Epistemic projects, indispensability and the structure of modal thought

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Abstract: In this paper, I argue that modal epistemology should pay more attention to questions about the structure and function of modal thought. We can treat these questions from synchronic and diachronic angles. In this paper, from a synchronic perspective, I consider whether a general argument for the epistemic support of modal though can be made on the basis of modal thoughs's indispensability for what Enoch and Schechter (2008) call rationally required epistemic projects. After formulating the argument, I defend it from various objections. I also examine the possibility of considering the indispensability of modal thought in terms of its components, and finally, I argue that we also need to approach these issues from a diachronic perspective, and sketch how to approach this task.

1 Introduction

That modal thought plays some role in our cognitive and epistemic lives (perhaps even an important one) is a commonplace that is hard to deny. Philosophically, however, there is much to say about how to best understand this. On the one hand, given the apparent complexity of modal reasoning and conceptual frameworks, it is necessary to ask what the *inner structure* of modal thought is: if it has distinct parts, what are they, and how do they hang together? On the other hand, it is pertinent to ask questions about what we can call the *outer structure* of modal thought: what place does modal thought occupy in the context of our epistemic and cognitive systems, and how does it integrate with them? What is the function of modal thought? For what purposes is or could it be necessary? And if it is necessary, why is it? Since talk about 'outer' structure can be confusing, I will rather call the first set of issues the *structure question* (and assume that whenever I talk about structure I mean the inner structure

of modal thought), and the second the *functional question* (because it concerns the function of the structure, in a broad sense).[1]

We can approach the structure and functional questions along *synchronic* and *diachronic* dimensions. From a synchronic perspective, we may be concerned with the parts that at a given time modal thought has, and their connections and functions at that time. From a diachronic perspective, we may be concerned with the changes that the structure may suffer through time, and how the functions it has change accordingly. One of the goals of the current essay is to argue that in modal epistemology it pays off to treat these questions from both perspectives. We can think of the diachronic dimension as concerning transformations on a structure which at each point in time can be described from the synchronic perspective. Thus, it is impossible to get the full picture without having a grasp of both. While the bulk of my treatment will be limited to the synchronic dimension of these questions, the point is not that it takes precedence over the diachronic, but to build up the importance of the latter from the limitations of the former.

More specifically still, my strategy will be to approach the structure question from the angle of the functional question. I will argue that we can formulate some problems about the structure of modal thought in terms of indispensability relations, which map those questions to functional issues about the epistemic and cognitive roles that modal thought fulfills.[2] So that there is some common ground on the terms of the discussion, in section 2 I will give a characterization of the notion of indispensability and of indispensability arguments. In section 3 I briefly examine how indispensability concerns already play a role in some discussions in modal epistemology. In section 4, I examine an argument-template inspired by Enoch and Schechter (2008) that we can use to argue for the indispensability of epistemic systems in terms of what we can call *rationally-required projects*, and develop a general argument for the indispensability of modal thought following that scheme. In section 5 I show how this argument can be defended against several objections. In section 6 I will move on from the question of the indispensability of the whole of modal thought towards the question whether parts of it are indispensable, showing that the structure question matters for the functional question, and show how the argument against the need for essentialist thought in Roca-Royes (2012) can be spelled out in these terms. Finally, in section 7 I will suggest that a full account of these problems will require revisiting them from a diachronic perspective, and sketch how I think this should proceed.

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[1] On the functional question, see the antecedent of Divers (2010).

[2] As we will see, this idea has some antecedent in Brandom (2008) and Williamson (2007).

2 Indispensability and indispensability arguments

An initial characterization of the notion of indispensability will be useful for our discussion throughout the paper. The notion of indispensability that I will use is somewhat unusual in that it is more generic than the usual from philosophy of science and mathematics; whereas in typical indispensability arguments we are dealing with entities and theories as relata of the indispensability relation, here I will also consider whether practices, conceptual frameworks and cognitive systems can be indispensable in some sense.[3] Taking inspiration from Colivan 1999; 2001 and Field (1980/2016), which can be considered standard approaches to indispensability, I will understand the indispensability relation as follows:

> **No Better Alternatives (NBA):** X is indispensable for Y iff there is no alternative to fulfill Y that would play this role better than X (by some appropriate standards)

The condition makes certain implicit type assumptions about the entities which stand in the indispensability relation which are worth mentioning: Y is something that can be 'fulfilled' (such as purposes, or more generally satisfaction conditions like the satisfaction of goodness conditions for a scientific theory, which can be fulfilled), X is something that can play a role in fulfilling something of the type of Y (such as actions of certain types, the satisfaction of preconditions for the satisfaction of goals, and so on). Furthermore, we will be interested only in indispensability relations where X and Y are something that a cogent indispensability argument could be made about; having the material means to record our scientific theories is 'indispensable' in some sense for science, but this is not the sense of indispensability in which we are interested.[4]

An alternative way to state the notion of indispensability is

> **Elimination Consequences (EC):** X is indispensable for Y iff eliminating X would leave us without a way to fulfill Y or if it did, none of the alternatives left would be better (by some appropriate standards) than X in fulfilling it.

This formulation makes it clear that indispensability is not *ineliminability*, the impossibility to be eliminated: it can happen that something that is indispensable can be eliminated, albeit with loss according to the relevant standards for indispensability (although it can also happen that the given standards for indispensability make indispensability and ineliminability coincide).[5] Still, we may say that X is indispensable for Y iff Y would be

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[3] I will remain neutral on whether entities of the latter kinds can be reduced into entities of the more former types.

[4] Cf. Colyvan (2001, 7).

[5] Panza and Sereni (2016, 486) offer a different way to spell out the consequences that possible elimination has on indispensability. Their characterization of indispensability makes it a relation between theories. Generalizing their proposal we get:

impossible* (in a sense that can accommodate eliminability) unless some condition held true about X.[6]

The notion of indispensability is of interest because it seems to allow various arguments for claims of philosophical significance. Presumably, the most well-known example of an indispensability argument is Quine/Putnam's indispensability argument in favor of mathematical platonism:

1) We ought to be ontologically commited to all and only the entities which are indispensable for our best scientific theories.
2) Mathematical entities are indispensable for our best scientific theories.
3) We ought to be ontologically commited to mathematical entities.

For the reasons given above about the more generic character of the indispensability concept I am using, it is necessary to have also a more generic conception of indispensability arguments. Field (1989, 14) characterizes indispensability arguments as arguments 'that we should believe a certain claim (for instance, a claim asserting the existence of a certain kind of entity) because doing so is indispensable for certain purposes (which the argument then details)'. Within the context of an indispensability argument, we should distinguish between the *target* claims that come as their conclusion and the indispensability *claims* themselves. The argument also crucially relies on an *indispensability principle*, which connects the target claim to the indispensability claim. In the Quine/Putnam argument we just sketched, the principle is premise 1, the indispensability claim is premise 2, and the target claim is the conclusion. Panza and Sereni (2016) make the observation that the core of indispensability arguments lies in transferring certain properties from initially admitted theories to disputed ones:

> Suppose we have a class of theories of such a kind that we posses fairly clear means of establishing whether they are

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EC2: If X was missing, or replaced by a different X', this would result in no changes to Y but it would make it impossible to fulfill Y's purposes, or would transform Y into Y' (the purposes of which could or not be satisfied independently of X).

