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A Theory of Philosophical Arguments

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Abstract: In this article, a new, idealizing-hermeneutic methodological approach to developing a theory of philosophical arguments is presented and carried out. The basis for this is a theory of ideal philosophical theory types developed from the analysis of historical examples. According to this theory, the following ideal types of theory exist in philosophy: 1. descriptive-nomological, 2. idealizing-hermeneutic, 3. technical-constructive, 4. ontic-practical. These types of theories are characterized in particular by what their basic types of theses are. The main task of this article is then to determine the types of arguments that are suitable for justifying these types of theses. Surprisingly, practical arguments play a key role here.

Keywords: Descriptive-nomological theory, idealizing hermeneutics, methodological intuitionism, methodological naturalism, ontic-practical theory, philosophical arguments, philosophical theories, practical arguments, technical-constructive theory, theses in philosophical theories

1. Theories of philosophical types of argument: 1. The bottom-up approach

In philosophy, there is a fair amount of argumentation – though less than one would expect – and argumentation is essential to systematic philosophy. Accordingly, there are collections of important philosophical arguments (e.g., Bruce & Barbone 2011) and theories of philosophical arguments or introductions to philosophical argumentation (e.g., Harrell 2016; Nelson <1921; 2011> 2016; Passmore 1961; Tetens 2004). A positive theory of philosophical argumentation could try to determine more or less empirically, within the set of (clearly understandable and reasonably successful) philosophical arguments, the types of the individual arguments, thereby arriving at a list of philosophical argument types that is as complete as possible – similar to taxonomy in biology. The next step would then be to develop criteria of validity for these argument types – in so far as they are not already contained in the usual general validity criteria for arguments. Finally, a theory of these types could be developed: Why are there exactly these types? What is the systematics behind them? Which questions are answered by them? I call this approach to a theory of philosophical types of arguments the "*bottom-up approach*". In this section I will explain why the bottom-up approach is not fruitful and, starting in the next section, develop an alternative approach: an idealizing-hermeneutic approach.

For the classification of philosophical arguments within the bottom-up approach, two classification methods (or better: groups of classification methods) are especially suitable: 1. a general theory of argument types or argument schemes and 2. a list of classical philosophical argumentation figures, as they are occasionally suggested as typically philosophical: transcendental arguments, thought experiments, *reductio ad absurdum*, arguments from intuition etc.

1. Classification of philosophical argument types according to a general theory of argument types: There are a number of general theories of argument types or schemes (e.g., Eemeren & Garssen 2020; Garssen 2001; Kienpointner 1992; Walton et al. 2008); the considerations here are based on an approach developed in epistemological argumentation theory, because it is congenial to the truth and the justification claims of philosophy: Lumer 2011a (for the philosophical foundation of this approach: Lumer 2005). According to this

approach, a distinction is made between elementary and molecular argumentations, where molecular arguments are composed of elementary arguments in such a way that the thesis of a lower-level elementary argument is the premise of a higher-level argument, thus creating a tree structure. The elementary types of arguments, in turn, are distinguished according to their epistemological foundations, namely the epistemological principles taken from various philosophical theories on which they are based and which guarantee the acceptability of the thesis justified by such an argument, e.g., the deductive epistemological principle: 'A proposition is true if it is logically implied by true propositions'. According to the epistemological theory of argument types there are then (at least) three groups of elementary argument types: deductive, probabilistic and practical argument types. (*Practical arguments* consist of listing and then netting the advantages and disadvantages of a value object, or more precisely: of listing relevant (probabilistic) consequences of the value object and the valuations of these consequences as well as the intrinsic valuation of the value object itself and finally netting these valuations). These three types of arguments cannot be reduced to one another because of their different pragmatic conditions of validity and situational adequacy: (Valid) *deductive arguments* are the only arguments that in principle prove with certainty and that are monotonous, i.e., they cannot be overthrown by new information. *Probabilistic arguments*, instead, always refer to a certain database; a change, improvement of this database can make a valid and previously adequate argumentation inadequate; it is then epistemically no longer rational to use this once accepted argument as a basis for one's belief in the thesis. And *practical arguments* often contain firstly probabilistic components and secondly their validity is based on completeness conditions, the fulfilment of which cannot be positively proven, namely that all relevant consequences are covered in the argument.

The impression one gets from the lists of the most famous philosophical arguments and textbooks of philosophical argumentation is that philosophical arguments are deductive. In the collection and systematization of 100 arguments from seven sub-disciplines of philosophy by Bruce & Barbone (2011), all these arguments are reconstructed as deductive arguments (with an indication of the premises and the conclusion etc.) The books by Harrell (2016), Nelson (<1921; 2011> 2016) and Tetens (2004) also give the impression that philosophical arguments are (almost) exclusively deductive.

But this impression is wrong. There are also many non-deductive arguments in philosophy, especially practical ones – for example, Hobbes' contractualist justification of the absolutist state (Leviathan) is a practical argument for the thesis that this state order is clearly better than the natural state and Pareto superior to it – but also probabilistic and statistical ones – just think of empirical philosophy, which has grown astonishingly since the 1990s (Mizrahi & Dickinson 2020) and wants to establish hypotheses of general laws. The constructive part of this article shows that these argument types are even systematically more central in philosophy than deductive arguments.

(There are several reasons for the semblance of deductivism in philosophy. 1. Non-deductive arguments are much less well known in philosophy than deductive ones and are also much worse theorized. That is why neither the arguers themselves nor the argumentation analysts usually know the non-deductive types of arguments well. And because the arguers have no patterns and sets of rules for them, the non-deductive arguments presented in philosophy, especially the practical ones, are usually much more unclear and indistinct than deductive ones; they are often only rudimentarily present, rather incomplete and not canonized in form, thus almost amorphous. 2. The theorists also recognize the non-deductive arguments even worse. (An example is the analysis of Pascal's wager in Bruce & Barbone (2011, No. 5): This is quite obviously a practical, decision-theoretical argument. The analyst Burkholder initially also reconstructs it as a decision-theoretical argument, but finally presses it into the form of a deductive argument (*modus ponens*). This is done with the help of two

premises not present in Pascal, but additionally inserted by Burkholder: P2, an assertion of completeness (of the list of circumstances / relevant worlds and of the list of relevant consequences), and P3, the deductive minimum.[1] Apart from the fact that these additions are over-interpretations that violate the conditions of clarity, authenticity and immanence of argumentation interpretations (Lumer 2003, pp. 716-717; 2019, p. 774), the assumption of completeness (P2) obscures one of the essential differences with deductive arguments: This assumption cannot be positively substantiated; therefore, in practical arguments it is presupposed but not made explicit. If, instead, it is inserted into the argument in order to make the argument deductively conclusive, this violates the adequacy condition for the convincing use of deductive arguments, namely that the addressee must justifiedly believe in the premises (Lumer 2011a, p. 20). Premise P3, the deductive minimum, is not epistemically accessible to many addressees: neither do they believe in the truth of this premise beforehand, nor can they recognize it as true ad hoc, nor are they guided by the argument to recognize it – and this is a general problem of such deductivist reconstructions with the help of the deductive minimum (Govier 1992, pp. 399-404; Lumer 2019, p. 775). However, the problem of recognizing the truth of the deductive minimum in Burkholder's reconstruction is mitigated by the – illegitimate – additional premise P2.) 3. Deductive arguments are often reasonably well ordered and concise. By contrast, *practical* arguments often take up a lot of space. For example, first the value objects themselves, such as the rules of a constitution or a system for evaluating scientific hypotheses, must be presented in detail; then the consequences can be very complex and also require elaborate presentation. Thus, it is possible that the individual argument covers an entire book or most of it. In this case there are often no argument indicators, but the argumentative relationship must be recognized by the content. All this makes it considerably more difficult to recognize the argument. Even the actual thesis is very often difficult to find and is then also wrongly formulated; or it even remains implicit. 4. And arguments for empirical nomological hypotheses are classified by many philosophers from the outset as scientific rather than philosophical – often on the basis of a Kant-inspired aprioristic demarcation criterion of philosophy from the sciences.)

In philosophy, however, there are not only certain types of deductive, practical and probabilistic as well as statistical arguments, but within these groups there are also most of the argument types that are also used elsewhere (list with important argument types in these groups: Lumer 2011a, pp. 20-26). This holds simply for the reason alone that philosophers, as comprehensive meta-theorists, use statements from almost all areas of life and science in the development and substantiation of their theses and theories – from mathematics to theoretical physics, jurisprudence, text interpretation, art history to neurophysiology, euthanasia or the psychology of love relationships, to name but a few – which can then also be substantiated with the most diverse arguments. One could object to the relevance of this statement by saying that one then has to distinguish the actually philosophical part of philosophical arguments from the applied part, which is often taken from other sciences, whereby only the former are relevant for a theory of philosophical argumentation. But this reply already presupposes that core statements and arguments of philosophy can be distinguished from subordinate statements and arguments. This distinction, however, goes beyond the limits of a bottom-up strategy; this distinction can only be developed and justified within the framework

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1 The *deductive minimum* is a premise, intended to make an inconclusive argument deductively valid, of the following form: If the argument consists of the premises p_1, ..., p_n, and the thesis t, then the deductive minimum is the material implication connecting these two components: '$p_1 \& \ldots \& p_n \rightarrow t$'. The deductive minimum is a device proposed by deductivists to transform a nondeductive argument into a deductive one. The problem with this proposal is that though it resolves a problem of deductive invalidity it typically creates problems of the argument's situational adequacy: the addressee does not justifiedly believe in the deductive minimum.

of a metaphilosophy of the tasks and theory types of philosophy. This is precisely the approach that will be developed in the following sections of this article. Conversely, there is no formal argument type in philosophy that is not also used in other areas of life or science.[2] Hence, also in this way one cannot develop a theory of philosophical arguments.

Thus we can record so far: Philosophical arguments are not a separate formal type of argument; and almost all formal epistemologically differentiated types of argument occur in philosophy. The bottom-up approach on the basis of an epistemological differentiation of argument types is therefore a non-starter: By having to recognize almost all formal argument types as philosophical, i.e., used in philosophy, it does not lead to an informative differentiation of philosophical from other arguments. An alternative to this approach is to find philosophical types of *theory* on a metaphilosophical level with the central and flanking types of theses they establish and then to identify the corresponding arguments. This approach is pursued below.

2. Classifying philosophical argument types according to typical philosophical argument figures: An alternative bottom-up approach is to collect typical philosophical argument figures and then develop a theory for this collection. As "*argument figure*" I denote here certain types of arguments with certain types of theses or reasons that are determined by content or form; these types of arguments can be elementary or complex. An argument figure goes beyond an epistemologically determined *formal* type of argument, because its contents can and usually are determined by the subject or the type of justification. A *philosophical* argument figure is then an argument figure typical (frequently used by, and characteristic) for philosophy with philosophical contents. Important and frequently mentioned philosophical argument figures are, among others: transcendental arguments, thought experiments, arguments from intuition, *reductio ad absurdum*, references to a self-contradiction or an apparently contradictory set of theses, language-critical arguments (cf. e.g., Passmore 1961; Tetens 2004). Among these, in my opinion, the transcendental arguments are the only exclusively philosophical argument figures. According to Tetens, their central premise is: 'What one must presuppose for conceptual reasons when rationally referring to objects is the case.' (Tetens 2004, p. 74); other premises then specify what "one must presuppose for conceptual reasons when rationally referring to objects". The formula in quotation marks is quite unclear and in need of interpretation in several places, and therefore invites highly speculative and methodologically obscure considerations. I therefore doubt whether this kind of reasoning can lead to good philosophy. However, such transcendental arguments are certainly not the only form of reasonable philosophical arguments and make up at most a small part of philosophical arguments.

There are several objections against the bottom-up approach based on philosophical argument figures: 1. Although these figures are typically philosophical, i.e., they occur more often in philosophy and usually do not occur in other disciplines, they are not informative for understanding philosophy. They can be used to clarify individual philosophical questions, but these are not necessarily the central questions. And when one knows these arguments and knows that they are typical of philosophy, one does not yet know why they especially occur in philosophy and what connection they have with the fundamental questions of philosophy. 2. The figures mentioned above occur particularly frequently in philosophy. But many of them are also used outside philosophy: Thought experiments, arguments on the basis of intuitions, the practical *reductio ad absurdum*, references to a self-contradiction, language-

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2 Pascal arguments (see below) are a borderline case in this respect. They are mainly prudential practical arguments for decisions under uncertainty – which is a general, formal argument type. A specifically philosophical, epistemological element that goes beyond this, however, is the restriction to epistemic aspects and their consequences and thus also to the epistemic optimality of action for orientation purposes.

critical arguments. But then with these argument figures one has again not captured the typically philosophical. 3. If, as has just been stated, more or less all epistemologically differentiated types of arguments occur in philosophy (and also the philosophical figures of argument can be reconstructed as such types of argument (with a certain content)), then the list of these argument figures is by no means exhaustive. It does not cover all types of arguments used in philosophy nor the especially important types of arguments such as practical arguments. Some of the characteristics of philosophy seem to be lost in this way.

2. Theories of philosophical types of argument: 2. the idealizing-hermeneutic approach

The positive lesson from the failure of bottom-up approaches is that a substantial theory of philosophical types of argument must be based on a theory of philosophical theory types which determines the subject of the central statements, i.e., the types of theses or more precisely: the complexes of theses of such philosophical theories and thus also the questions to which these theories provide answers. Once the types of theses have been determined, the next step is to determine the types of arguments by which these theses can be justified. In the next section four such types of theories are presented: 1. descriptive-nomological, 2. idealising-hermeneutic, 3. technical-constructive and 4. ontic-practical theories. As a dialectical safeguard, some common conceptions of philosophical methods that are not covered by this list, namely methodological intuitionism and naturalism, will also be briefly discussed and criticized.

These brief announcements may sound as if a *top-down approach* is now being presented after the criticism of bottom-up approaches – the theorist devises *a priori* certain philosophical theory types and types of arguments belonging to them, which one then tries to find among the arguments actually presented – which has little to do with the empirical reality of philosophising and therefore cannot be gainfully used to analyse topical arguments. However, this would be a misunderstanding. For the theory presented in the following is not a top-down approach in this sense, but an *idealizing-hermeneutic theory*. Indeed, as a starting point for the actual argumentation-theoretical part, it presents several types of philosophical theories, which are distinguished by the type of (true) theses they strive for. However, this list of types of theories has not been developed *a priori*, but rather idealizing-hermeneutically: The first step in the research procedure is to examine a wealth of philosophical theories in order to determine which fundamental philosophical question they are actually intended to answer; in particular, hierarchization is necessary: What is the fundamental question? Which questions are subordinate, treat only partial aspects or aim at premises for answering the basic question? (Instead of speaking of the "search for the basic question", one can of course also speak of the "search for the fundamental true thesis aimed at in this theory (from a content-related spectrum of theses)".) After all, many philosophical arguments, especially in journal articles, only aim at answering subordinate special questions. Finding the basic questions is not easy. