesting here, is the conflict between scientific concepts and their parallel folk concepts among the public. As Nersessian (1989) argued early on, there is a surprisingly large discrepancy in how particular concepts are understood within and outside of science. Contested concepts include human nature (Linquist et al. 2011), genes (Dar-Nimrod and Heine 2011), and innateness (Machery et al. 2019). This raises important challenges for conceptual engineering and its role within science education that we shall partially address in **Section 3**, where we apply our bipartite account of conceptual engineering to the concept of animal welfare.

Though some degree of vagueness may aid the initial popularization of an idea, we would much prefer to offer a precise and clear contribution that aids understanding. While ultimately disagreeing with Cappelen and Plunkett's (overly) broad definition of conceptual engineering, it does provide a useful basis on which to build our own definition:

> "**Conceptual Engineering** = (i) The assessment of representational devices, (ii) reflections on and proposal for how to improve representational devices, and (iii) efforts to implement the proposed improvements."

[5]See Chalmers (2011); Jenkins (2014); Jackson (2014) for recent philosophical discussions on verbal disputes and Thagard (1992) for an ambitious account of conceptual changes in science.

– Cappelen and Plunkett (2020, p. 3)

It seems surprising that Cappelen and Plunkett opt for representational devices, rather than concepts in their definition of conceptual engineering, given the very title of the practice. Their justification here, however, is far from satisfying, stating that this is "[p]urely for aesthetic reason: 'representational devices engineering' doesn't roll off the tongue in the way 'conceptual engineering' does" (Cappelen and Plunkett 2020, p. 3). Our dissatisfaction with this definition is twofold. Firstly, it is misleading and will hence add confusion about conceptual engineering, rather than help to alleviate it. Secondly, it is far too broad – and hence becomes uninformative. While their definition is perhaps able to accommodate all the different methods and approaches proposed by different authors under the umbrella term of 'conceptual engineering', little has been gained if nothing is excluded either. Here, we should keep Godfrey-Smith's warning in mind that "[o]ne of the hazards of philosophy is the temptation to come up with theories that are too broad and sweeping" (2003, p. 5).

We commend their pluralism and willingness to let alternatives proliferate, hence avoiding the danger of needlessly restricting the future direction of meta-philosophical work on conceptual engineering. Representational devices, however, are not the right target, as they are manifold and so diverse that they hardly share any features beyond their representational function. In particular, we are concerned with this leading to the accidental combination of two separate philosophical debates: one on conceptual engineering, and one on the status of scientific models. While it is true that there has been too little overlap between the two debates, we should be careful not to overgeneralize and repeat mistakes. Veit (2019b), for instance, argues that the philosophical literature on models has been misguided in its monistic attempts to provide a general account or framework of models in science – missing their epistemic richness and diversity – instead proposing what he dubs 'model pluralism'. Similarly, we argue that a broad definition of conceptual engineering as the evaluation and improvement of ALL representational devices must fail. Many scientific instruments, for instance, serve a variety of representational functions and are improved in what one could call 'engineering' efforts. These improvements, however, are highly contingent on their scientific context and the representational goals to which they are put to use, with a large diversity across the sciences. It would be quite surprising to say the least, if an account is able to generalize not only over all these

different representational instruments, but also across drawings, models, and lastly concepts – and still be informative.

Furthermore, we think it to some extent misguided to seek for a 'theory of concepts'. The reasons for this are twofold. Firstly, there are too many different definitions and uses of the word 'concept' in philosophy, psychology, cognitive science, and ordinary folk discourse (see Margolis et al. 1999 for an overview of the diversity of alternative views). Secondly, a *concept of concept* itself is subject to improvement. We are well-advised to follow Neurath's (1921) anti-foundationalist dictum (as shown in the epigraph of this paper) to treat philosophy as a constant reworking of our concepts with concepts already in play. Cartwright et al. (2008) argue that there are at least five different ways Neurath's boat metaphor can be interpreted. Partly owing to Neurath's frequent use of the metaphor throughout his work, with the earliest use dating back to 1913, it has been influential as a slogan for naturalism (largely owing to Quine (1960)) and practical philosophy (of science). In line with Cartwright et al. (2008), we think the following motivation is the core of Neurath's philosophy and, moreover, one of the most important instances of conceptual engineering:

> "What propelled Neurath was an idea: the idea not simply that our stock of knowledge claims keeps on changing forever, but that a decisive revision of our concept of knowledge is required if reason is to fulfil its Enlightenment promise."
>
> – Nancy Cartwright et al. (2008, p. 92)

In this, our account of conceptual engineering is closer to Neurath than it is to Carnap, something that will become apparent throughout this paper. Let us now spell out the details of our account. We propose an alternative account of conceptual engineering that is faithful to the original label, provides recognition of pluralism distinctive to other forms of *assessment and improvement*, and - contrary to Cappelen and Plunkett's deflationary account - offers some genuine improvement on our understanding of the set of practices we label 'conceptual engineering':

> **Conceptual Engineering** = (i) The assessment of concepts, categories, and classificatory systems, (ii) determination of their relevant contexts and purposes to which they are and should be put to use, (iii) reflections on and proposal for how to improve

them, and (iv) proposals for and active participation in the implementation of the suggested improvements.

For the sake of brevity one may want to call our account the **3C account**, **Conceptual Engineering Pluralism**, or alternatively **Ameliorative Pluralism**. The extension from **c***oncepts* to **c***ategories* and **c***lassificatory* systems more generally is intended to cover the different senses in which the term 'concept' is generally used in cognitive science, philosophy, and ordinary language. While this pluralist definition still covers a broad range of devices or items, we deem these entities sufficiently similar to fall under the heading of 'conceptual engineering'.[6] We think it better to treat conceptual engineering as a diverse set of methods and practices with a loose degree of family resemblance – rather than equate it with either Carnapian explication or Haslanger's ameliorative analysis. While we can only offer a sketch of our full account here, the building blocks are now in place to turn to our main purpose in this paper.

Our goal in this paper is to draw a distinction between two distinct kinds of conceptual engineering that can come into conflict in practice. They do not differ in their methods, but rather in the ends at which they are aimed. This follows from Haslanger's 2005 original description of ameliorative analysis as "a project that seeks to identify what legitimate purposes we might have (if any) [...] and to develop concepts that would help us achieve these ends" (p. 11). In this paper, we argue that the purposes to which conceptual engineering are put can be primarily grouped into two categories - scientific and moral. In the first instance, we aim at making concepts more scientifically adequate, and improving them for epistemic and pragmatic purposes. For the second, we often want our concepts to do work in the moral or political sphere, and must consider the relevant consequences there.

We do not mean to suggest that these two kinds of conceptual engineering are exhaustive. For example, a third kind suggests itself by considering a kind of value that is different from both moral/political values and epistemic/scientific ones, i.e. aesthetic values. *Aesthetic conceptual engineering* **(ACE)**, however, we contend that in most cases these will be philosophically

[6]Indeed, we think the metaphysical complexities of what concepts *really are* can be largely avoided. Yet, again unfortunately the present paper does not offer us enough space to argue for this claim at a length that would to it justice. For our present purposes it should be sufficient to recognize that our introduced distinction between **NCE** and **MCE** is largely independent of the *metaphysics of concepts*.

less interesting and relevant.

Thus, we offer a bipartite account of conceptual engineering, broken down into *moral conceptual engineering* (**MCE**) and *naturalist conceptual engineering* (**NCE**), as will be elaborated in the following sections.

## 2.1 Moral Conceptual Engineering

The first type of conceptual engineering we wish to distinguish is *moral conceptual engineering* (**MCE**). This type of conceptual engineering is undertaken with specifically moral, political and/or social goals in mind, and thus is performed with reference to these types of norms. As mentioned, it is not a unique methodology that distinguishes **MCE**, but instead the ends at which it aims. We take all conceptual engineering to follow the general practices we have described above, but evaluated and improved according to norms associated with specific goals. For **MCE**, these purposes are moral, social and political: in aim of what enables values such as right, wellbeing or justice. Examples of concepts that may fall into this category (though, as we will argue, most concepts will fall into both depending on the specific application) are poverty, race, gender, welfare and sentience. We offer the following definition for MCE:

> **Moral Conceptual Engineering** = (i) The moral, political, and social assessment of concepts, categories, and classificatory systems, (ii) determination of their relevant context and purposes to which they are and should be put to use, (iii) reflections on and proposal for how to improve them, and (iv) proposals for and active participation in the implementation of the suggested improvements.

**MCE** may appear similar to what some take 'ameliorative analysis' to consist of. This process, developed by Haslanger (2005) relies on normative considerations in assessing and developing concepts. Normativity here is often taken to refer to moral, social and political considerations, such as those included within **MCE**. However, this is a mistake arising from Haslanger's discussion of politically charged concepts such as race and gender. While it is true that Haslanger's ameliorative analysis overtly relies on moral norms in engineering/improving concepts, it need not. Instead, amelioration is simply the act of improvement. After analysing a concept and identifying its faults

relative to some norms or purposes, amelioration is the process of modifying the concept such that it better serves these ends. It is true that these ends are often moral, political and social, such as Haslanger's own revisions of the concepts of gender and race formed by "considering what categories we should employ in the quest for social justice" (Haslanger 2005, p. 11). However, they do not necessarily have to be - as will be discussed in Section 2.2, they could also be scientific and in general "whether or not an analysis is an improvement on existing meanings depends on the purposes of the inquiry" (Haslanger 2005, p. 24). Thus, **MCE** is distinct from ameliorative analysis, instead simply forming a distinct part of analysis of this type. We will turn now to what we consider to be the second primary type of conceptual engineering.

## 2.2 Naturalist Conceptual Engineering

**NCE** will be quite familiar to anyone who is acquainted with Carnap's 1950 concept of 'explication'. It would be a mistake, however, to equate all conceptual engineering within science as explication or to think that only Carnapian explication is a justified form of conceptual engineering within science. It is not our goal here to ameliorate Carnapian explication, a particular method with a rather clear but limited role in science. We shall offer a brief survey of the diverse ways **NCE** can occur in science. Importantly, unlike Carnapian explication, **NCE** is instead a set of methods of which Carnapian explication is a member.[7] In Carnap's own words:

> "The task of making more exact a vague or not quite exact concept used in everyday life or in an earlier stage of scientific or logical development, or rather of replacing it by a newly constructed, more exact concept, belongs among the most important tasks of logical analysis and logical construction. We call this the task of explicating, or of giving an explication for, the earlier concept"
>
> – Carnap (1947, pp. 8-9)

[7]Novaes (2018) argues that Carnapian explication while not explicitly about moral or political values, is implicitly endorsing Enlightenment values such as emancipation and freedom – in line with Carnap's political stance (see Carus 2007). Ordinarily, however, Carnapian explication is merely seen as scientific concept refinement, which is the received view we shall follow. If Carnapian explication is political, then it would be even more of a mistake to equate it with **NCE**.

Carnap, like other members of the Vienna circle, is mostly concerned with the usefulness or fruitfulness of the use of concepts in the formulation of scientific laws. In this vain, he 1950 discusses the concept of Pisces as an explication of the concept of fish – better able to play a role in scientific laws. The philosophy of science, however, has long moved on from such a narrow conception of scientific progress. Indeed, there is an incredible diversity of different roles concepts play in science, and we do not dare to begin listing all of them here. Rather, we offer the following pluralist account of **NCE**.

> **Naturalist Conceptual Engineering** = (i) The scientific assessment of concepts, categories, and classificatory systems, (ii) determination of their relevant context and purposes to which they are and should be put to use, (iii) reflections on and proposal for how to improve them, and (iv) proposals for and active participation in the implementation of the suggested improvements.

The primary purpose of distinguishing **NCE** from **MCE** is to clarify debates about concepts that play a role in both science and society. Such concepts, intended to play a diversity of roles and purposes are manifold. From Haslanger's discussion of race and gender to old philosophical debates on sentience and welfare – many of the most philosophical discussions attempt to untangle a muddled field of concepts, categorizations, and classificatory schemes. Where there is confusion, philosophy has a useful role to play. To do so, however, we need to disentangle the different roles, functions, and purposes for which respective concepts are put to use. Here the context in which the concept is used is key. This may be disappointing to those who try to provide a unified picture of all of conceptual engineering – but such monist aspirations should be resisted. Indeed, philosophers can still play useful roles, but they need to dive into the actual conceptual debates, with constant care given to resist the temptation of extrapolating from one conceptual debate to all others. Let us now move on to illustrate how the competing demands of these two kinds of conceptual engineering can come into conflict in practice, through the example of a concept which squarely falls into both the scientific and moral/political domain: animal welfare.

# 3 The Case of Animal Welfare: Concepts, Conflict, and Concord

Animal welfare provides a fruitful example of the use of this distinction within conceptual engineering; a concept which plays both moral and scientific roles that have historically grounded deliberations about which concept to use. Animal welfare has long been recognised as a moral as well as a scientific concept - what Fraser et al. (1997) have called a 'bridging concept' that sits between science and ethics, playing an important role in both areas. Welfare is studied scientifically, both to gain increased understanding of the behaviour and biology of animals, and to inform moral deliberation. It is therefore important to ensure we have a concept that fulfils both roles. Both **MCE**and **NCE** are relevant and important in deliberations as to the best concept of animal welfare.

Within science, the study of animal welfare has been increasing exponentially over the last few decades (Walker et al. 2014). The science of animal welfare aims to measure the welfare of animals under different conditions. Scientists use a range of physiological and behavioural indicators, such as heart rate, cortisol levels, vocalisations and preference behaviour. The measurement of animal welfare thus heavily relies on the concept of welfare in use. The selected welfare concept will determine which measurements are considered valid, as well as which conditions will turn out to impact welfare. In order to practice this science, it is plainly important to have a meaningful concept of welfare. We need to be clear on exactly what it is we mean when we speak of welfare – what it is that comprises this state in an animal. Without knowing exactly what it is that we're trying to measure, we can't hope to assess which conditions matter, or which indicators will be the most accurate.

As the primary scientific role of welfare is as a target for scientific investigation, to fulfil this role it must therefore be something measurable. Additionally, if we take welfare to be the appropriate relevant target for investigation, a central concept in itself rather than a property or proxy of some other state, it must also be something which is fundamental. Here, we take fundamental to mean that it is something necessary for welfare - something without which we would not be able to characterise welfare - as well as something that is intrinsically important to welfare, such that its importance cannot be collapsed onto some other state.

Animal welfare is also a central concept in ethics. Particularly since the publication of Peter Singer's 'Animal Liberation' in 1975 (Singer 1975), moral concern for animals has become a high priority for both moral philosophers and the wider community. Human uses of animals include food, research, sport and companionship, and the treatment of animals within these realms is under ever-increasing scrutiny. Animal welfare is relevant to decisions made by legislators, producers and consumers with regards to housing and treatment of animals. Expenditure of time and resources on animal welfare improvements requires a clear understanding of what welfare is, in order to ensure interventions are effective. Otherwise, the risk is that efforts may be wasted on providing conditions that may appear to increase welfare without actually doing so.

Welfare itself is typically considered to have moral importance. "Any conception of animal welfare inherently involves values because it pertains to what is better or worse for animals" (Fraser et al. 1997, p. 188). Welfare plays a central role in many moral theories (Crisp 2017). Deliberations about animal welfare, particularly within consequentialist frameworks, aim to determine how we can maximise welfare. Thus, to fill this role, our concept of welfare must contain something that we consider to morally valuable. We also want the concept to be capable of identifying those bearers of moral worth. Welfare being morally important, then those individuals capable of experiencing welfare should therefore form part of the moral community. Establishing a welfare concept will make rulings on which individuals fall within this group, and our assessment on which they rule in and out will affect our judgement as to the suitability of the concept.

As occurs sometimes within conceptual engineering, because of the two vastly different roles or applications for a welfare concept, some have suggested a use of pluralism, so that the concept used should vary depending on the different application (Webster 2005, p. 2). For example, something like a physical concept of welfare might best fit the scientific role, while a subjective account might better capture our ethical intuitions about the way their experiences matter to animals. However, while it is clear that there are these two different roles for, or applications of, the concept of animal welfare, it does not seem expedient to use two different concepts in each space. We want our concepts in both areas to refer to the same entity, and thus must find a single concept to use. Bringing in different concepts would remove our ability to use our findings from welfare science to inform moral decision-making; which is currently one of its primary functions. We instead need a

single concept, and one that both captures the basic state that is of scientific interest, and is morally relevant.

There have been a number of different concepts of welfare in use, and many are still in use today. The four most common concepts in use are the experience of positive and negative mental states by the animal (subjective welfare); good physical functioning (physical welfare); living naturally (teleological welfare); and meeting animal preferences (preference-based welfare). Assessing which of these concepts is preferable, requires first identifying what the requirements are for a concept of welfare, and then assessing how well these concepts fulfil the requirements. As discussed, for the scientific role, the requirements are for a concept that is measurable, and fundamental; while for the moral role, the requirements are for a concept that delineates something of moral value.

The earlier versions of welfare science used physical concepts, in which animal welfare consisted in some set of physical functionings - bodily health and comfort. One of the more prominent of these was the idea of welfare as coping: an animals welfare consisting in "its state as regards its attempts to cope with its environment" (Broom 1986, p. 524), trying to meet its physiological and behavioural needs. These concepts did very well for the scientific role, but not so well for the moral role. Physical states are easy to measure - growth rate, reproduction, mortality, prevalence of injury and disease, cortisol levels and abnormal behaviours. It is more difficult, however, to make a case as to why they should matter morally. Most of the reasons we have for thinking that poor physical functioning matters is due to its negative effects on the subjective experience of animals, which means it is not fundamental. It also fails to delineate the bearers of moral worth from those without - if physical functioning is what matters, then animals, plants and microorganisms may all be said to have a welfare equally worth considering, and this is not a view many wish to accept.

Natural living, or teleological accounts (Browning 2019) of welfare, emphasise the overall 'flourishing' of an animal according to its nature - the lifestyle for which it has evolved to live; generally focussing on the performance of natural behaviours. This concept does poorly on both the scientific and moral roles. It is not easily measurable, as identifying what count as natural behaviours and how much of their performance counts as good welfare is unclear (Veasey et al. 1996). It is also not obviously of moral importance - although intuitive to some, there is no strong account of how or why naturalness should matter morally (Browning 2019). It also fails to delineate

our moral circle in line with common intuitions - again, all organisms are capable of natural functioning, but it is not common to extend equal moral consideration this distance.

This is also an example of the discrepancy of the use of concepts between the general public and those within the scientific community, as raised in Section 2. It is common for those among the general population to take welfare to consist at least in part in natural living (Lassen et al. 2006; Vanhonacker et al. 2008), though it is not commonly used by the welfare science community for the reasons discussed above. This gives reason to think that part of the role of adopting or modifying scientific concepts is to assist in educating the general public as to the preferred concept and the reasons underlying its choice. In this case, informing the public as to the defects within this concept could have wide-reaching effects in the decisions made by consumers and advocates for animal welfare. Switching out a teleological concept for an alternative, such as subjective welfare, will alter which conditions might be thought important for welfare. For example zoo visitors often prefer seeing monkeys in naturalistic island-type enclosures, but in actuality cage-style exhibits often provide more climbing surfaces and opportunities for activity, promoting good subjective welfare (Browning and Maple 2019).

Today, the subjective welfare concept is more prominent. While this account has been used in animal ethics for decades (see e.g. Regan 1983; Singer 1975, it has only more recently become commonplace within animal welfare science . Subjective welfare certainly tracks something of moral import - much of the work on the moral importance of animals focuses on subjective experience, or sentience: "The question is not, Can they reason? nor, Can they talk? but, Can they suffer?" (Bentham 1879, p. 309). It is the capacity for pleasure and suffering, as experienced subjectively, that provides cause for moral concern and delineates the boundaries for moral consideration. The biggest problem with a subjective welfare concept is that it may not be considered measurable (Browning 2020). Subjective experience is inaccessible to direct measurement - we can only gather information on what animals do, not what they are thinking and feeling (see Veit and Browning forthcoming). However, it is more common now to accept that the internal subjective states of animals have measurable effects and "that some bodily states and behaviour can be used as reasonably reliable guides to what a human or other animal is experiencing" (Dawkins 1980, p. 11). If we accept that these sorts of tests are accessing subjective experience, then it is measurable. Indeed, unless we think subjective experience is epiphenomenal,

having no causal impact on the world, then there must be behavioural and physiological effects of mental states, which we can then detect and can form the basis for measurement.

Another popular welfare concept is a preference-based account of welfare (Dawkins 2003). Under this concept, welfare is good when preferences are satisfied, and poor when they are frustrated. Preferences do well from a scientific standpoint. They are easily measurable through preference-based behavioural tests, in which animals are presented with different options and observed to see which they choose, and how hard they will work to attain it. This concept also does well from the moral perspective - preference-based accounts of wellbeing are common (e.g. Griffin 1986) and most consider the satisfaction of their desires to be highly valuable. The question in this concept is whether preferences are fundamental. The most common competitor is the subjective account described above, and it is an open question whether subjective experiences are valuable because they are desired, or whether desires are valuable because they create positive experiences. Although the satisfaction of preferences is often closely tied with positive mental states - and their frustration with negative states - they are separable. Which of these is taken to be fundamental may push deliberation in the direction of either of these concepts.

Some modern accounts also include multiple of these components brought together - the most common being the 'tripartite' account in which physical, teleological and subjective components come together, requiring "that animals should feel well by being free from prolonged or intense fear, pain and other unpleasant states, and by experiencing normal pleasures; that animals should function well in the sense of satisfactory health, growth and normal behavioral and physiological functioning; and that animals should lead natural lives through the development and use of their natural adaptations" (Fraser 1999, p. 178). This concept is beneficial as it includes the strengths of all its component concepts, but the primary problem is in adjudicating conflicts between the different components. When measures of the different components give contradictory information, it is not clear what conclusions should be drawn. If one of the components are given primacy, as is often the case for subjective experience in these accounts, then it seems that this is the more fundamental concept that should be used. If possible, a single-component account will be much more tractable than a multi-component account.

The example of animal welfare perfectly demonstrates the distinction

between **NCE** and **MCE**. As shown for the different welfare concepts, these two can be in conflict, and the needs of **NCE** and **MCE** may not both be met within a single concept. However, when we are able to establish a concept that meets the requirements of both, this gives stronger reasons to accept that concept. Currently, the subjective or preference concepts appear to do best under both types of conceptual engineering.

# 4 Conclusion

To conclude, our distinction between *naturalist conceptual engineering* **(NCE)** and *moral conceptual engineering* **(MCE)** refers to the goals of conceptual engineering, rather than its methods. While Carnapian explication is traditionally associated with the formal methods and tools of logic and the natural sciences, amelioration is often understood as the qualitative improvement of concepts by drawing on the humanities and social sciences (see Novaes 2018). Our pluralist account of conceptual engineering combines these and other forms of 'concept improvement' as mere methodologies for a diverse set of practices that fall under the umbrella term 'conceptual engineering'. Some of these ameliorative methods can be used for both scientific desiderata and moral/political purposes – something we may very well consider a feature, rather than a bug. Nevertheless, where philosophers become engaged in highly divisive debates about concepts with very little consensus, it should be our task to alleviate and disentangle muddled conceptual confusions. Care must be taken not to extrapolate from one conceptual debate to all others. To do so, however, we need to separate the functions, goals, and purposes for which particular concepts are put to use. After all, concepts, categories, and classificatory systems play too many roles as to allow for a single simple monist account of 'conceptual engineering'. This will require us to move much closer to examination of scientific practice, history, and sociology – and hence endorse a pluralist and pragmatic form of conceptual engineering that is much closer in spirit to Neurath than it is to Carnap.

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