This makes a distinction between Y and Y's purposes, whereas in NBA and EC this is not needed or desirable, since Y can be itself some purpose. A different problem with EC2 is that it doesn't specify what is the relation between the purposes of Y and Y'. In hypothetical cases where Y is transformed into Y', Y's purposes are the same as Y, and those purposes can be fulfilled after the transformation, it follows from EC2 that X is indispensable for Y. However, it seems to me more natural to say that X was *dispensable* for Y *because* it is dispensable for Y' (since Y' is a variation of Y which can fulfill the same purposes as Y).

[6] Indispensability is a form of (binary) necessity: if X is indispensable for Y, X is necessary for Y. The corresponding binary indispensability operator $\Box_i$ is naturally transitive and irreflexive (it relates distinct entities; nothing can be indispensable for itself). On the other hand, it is neither symmetric, asymmetric or antisymmetric.

> true (or justified, or confirmed, or the like) [...] Suppose
> that we have theories of another disputed class, a class for
> which we lack those probatory means [...] If we have a
> way to show that appeal to theories of this second kind
> cannot [...] be avoided by theories of the first class, we
> may have reason to think that some appropriate semantic
> or epistemic property [...] is transferred from the former
> to the latter. This will give us indirect probatory means
> like those at our disposal for theories in the former class;
> this will then allow us to stablish whether theories in the
> second class are true (or justified, or confirmed, or the
> like) [...] (470)

The target claim in an indispensability argument will thus aim to undercut skepticism about the status of some class of object that is under dispute. Since the indispensability principle at work in the argument will connect some disputed X to some other Y which is not disputed, every indispensability argument will depend on an implicit assumption about the positive status of Y. Call this the *status assumption* (this assumption is not explicit in many indispensability arguments; for example, it is not explicit in the Quine/Putnam indispensability argument in the form given above). The properties that are assigned to Y in the status assumption are referred to again in the target claim, although not necessarily in the same guise. For example, in the status assumption one could claim that Y is *practically justified*, and in the target one could claim that X is *epistemically justified because it is involved in a project that is practically justified.* This indirection would have to be justified in each case, since the properties assigned to X is the target claim cannot be entirely disconnected from the properties assigned to Y in the status claim. Consequently, indispensability arguments also depend on an implicit assumption about the connection between the properties assigned in the status assumption and the target claim: if something has the target property, it has to have some connection to the status property. Call this the *minimal connection assumption.* In a sense, both the indispensability principle and the minimal connection assumption follow from an (implicit) theory about the relevant properties.

Schematically, then, with $\Box_i$ as the indispensability relation, S as the property assigned to something in the status assumption, and T_S as the property assigned to something in the target (which is connected to S in the connection assumption), the structure of an indispensability argument is

1) $\forall\alpha(T_S\alpha \to S\alpha)$ (minimal connection assumption)
2) $\forall\alpha\forall\beta((S\beta \land \alpha\Box_i\beta) \to T_S\alpha)$ (indispensability principle)
3) Sy (status assumption)
4) $x\Box_i y$ (indispensability claim)

5) $T_S x$ (3 4 $\wedge$-Intro, 2*,5* MP)
6) Sx (1*,5 MP)

Some further observations about different types of indispensability arguments are worth making. First, we should distinguish between *ontic* and *epistemic/pragmatic* indispensability arguments, depending on the nature of the target claims. In the former, the target claim asserts the existence of (a class of) entities. In the latter, the target claim asserts the positive epistemic or pragmatic status of certain claims, principles or practices (justification, intelligibility, usefulness, etc.). There are several reasons to think that ontic indispensability arguments are doubtful. Some of those are tied to the specifics of the arguments in question (for example, Field (1980/2016) criticizes the Quine/Putnam indispensability argument's assumption that mathematical entities are indispensable for mathematical theories), but an important general worry is that ontic indispensability arguments incur in circularity in cases where the fully specified versions of the premises already assume the existence of the entities to vindicate[7] As a response to these issues, some authors have proposed that we should understand the import of indispensability arguments pragmatically or epistemically, which bypasses some of those issues.[8] Here, I will operate on the assumption that our best way to use indispensability arguments is in the pragmatic/epistemic key.

A secondary distinction has to do with the type of the relata in the indispensability assumptions. As I mentioned above, the notion of indispensability that we will use is intended to be generic. One might wonder if there is a proper sense of indispensability that can be used in this generic way, given that we might also be able to distinguish between varieties of indispensability that relate different types of things.[9] For example, we can distinguish between the relation of indispensability that is appropriate for pairs of types of abstract entities and theories (this is the type of indispensability relation that is operative in the Putnam/Quine argument), and the relation of indispensability that is appropriate for pairs of actions or processes and goals. The differences are substantial enough that we might not be able to formulate sound indispensability arguments in both cases. In my current reconstruction, indispensability arguments only work over the background of substantive assumptions (for example, the status and connection assumptions we identified earlier) about the types of entities (broadly speaking) that the arguments refer to, so this is to be expected. A critic of indispensability arguments has various strategies to reject them; two are relevant here. On the one hand, she can

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[7] Cf. Leng (2005), Bangu (2008), Panza and Sereni (2016), and Heylen and Tump (2019).

[8] Cf. Bueno (2005), Bueno and Colyvan (2011) and Soto (2019). Panza and Sereni (2016) also recognize epistemic indispensability arguments, but they do not endorse them.

[9] I thank a reviewer for pressing me on this point.

reject the premise that there is an indispensability relation between the relevant items (this is roughly Field's 1980/2016 strategy). On the other, she could grant that there is an indispensability relation, but reject the indispensability principle that entitles the crucial inference from the fact of the indispensability relation. I will return to this point when we examine the specific indispensability arguments that we could use to vindicate the justification for modal thought.

3 Indispensability in modal epistemology: antecedents

Are indispensability and indispensability arguments relevant at all to modal epistemology? Arguably, some existing positions in modal episte-mology can already be understood in terms of the availability of specific indispensability arguments. For example, Brandom (2008) argues that the use of modal language, and presumably, the conceptual framework of modality and our practices of modal reasoning, are pragmatically justified by their answering to our need to explain the use of empirical vocabular-ies (modal thought is then intrinsically of higher order). To that extent, modal language is expressively indispensable for the practices of explaining empirical vocabularies. The kind of dependency relations that Brandom appeals to in order to explicate the place of modal thought in the complex of our epistemic system can be seen as a form of indispensability relation. Similarly, Williamson (2007) comes close to indispensability-talk when he argues for the epistemic import of counterfactual reasoning (which, as is known, he uses to defend the possibility of acquiring knowledge of metaphysical modality):

> Our overall capacity for somewhat reliable thought about counterfactual possibilities is hardly surprising, for we cannot know in advance exactly which possibilities are or will be actual. We need to make contingency plans. In practice, the only way for us to be cognitively equipped to deal with the actual is by being cognitively equipped to deal with a wide variety of contingencies, most of them counterfactual. (137)

and more explicitly when he discusses the role that imagination has in counterfactual thinking:[10]

> Despite its discipline, our imaginative evaluation of coun-terfactual conditional is manifestly fallible. We can easily misjudge their truth-values, through background igno-rance or error, and distortions of judgement. But such fallibility is the common lot of human cognition. Our use

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[10] Cf. Williamson (2016a).

> of the imagination in evaluating counterfactuals is moder-
> ately reliable and practically indispensable. Rather than
> cave in to skepticism, we should admit that our methods
> sometimes yield knowledge of counterfactuals. (155)

We should remember that Williamson's target is even a moderate form of modal skepticism about knowledge of metaphysical modality: because of his wide-ranging anti-exceptionalism (for him, there is no need to appeal to any extraordinary mechanisms of modal belief formation), skepticism about the means to acquire knowledge of metaphysical modality entails skepticism about ordinary modal knowledge. If the reading I am proposing of Williamson's claims holds water, then this shows how indispensability concerns may lie at the center of very substantive claims about modal knowledge.[11]

It is important to note that in both cases the implicit arguments are examples of *partial* justificatory/vindicatory arguments in favor of modal thought: they vindicate parts of it in relation to specific purposes. While part of their appeal comes from their specificity, we might wonder if it is possible to produce a more general vindicatory argument. If we had it, we could perhaps show that the partial arguments derive from more general facts about the function of modal thought. In the next sections, I will propose an argument of this general kind, showing that this is indeed the case, and defend it against some possible objections.

4 A general argument for the indispensability of modal thought

When we consider the question of the indispensability of modal thought, what we want is to show the indispensability of very general mechanisms of belief formation and management, which in turn is taken to support the justification of those mechanisms. Since we know the subject of the indispensability claim and our target, we need to fill in the indispensability argument scheme with the object of the indispensability claim and its corresponding status assumption, and an appropriate indispensability principle.

For our purposes here, we can take a hint from a proposal from Enoch 2007; 2011, Enoch and Schechter (2008) and Schechter (2019), who have used a similar strategy to defend the support of various claims of a similar

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[11] I should make clear that I do not endorse Williamson's argument: the existence of general competences to assess modal claims that allow for the assessment of ordinary modal claims is compatible with the existence of significant limitations to those competences. If those competences didn't have limitations, we could obtain modal knowledge of all types (ordinary and remote). But we may pressume that those competences *do* have limitations; for the importance of limitations stemming from ccognitive architecture, see Jones and Schoonen (2018) (who also argue for a variety of moderate modal skepticism), and Balcerak Jackson (2018).

nature.[12] While Enochs's target in 2007 and 2011 is a defense of the reality of moral truths, making his argument *ontic* in nature, the best reconstructions of the arguments in Enoch and Schechter (2008) and Schechter (2019) are epistemic and pragmatic. Here I will focus on the argument from Enoch and Schechter (2008). Their target there is a defense of the epistemic justification of what they call *basic belief-forming methods*, which they characterize as the most fundamental methods a thinker can appeal to when reasoning. Amongst those basic-belief forming methods we find the use of inference rules like *modus ponens* and inference to the best explanation. The justification of these supposedly elementary forms of reasoning is a vexed problem in the philosophy of logic. On the one hand, it may seem unacceptable that they should justify themselves.[13] On the other, if they were justified through the use of other belief formation methods, we could doubt whether the supposedly basic belief formation methods are actually basic in the required sense. Even if that didn't dissuade us, we would still face of the justification of those other methods, and so on.[14]

Enoch and Schechter (2008) think they can deal with the issue by appeal to the idea that we are rationally required to engage in various epistemic tasks. They introduce the notion of an *epistemic project*, which corresponds to the idea of a long-term recurring task that can be evaluated along epistemic dimensions. As an example of an epistemic project, consider someone's task of looking for explicit reasons for their inchoate beliefs: by collecting reasons, they gain justification for holding on to those beliefs. I take it that the question whether beliefs are justified is a paradigmatic example of epistemic evaluation. Since the epistemic status of beliefs is presumably reactive to the contingent situation of the subjects who have them, they may engage in this task whenever their situation changes, making it an open (and thus long term) recurring task. We may

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[12] Enoch and Schechter (2008, 553) trace their proposal to earlier ideas from Kant, Reichenbach's 1938; 1949 pragmatic defense of enumerative induction, Feigl's 1952 discussion of *vindication*, Nagel (1997), Dretske (2000) and Wright (2004).

[13] An option here would be to say that basic belief forming mechanisms are something like 'primitively justified', and so, that even though they don't justify themselves or are justified by something else, they are nonetheless justified. This is compatible with the argument that they are justified because of their indispensability in that precisely their indispensability could *be* their primitive justification. If so, perhaps it will be more economical to dispense with the talk of primitive justification (which can be prone to mystifications) and describe the justification of belief forming mechanisms in terms of their indispensability only.

[14] McFetridge (1990) and Hale (2013) develop indispensability arguments for rules of inference which also aim to solve this problem. Their arguments work by *reductio* of the hypothesis that certain forms of modality are dispensable. Hale explicitly argues that this kind of reasoning can be used to defend the existence of logical necessities. However, in doing so he jumps from an epistemic construction of the indispensability argument to another ontic one. For the reasons I mentioned above, I think ontic indispensability arguments are dubious.

ask whether engaging in a task like this is itself epistemically appropriate or even required; whether it is will depend on the nature of the task and the subjects who engage in them.[15] Enoch and Schechter point out that certain epistemic projects are not only appropriate but also *rationally required* for subjects like us: if we did not engage in them, we would be criticizable as rational agents. Engaging in these rationally required projects (RRPs) whenever appropriate is constitutive of rationality. Enoch & Schechter identify four such projects:

1) the *explanatory* project of making sense of and understanding the world,[16]
2) the *deliberative* project of making decisions,
3) the project of *planning* for the future, and
4) the project of *self-evaluation*.

Something like a belief-formation mechanism would be indispensable for the realization of those projects if one could not realize them without loss (in the sense we discussed in the previous section) unless one engaged in those belief formation mechanisms. Enoch and Schechter argue that under those conditions there is independent *prima facie* epistemic justification for engaging in those belief-forming mechanisms. The structure of their argument can be captured as follows:

RRP Indispensability scheme::
1) For any μ that is indispensable for engaging in an RRP, there is pragmatically grounded *prima facie* epistemic justification for the use of μ.
2) Rational agents should engage in RRPs.
3) m is indispensable for engaging in an RRP.
4) There is pragmatically grounded *prima facie* epistemic justification for the use of m.

This scheme, I will now argue, provides us with a skeleton of a general defense of the justification of modal thought.[17]

First, we need an appropriate notion of indispensability. We can apply our initial characterization of indispensability to get:

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[15] Some may require that the agents are in some sense responsible for their engagement in the tasks. An agent who compulsively looked for reasons for his intuitions may or may not be engaged in an epistemic project.

[16] We should treat language building as part of this project. Cf. Sellars (1957, 2307): "The descriptive and the explanatory resources of language advance hand in hand: and to abandon the search for explanation is to abandon the attempt to improve language, *period*." See also Steiner (1998) on the connection between modality and language building: "Hypotheticals, 'imaginaries,' conditionals, the syntax of counter-factuality and contingency may well be the generative centres of human speech."

[17] Note that the 'outer' argument about the status of m is omitted, so the minimal connection assumption, so the minimal connectios not given.

Modal RRP Indispensability: For some rationally required project r, modal thought (of type t) is indispensable for r iff there is no alternative to fulfill r that would play this role better than modal thought (of type t).[18]

Earlier, we saw how something like indispensability talk may play a role in the formulation of various modal epistemological theses. Remember Williamson's claim that "the only way for us to be cognitively equipped to deal with the actual is by being cognitively equipped to deal with a wide variety of contingencies". It may be borderline-platitudinous to say that dealing with the actual is rationally required: if there is anything that rational agents have to be able to assess, it is the actual. The actual has priority for action. But then, if dealing with the actual is indispensable for rationally required projects, and if being able to assess counterfactuals is indispensable for dealing with the actual, then we can transmit our justification for the former to the latter.[19]

These observations are still specific. What about the general case?

There are reasons to think that modal thought is at least *involved* in all the projects that Enoch and Schechter identify as rationally required. It seems like the evaluation of alternative courses of action in terms of their potential outcomes is central to at least some instances of decision-making and deliberation.[20] It is, of course, an empirical question whether all decision-making involves explicit modal thought, although counterexamples could perhaps suggest that we should think of modal thought in a way that is compatible with non-representational modes of cognition (for example, acting on affordances seems like a good candidate for a process that is intrinsically modally-based, deliberative and non-representational). Similar points can be made about the planning project: there, besides the consideration of alternatives in the form of different ways that aims could be realized, one often has to consider, on the one hand, contingencies that could prevent those aims to be realized, and, on the other, fixed points that we can rely on (that would not succumb to contingency). The reference

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[18] Alternatively, as before, we may say that for some rationally required project r, modally-based thought or practices of type t are indispensable iff it would be impossible* to realize r unless one engaged in modally-based thought or practices of type t.

[19] Of course, the platitude about the need to deal with the actual is not informative, and this may count as a reason to rephrase Williamson's idea in terms of more specific projects; this is precisely what Williamson does when he discusses the importance of modal thought in planning, for example.

[20] Cf. Stalnaker (1996, 133): "Deliberation about what to do in any context requires reasoning about what will or would happen in various alternative situations, including situations that the agent knows will never in fact be realized. In contexts that involve two or more agents who have to take account of each other's deliberation, the counterfactual reasoning may become quite complex. When I deliberate, I have to consider not only what the causal effects would be of alternative choices that I might make, but also what other agents might believe about the potential effects of my choices, and how their alternative possible actions might affect my beliefs."

to fixed points is characteristic of explanatory tasks as well. Whatever is explained is shown, through the explanation, to have been fixed in some way by something else that serves as its support or ground.[21] Furthermore, looking for explanations requires the consideration of what *could* fill the role of fixing the *explanandum* in that way (for that reason, modal thought of a sort might be involved in supposedly basic belief formation mechanisms like inference to the best explanation). These features of explanations are not dependent on the type of account of explanation that we adopt; rather, they are given as desiderata that those accounts should themselves explain. Finally, while self-assessment may appear to deal mainly with the evaluation of actual *de se* properties, it seems to be equally important for it that we are capable of evaluating our dispositions and capacities.[22] In an important sense, we engage in self-assessment *because*, amongst other things, we need to consider what we can do.

In all these cases, modal thought can and often does play an important role that, if not fulfilled, would impoverish our capacity to engage in the relevant RRPs. Consequently, these observations we just made count as support no only for the involvement claims, but for the indispensability claims which are required to instantiate the RRP Indispensability Argument Scheme. Once one takes that step, the argument is fully set up:

General Modal Indispensability Argument::
1) For any μ that is indispensable for engaging in an RRP, there is pragmatically grounded epistemic justification for the use of μ.
2) Rational agents should engage in RRPs.
3) Modal thought is indispensable for engaging in some RRPs.
4) There is pragmatically grounded epistemic justification for modal thought.

If we accept that RRPs can serve as the source of *prima facie* epistemic justification for methods, and that modal thought is indispensable in the required sense to RRPs, we have a way to undermine certain forms of skepticism about the justification of modal thought as a whole (admittedly, the forms of skepticism that the argument rules are rather immoderate and thus antecedently less plausible). Indeed, our construction of the argument shows something stronger than what the anti-skeptic argument requires (since that requires that modal thought be indispensable for at least one RRP). Modal thought does not seem to be merely indispensable to RRPs, it seems to be *systematically* indispensable for RRPs: there is no RRP where modal thought does not play an important function.[23]

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[21] Cf. Kment 2006; 2014, who analyses necessity in terms of invariability, unconditionality and security, and through that, to underlying explanatory relations.

[22] Cf. Ryle (1949), and more recently, Stanley (2011) on know-how as modal *de se* knowledge.

[23] On the notion of *importance*, see Schechter (2019).

Modal thought may be deeply entrenched in our functioning as rational, epistemic agents.

Engagement in RRPs is intended to be partially constitutive of rationality. A plausible requirement for subjects who engage in RRPs is that they engage in them reflexively. This means that ideal rational agents should be aware of their engagement in RRPs.[24] In order to have some notion that one is engaging in a project, one has to be able to understand what one is engaging with *as* a project. However, there is no obvious way to describe a project as such without the use of modal vocabulary: to understand what a project is, one has to understand that engaging in a project often requires considering alternative courses of action and possible contingencies. In engaging in a project we aim at goals, but from past failures we know that we would not achieve those goals unless the conditions are right, which they *might* not be. If engaging in those projects can only be accounted for using modal vocabularies, and rationality requires that one is aware of this, modal vocabulary and thus modal thought is required for engaging in those projects. Put in different terms: to engage in any project, including rationally required projects, we have to engage also in rationally required projects.[25] This is what we should expect from projects of this kind. And since understanding projects requires the capacity for modal thought, this partially explains its entrenchment in rationally required projects.

5 Defending the argument

My sketch of the General Modal Indispensability Argument can be resisted on various fronts. In this section I want to address some objections that I find more pressing or that can help clarify some of the moving pieces in the argument. Some of them are derived from the argument schema that the current proposal derives from, and some others are more specific to the modal case.[26]

5.1 Against premiss 1): justification from indispensability?

The indispensability principle that the argument uses connects indispensability to justification. But why think that there is any connection between them at all? More generally, why think that indispensability principles that target epistemic properties are viable?

Arguably, epistemic indispensability principles are no less strange than ontic indispensability arguments, and may even be less strange. Why

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[24] I don't take awareness of engaging in RRPs as a requirement for engaging in them rationally. In place of awareness, rational agents could merely be disposed to act in ways that conformed with engagement in RRPs.

[25] Consider Dretske's 2000 thought that *entitlements* are in some cases unavoidable. Worsnip (2016, p231–233) makes a similar observation about the reflexivity of indispensability in the case of inference to the best explanation.

[26] I thank the reviwers for helping me improve this section.

not ask instead why we should connect indispensability to questions of ontological import, as in the Quine/Putnam argument? In the conception of indispensability arguments defended here, their aim is to defend or uphold the status of something that is under dispute; what they ultimately do, if successful, is to give reasons to believe in the positive status of the disputed items. In this view, the epistemic import of indispensability is central to understanding what indispensability arguments can be about.[27] If it is to be granted that indispensability relations can support any conclusion of interest, it is not implausible to admit indispensability principles that target justification claims.[28]

5.2 Against premiss 1): epistemic or pragmatic justification?

A natural point of concern is that the argument might trade illicitly on an *epistemic* notion of justification when the intuitions that seem to underlie the principle are actually about *pragmatic* justification. Even if an indispensability principle that targets pragmatic justification is true, that may not mean that the indispensability principle that the argument uses is.

   The worry is inherited from concerns with Enoch and Schechter's 2008 original argument, but it takes a somewhat different form in our present case. To make this clear, it will be worth considering their answer to the issue. They offer two lines of response.

   The first is a clarification of the type of epistemic justification that is involved in the argument. One way to misunderstand what the argument is doing is to take it as extracting justification for particular modal claims because of the indispensability of the mechanisms that produce them. Instead, the kind of justification that the argument is about has to do rather with the value of those mechanisms as potential sources of justification for modal claims. In their words, the pragmatic account of the justification of basic belief-formation mechanisms 'is not part of the epistemic story of our justification' (563). This mostly holds for the present proposal as well. When I say that modal thought is justified pragmatically, I don't mean to say that the justification of particular modal claims could come purely from the indispensability of modal belief formation mechanisms in tasks that belong to RRPs. I do however think that in some sense the indispensability of those mechanisms to RRPs provides justification for the belief in the reliability of those mechanisms, which in turn gives justification for belief in the products of those mechanisms (so, contra

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[27] This is independent of any skepticism one might have on independent grounds about the viability of ontic indispensability principles. The epistemic understanding of indispensability arguments could be important even if indispensability arguments effectively supported ontic conclusions.

[28] A separate question would be if similar arguments could be made making use of different relations.

Enoch and Schechter, I do think the pragmatic account can play some role in the epistemic story of justification). But, to reiterate, I don't think this can be the whole support for holding belief in the product of those mechanisms. The justification that could come from the indispensability of those mechanisms is largely insensitive to the content of their products, so that even if it applies to items with the features of those products, strictly speaking it cannot give justification *for* them in specific. To say that we have justification for specific claims we need at least that much more.

Enoch and Schechter's second line of response is that, because of the type of indispensability relation that we are dealing with here (where one of the relata is a rationally required project), it is somehow natural to think of the relevant type of justification as pertinent to being 'a responsible thinker' (564), which they suggest is the subject matter of epistemic evaluation. In a footnote, they mention that this might not be sufficient for those who hold that epistemic evaluation has not only to do with the adduced sense of responsibility, but also with truth-conduciveness.[29] This is Enoch and Schechter (2008)'s answer to the worry:

> First, epistemic justification should not be taken to be solely concerned with truth [...] Second, there are a host of other clearly epistemic virtues, such as explanatory power and fruitfulness. Finally, there is a connection between the methods indispensable to a rationally required project and the truth. For instance, one does not count as a successful explainer if all of one's beliefs are manifestly off the mark. (564, footnote 25)

For my purposes, I can adopt the broad outlines of this answer: I do agree that justification cannot be reduced to a kind of connection to truth, I do think that epistemic value spans more than truth-oriented properties, and I believe that there might be a connection between successfully exercising RRPs and truth.[30] The point in which I depart from Enoch and Schechter is in their emphasis on the requirement that the targets of their pragmatic vindication arguments are *basic* belief formation mechanisms. This is not adequate for the modal case. Plausibly, not all modal belief formation mechanisms are primitive or basic.[31] In the cases where they aren't, they will be epistemically justified by the justification

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[29] This problem is forcefully raised against Enoch's 2007; 2011 argument for ethical realism in McPherson and Plunkett (2015). It is important to notice that their main line of attack is preempted by the first of Enoch and Schechter's responses to the problem, since they target the idea that indispensability does play a role in the justificatory story of particular beliefs. Consequently, not all McPherson and Plunkett say about Enoch 2007; 2011 applies equally to Enoch and Schechter (2008).

[30] On the issues I side with Kvanvig (2005) and Elgin (2017).

[31] Indeed, one may be uncertain that there *is* any form of basic modal belief formation mechanism.

of basic belief formation mechanisms. Enoch and Schechter try to give an account of how the relevant chains of justification can get started; and they think that the appropriate justificatory mechanism (which depends on the indispensability to RRPs) is exclusive to the base of those chains. However, if epistemic justification can come from the holding of indispensability relations, the fact that those indispensability relations are also available in the case of non-basic belief formation mechanisms should entail that non-basic belief formation mechanisms can also obtain justification from their involvement in RRPs (as above, this does not mean that justification that they obtain can be taken as justification for specific beliefs). This is a separate question from the point that Enoch and Schechter make that we shouldn't confuse the justificatory base of those methods with their usefulness. The kind of justification that the principle talks about is, then, integrated into the epistemic justificatory story of articular beliefs, and thus at least in this sense itself epistemic, even though, in the sense I have argued, it cannot be taken to be the full ground for holding those beliefs.

5.3 Against premiss 2): rationality overloaded?

If modal thought is indispensable for rationally required epistemic projects, it follows that no subject can be rationally non-criticizable and fail to engage in modal thought. One worry here is that this assumes a notion of rationality is either too heavy or simply *ad hoc*. Because they are supposedly required for rationality, it may seem as if rational agents of any kind should engage in *all* of the projects of deliberation, explanation, planning and self-assessment. However: why, exactly, should any rational agent engage in the projects that the argument takes as required?

Enoch and Schechter (2008) argue that 'there is something intuitively very problematic with thinkers like us who fail to engage in the projects we have so far mentioned' (558). For those who don't share this intuition, or who prefer not to depend on intuitions, something more needs to be said. It is important to note that the requirement is restricted to thinkers 'like us'. Epistemic agents with a different constitution could be subject to different rational requirements *qua* rational agents; this is so because the capacities of epistemic agents as such (including the types of epistemic tasks that they can pursue and the types of projects that they can engage in) are partially determined by their constitution and partially by their relation to the environments they are situated in. In turn, the requirements to which they are subject to are constrained by the nature of succeeding in the exercise of those capacities. Furthermore, the exercise of their capacities is forced by the pressures of their environments. Agents like us cannot but make decisions, plan, look for information about our environments both proximal and distal, and self-assess. The cluster of projects which are required of epistemic agents like us is not arbitrary, but it responds to features of our constitution and our environment.

The type of rationality characterized by engagement in the four RRPs discussed above cannot be confused with minimal rationality. Nevertheless, the general argument can still work even if we consider an alternative conception of rationality. Some accounts of minimal rationality would have no trouble accommodating indispensability claims for modal thought. Cherniak (1990), for example, offers an account of minimal rationality that explicitly consists in part in the capacity to evaluate relevant counterfactuals. Similarly, Millikan (2006) characterizes rationality as "the ability to make trials and error's in one's head rather than in overt behaviour", and Hoek (forthcoming) offers an account of minimal rationality which centers around the notion of avoiding inconsistencies, which can also be construed as a modal affair in an extended sense.

5.4 Against premise 3): from involvement to indispensability?

The third premise in the argument, the indispensability claim, claims that modal thought is indispensable for rationally required projects. The evidence given in favor of the claim goes through some observations about the involvement of modal thought in those projects. One line of attack here is to object that at least for some RRPs this is not sufficient.

I already anticipated the objection by noting that in the cases that I indicated as evidence for the indispensability claim, besides the fact of involvement, it is plausible that there are either a) no alternatives to modal thought for the purpose of realizing the projects, or b) the alternatives are, for the relevant purposes, inferior to modal thought for that purpose. However, the strength of the evidence for this claim varies from case to case. For example, it could be objected on empirical grounds that the project of deliberation, even if rationally required, is not in the main pursued best by explicit evaluation of possibilities for action, but rather by unconscious thought of a kind.[32] There are several ways to respond. One alternative is to point out that the question is unsettled.[33] Let's suppose, however, that the question is settled against the modal thought hypothesis. In principle, we could retreat into the strategy of extending our conception of modal thought so that it encompasses implicit or unconscious forms of cognition, although it is in no way clear what that would entail (perhaps, for example, it could be hypothesized that in deliberation without explicit reasoning, the underlying subpersonal cognitive mechanisms involve representations with modal contents). The revisionary nature of the approach is a significant drawback. A more

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[32] While the explicit reasoning model of deliberation is more traditional, there are alternative models of deliberation. I thank a reviewer for pushing this point. For and example of an alternative to the traditional model, see Dijksterhuis et al. (2006) on the 'deliberation-without-attention effect'.

[33] Cf. Lassiter et al. (2009) and Mamede et al. (2010) for crtical assessments.

promising strategy is to focus on certain normative aspects of the projects themselves.

Because RRPs are non-optional, there is a requirement that we engage in them whenever it is necessary and fully. This leaves it open that in some cases the requirement to engage in RRPs will demand that we use less than optimal methods according to some standards. In other words, methods that according to the regular criteria would count as dispensable could turn out to be indispensable just because of the scarcity of alternatives. This coheres well with the idea that lack of alternatives is sufficient for indispensability. In this sense, modal thought could be vindicated as indispensable even if it acted as a redundant system. Deliberation, to go back to our example, is often non-optional not only in the sense that it is rationally required but also in the sense that we cannot fail to make decisions. Given that we are required to engage in these projects, we might have justification for trying through any means that are available and satisfy certain conditions of reliability (surely, not just any mechanism will do). But we cannot imagine that no means will satisfy the relevant reliability condition, because otherwise we will have reason to think that the project is no longer rational.[34]

5.5 Against premises 1) and 3): indispensable in the right ways?

Assuming that the previous worry can be defused, one might still worry that the effective indispensability claim we are entitled to make is too weak to motivate the application of the indispensability principle to obtain the target claim. There are various ways in which this could happen. For example, it could be that proportionally, instances of modal thought are more often than not dispensable for RRPs; in this case, we might want to say that even though for some cases modal thought is indispensability, this fact on its own is not enough to establish the overall epistemic justification of modal thought.

In response, we should observe that the ways we have to assess the systematicity of the indispensability of modal thought are limited. If we count only previous instances of RRPs, we might find that modal thought only scarcely occurs; for example, it might occur only for highly sophisticated epistemic agents, who are presumably only a thin slice of the total of rational agents. Now, if we project future instances of RRPs, we might find that the modalizing epistemic agents we have found so far are only the vanguard of an overwhelming mass of future modalizing agents. Of course, we are mostly ignorant of future trends. Precisely for this reason, however, we should not dismiss the significance of the

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[34] The assumption here is a specialized version of the 'ought implies can' principle. I make the assumption dialectically here (I personally think 'ought implies can' principles are generally doubtful): my opponent will have to reject it (which will mean knocking down the general version), whereas I only need to defend the specialized version here.

indispensability of even a few instances of modal thought for RRPs. We need to account for the potential epistemic significance of modal thought. Tools are important because we could do things with them if needed, even if we don't actually use them. What I suggest here is that modal thought acts, in this respect, exactly like a tool.

6 Intra-structural varieties of indispensability

So far, we have examined how an argument can be constructed that vindicates the justification of modal thought as a whole. Modal thought is a complex affair. If we consider the question of its internal structure, it seems worth it to develop a way to make indispensability claims meaningful in terms of parts of modal thought. In effect, the support for the indispensability claim in the general argument might be taken to show how specific types of modal belief formation mechanisms are involved in what we have called rationally required projects, and we might prefer those specific versions of the argument over the general version. To develop this line of thought we must give some preliminary sense to the idea that modal thought is constituted by identifiable parts. One way to do this is to individuate different parts to modal thought by the linguistic forms that they take when expressed. So, for example, we can think that counterfactual conditionals, modal adverbs, habituals and generics all characterize different pieces of modal thought. The semantic analysis of these constructions might suggest other partitions of more clear philosophical utility, and these partitioning schemes often overlap one another. For example, there are: categorizations that discriminate between alethic, epistemic, bouletic and deontic types of modality.[35]; between mind-dependent and mind-independent types of modality.[36]; between metaphysical, natural and normative modality.[37]; and so on. Under the wider umbrella of modality we also find other concepts such as essence, and perhaps other hyperintensional notions.[38]

The question of what partitions of modal thought are appropriate would take us too far afield from our target here, which is to show how, *given* some partition or partitions, we will have various types of indispensability relations that will give rise to more and finer-grained questions than what we have examined in previous sections. My goal is to provide a framework for thinking about the kinds of justification relations that we might find between parcels of our modal thinking. Later, I will illustrate how these relations play a role in some specific discussions.

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[35] Cf. Kratzer (1981) and Von Fintel (2006).

[36] Cf. Williamson 2016b; 2016c and Vetter 2015; 2016.

[37] Cf. Fine (2002).

[38] Fine (1994) argues that essence cannot be accounted for in modal terms, and while this is the orthodoxy nowadays, some authors reject it.

My basic assumption to construct notions of indispensability that are essentially sensitive to the structure of the partitions will be that the elements of the relevant partitions serve some roles within the structures they are embedded (indeed, I will assume that those roles are explanatory of the partinioning schemes' structure). For any such partition P of a structure M (like modal thought) which has a set of roles R, we can say that there are at least three types of cases when a part m of M which serves a function $r(m)$ within P can be indispensable in a distinguished sense:

> **External Indispensability (E-Indispensability):** m is e-indispensable iff $m \in P$ and m is indispensable for the realization of some $j \in R$.
>
> **Relative Internal Indispensability (RI-Indispensability):** m is ri-indispensable for m' iff $m \in P$, $m' \in P$, $m \neq m'$, and m is indispensable for $r(m')$.
>
> **Internal Indispensability (I-Indispensability):** m is i-indispensable for M iff $m \in P$ and m is ri-indispensable for some $m' \in P$ which is e-indispensable for M.

An important case of External Indispensability is that when j is the project that R (and thus M) is intended to fulfill. In this case, M is indispensable as a whole *because* some $m \in M$ is e-indispensable (we can then say that in this case m is e-indispensable *for* M). In the case that M is rationally required, this will mean that m is itself indispensable in the global sense we discussed in the previous section. With this in mind, it is possible to consider whether we can refine indispensability claims at the general level (that of modal thought in general) to more specific ones at the level of the members of the partition we are dealing with. It might then be possible to discriminate, for example, that some parts of modal thought are indispensable for rationally required projects while others are not (for example, whether consideration of counterfactual situations, or dispositional attribution are indispensable in this way).

The internal indispensability relations capture ways in which within a partition, parts of the partitions can be indispensable for other parts. These relations interact with the external ones. When the part m' for which the part m is ri-indispensable is itself e-indispensable, m should itself be e-indispensable (this follows from indispensability being a kind of relative necessity, as I pointed out before). These distinctions allow us to further refine indispensability claims: it could happen that certain parts of modal thought could not be recognized as indispensable unless one realized that other parts which are recognized as indispensable require them.

E-, RI- and I-Indispensability are relative to singular partitions. However, since we might have many overlapping categorizations of modality, it will be important to consider cross-partition relations. For two overlapping partitions P_1 and P_2 of a structure M which has a set of roles R, we have:

Cross Partition Relative Indispensability (CR-Indispensability):
m is cr-indispensable for m' iff $m \in P_1$, $m' \in P_2$, $m \neq m'$ and m is indispensable for $r(m')$.

These dependency relations between parts of partitions couple partitions. Using the notion of cr-indispensability, we can capture some interesting indispensability relations at the level of partitions:

Partition to Partition Indispensability (P2P-Indispensability):
P_1 is p2p-indispensable for P_2 iff there is an $m \in P_1$ that is cr-indispensable for some $m' \in P_2$.

Strong Partition Indispensability (SP-indispensable): P_1 is sp-indispensable for M iff for all P in the set of partitions of M excluding P_1, P_1 is p2p indispensable for P.[39]

When taken together, these distinctions give us a rich way to account for the structure of modal thought, and the dependency relations in which different parts of it stand.[40] Because of the type of indispensability relations that we are interested in, a full account of the justification of modal judgements has to be sensitive to this structure.

This is specially important to those who want to defend a form of epistemic pluralism about modal knowledge. An example of how this plays out can be extracted from an argument by Roca-Royes (2012) to the effect that knowledge of essence is not required for knowledge of counterfactuals.[41]

Roca-Royes (2012) observes that the views in Williamson (2007) and Kment (2006) seem to lead to a commitment to the claim that the capacity to acquire essentialist knowledge is central to knowledge of counterfactuals (and then, in Williamson (2007)'s case, to modal knowledge in general). To show that this is incorrect, she offers the following argument (the original version is fairly involved, so I will simplify it here). Let's grant that evolutionary usefulness can be explanatory of the existence and role of conceptual schemes, and let's grant, further, that counterfactual knowledge (CK) has evolutionary usefulness, so that its evolutionary usefulness can be explanatory of the existence and role of conceptual schemes. Now, consider two hypotheses: that CK's usefulness can be explanatory of the conceptual scheme of metaphysical modality and essence. One reason to hold these is that counterfactual evaluation might require one to keep constitutive/essentialist facts fixed, and that if it does, then it also has the

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[39] Weak Partition Indispensability (WP-Indispensability) is the relation such that P_1 is wp-indispensable for M if there is an $m \in P_1$ which is e-indispensable. WP-Indispensability is thus a straightforward consequence of E-Indispensability.

[40] One way in which we might want to extend the model further is by having partitions themselves serve specific functions.

[41] Roca-Royes defends a version of pluralism, which she has developed across many papers 2011; 2012; 2017. While I don't endorse all she says, I share most of her criticisms to extant accounts of modal knowledge.

means to engage in evaluation of metaphysical modality (this is all part of Williamson's counterfactual-based modal epistemology). The first point would be stronger if essentialist vision was a core part of counterfactual evaluation; otherwise, one would need reasons independent of CK's evolutionary usefulness to explain the conceptual scheme of essence. Against Williamson, Roca-Royes holds that ordinary counterfactual evaluation does not require keeping constitutive/essentialist facts fixed.[42]. It is implausible, then, that it is a core part of counterfactual evaluation. So CK's usefulness cannot be sufficiently explanatory for the usefulness of the essentialist scheme. Additionally, it is doubtful that essentialist knowledge, if we have it, is extensive enough to even be a viable candidate as the kind of thing that could be explained in evolutionary terms. Perhaps, then, essentialist vision can be dispensable. And since, for all we know, the possibility of knowledge of metaphysical modality might require it, we also don't have reasons to think that our capacity to evaluate metaphysical modal claims is indispensable. In other words: neither essentialist nor metaphysical modality are indispensable for the role that is satisfied by ordinary counterfactual thought (in our terminology, they are neither ir-indispensable nor cr-indispensable for it). So while ordinary counterfactual thought might be e-indispensable for some reasonably justified projects, essentialist and metaphysical modal thought (from now on, EMMT) cannot be e-indispensable *because* of their involvement in ordinary counterfactual thought, since they are not involved in it in a significant way.

7 The need for the diachronic

Roca-Royes' argument, when understood in this way, has various consequences for the viability of various forms of moderate modal skepticism. By distinguishing the structure of modal thought, we can articulate various hypotheses (like that essentialist thought is dispensable for rationally required projects) that put a limit to the *extent* to which we can have justified modal beliefs, even if on the whole we are justified in holding *some* modal beliefs. But then, the question emerges of what is the epistemic standing of the beliefs and belief formation mechanisms that could be dispensed with, or that fall outside the reach of rationally required projects. Roca-Royes herself observes that perhaps we 'have the resources to formulate questions about metaphysical necessity and essence which we do not have the capacity to knowledgeably answer' 2012, 171 Why would we have this capacity? As she herself admits, the development of the concepts of essence and metaphysical modality would be much more easily explained if they were required for the general capacity to assess counterfactuals (or other general capacity). Without this, some independent explanation is needed.

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[42] Cf. Roca-Royes (2011).

The question itself suggests, it seems to me, that to handle these cases we have to consider the *diachronic* dimension of the structure of modal thought. There are three directions in which to take this suggestion.[43] On the one hand, we can think of the structure of modal thought in *evolutionary* terms: modal thought is a trait of individuals like us, who are under selective pressures that have shaped their cognitive architecture. Then, we can think of the capacities to modalize in terms of ordinary modals, essence, and metaphysical modalities as the product of those evolutionary histories.[44] Likewise, we can think of modal thought in terms of the cognitive *development* of individuals through their lives For example, our innate cognitive capacities are deployed in social/cultural environments where we are trained to use modal vocabularies for specific purposes (for example, philosophers might be trained to do advanced modalizing).[45] From a more abstract point of view, we can also think about the *genealogy* of the modalizing practices that we are engaged in. In this case, we are also interested in the explanation of the contents of our conceptual frameworks, not so much in terms of the selection pressures that gave rise to our capacity to have them, but in terms of the history of the concepts themselves through conceptual evaluation and revision.[46]

Once again, giving a full picture of the issues would require an examination of all these different angles of the problem, but for my purposes here I will limit myself to a discussion of some points about the evolutionary and genealogical stories. In both cases, we hypothesize that EMMT (along with other varieties of modal thought) and the epistemic competences that underlie them developed because they fulfill some need, or answer to some pressure on our cognitive or epistemic constitution (broadly speaking).[47] Presumably, in absence of a function, they would be dispensable. What is more important from the diachronic perspective in either case is that they came to be required for the fulfillment of specific goals at some point, and that their coming to be required is explanatory of their presence in the current structure of modal thought.[48] What we need is an account of how they came to be required and how they could answer to those

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[43] I thank an anonymous reviewer for pressing me on the need to make this explicit.

[44] For an example of this type of approach, see Kroedel (2016).

[45] See Ichikawa (2016). Cf. Van Inwagen (1998) on how 'immersion' philosophical circles might distort self-assessment about our capacities to modalize correctly.

[46] Cf. Kusch and McKenna (2020) for an overview of genealogical methods in mainstream epistemology, Hannon (2019) for a recent take on this kind of project, and Wilson (2006) for a reflexive take on the dynamics of concept evaluation.

[47] If we adopt a genealogical story, we might want to say that they developed in order or with the purpose to fulfill those needs. This way of presenting the issue might not sit well in evolutionary accounts, although whether teleological language is appropriate in the context of naturalistic explanations is very much an open question.

[48] On the one hand, it is explanatory of the fact that they did develop at some point, and on the other hand, of the fact that they persisted in time. This roughly corresponds to the distinction made in philosophy of biology between causal role and etiological accounts of functions. Cf. Godfrey-Smith (1993).

requirements. If EMMT thought is required for the application of general modal belief formation mechanisms, as the Williamsonian model suggests, and if those general belief formation mechanisms are in turn explained by the general rational requirements, we should expect their development to have happened early on as the relevant epistemic agents were presumably for all effects and purposes always engaged in what we can describe as epistemic projects.[49] On the other hand, if their development was not required in response to the same constraints that forced the development of the more basic modalizing mechanisms (that is, if their development was late rather than early), as critics of the Williamsonian model suggest, we have broadly two cases to consider: first, the development of the relevant capacities might be brought by the need to extend the more basic capacities, or second, it may come to pass because the relevant agents are subject to entirely novel pressures that they are then not able to cope with. In either case, the response of epistemic agents to the new requirements will happen in the context of their broader epistemic projects. In changing enviroments and situations, the specific demands of those projects cannot remain fixed.

We can now ask what is the right model for thinking about our capacities for EMMT. While a capacity for modalizing seems to have developed early (in the sense I described above), it is not plausible that EMMT developed as early.[50] Rather, it is more plausible that the basic requirements for epistemic agents only forced the development of limited capacities to modalize in specific scenarios (for example, the capacity to assess our own abilities), which where then generalized as the application of modal machinery proved useful in a wider range of cases, at the same time that they were made more robust. The development of EMMT could have been either central to this strenghtening and widening of the scope of our modalizing capacities, or a side effect of that process.[51] In effect, the Williamsonian requirement that counterfactual evaluation requires keeping constitutive facts fixed (and thus requires a form of essentialist thought) answers to a need to make counterfactual evaluation more reliable for some tasks.[52] Call this cluster of potential explanations for the development of EMMT the *Intermediate* view (IV).

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[49] This is connected with the idea that minimal rationality can be exhibited by agents much simpler than us. Cf. Cherniak (1990) for a general formulation of the idea, and Martinez (2015) for a model of how simple agents can acquire the capacity to modalize. There is a growing literature on cognitive evolution that is relevant here; cf. for example Sterelny (2003).

[50] A reason to think that is that EMMT might requires more cognitive resources than other forms of modal thought. Cf. Roca-Royes (2011).

[51] Indeed, our capacities to modalize might have developed as side effects of a process to generalize even more basic cognitive capacities.

[52] Whether this requirement is appropriate for a more general capacity is an open question. It could be that the stronger requirement is important only for specific types of counterfactuals, but is taken as a more generally applicable normative standard.

The IV contrasts with views that propose that EMMT developed even later, perhaps as a response to specific *theoretical* or *explanatory* demands (an example of this is the position that essentialist and metaphysical modal thought only serve a function in contexts of broadly-speaking 'philosophical' discussion).[53] While the cognitive capacities that the IV can account for can be general, it does not follow that they are *fully* general (in the sense that they would be if for any possible task of the kind that they can satisfy they could indeed satisfy them). Epistemic projects are naturally open-ended, and we are in a situation of ignorance with respect to the possible tasks that we will be required to satisfy in pursuing them beyond what we can already see (in the same way that stone-age people could not anticipate, perhaps, our current needs to solve cryptographic problems). It could be the case that our current capacities to modalize are optimized solutions to a balance between generality and cognitive demands. The fact that we can apply them compositionally and more specifically recursively, for example, is a good reason to think that their scope is very wide-ranging. Those features are plausibly derived from more general features of the architecture of the cognitive system that supports modal thought, and with which it also interfaces.[54] But in no way does this rule out the possibility of further extending of our modalizing capacities, or the possibility that our current capacities to answer to the pressures that give rise to EMMT are in some sense disfunctional (in which case they should be either replaced or ameliorated).

This connects directly with the debate on exceptionalism and anti-exceptionalism about modal knowledge. I understand exceptionalism as the thesis that our capacity to do advanced modalizing requires the deployment of capacities other than those required for ordinary modalizing. Anti-exceptionalists like Williamson (2007), Strohminger and Yli-Vakkuri (2017) and Vetter (2016) reject this on the basis of what we can call dispensability arguments against the need for non-ordinary modalizing mechanisms. This strategy is plausible when we consider the question in a static way, so that exceptionalists should show that there are independent capacities for advanced modalizing that cannot be reduced into more elementary belief formation mechanisms (for example, that humans possess an innate capacity to intuit modal truths). The evidence for this seems scarce. But on the other hand, as I have suggested above, we may not be in a position to reject the weaker claim that there might be tasks (required in our engagement in RRPs, for example) that cannot be solved by our current capacities; this is a dynamic version of exceptionalism. This could point either to strict bounds in our cognitive capacities *tout court*, or to the need to engage in the task of extending those capacities, perhaps through the use of cognitive scaffolding, although how to proceed in the

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[53] Cf. Brandom's 2008 idea that modal language serves an explanatory function in relation to first order languages.

[54] Cf. Hauser et al. (2002) and Pinker and Jackendoff (2005).

latter case is not clear, neither in general nor specifically in the modal case.[55]

It would be a mistake to think that new tasks are guaranteed to require new concepts and belief-formation mechanisms, but it would be equally mistaken to hold that new tasks could never require them, or that no new types of tasks are possible. To abandon the project of extending our conceptual grasp is to defect out of our rational requirements. So is refusing to revise our projects.

8 Conclusion

My main goal here has been to clarify the kinds of commitments to modal thought we may have, and what is the structure of the support relations that underlie them. I have shown how at least some of those commitments should be better understood in terms of indispensability, and how those concerns can be developed both in the general case and in more specific ways once we pay attention to the inner structure of modal thought as a system. While modal thought might be in general epistemically indispensable, this does not mean that parts of it cannot be dispensed with. What is at stake here is what kind of constraints we should accept for the construction of our accounts of modal judgment. I have suggested that we should be open to the idea that the structure of modal thought has certain kind of fluidity across a diachronic dimension, that stems from the kind of roles that modal thought answers to. This might partially explain why there appear to be several admissible sources of modal judgements.

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[55] For the idea of cognitive scaffolding, see Sterelny (2010).

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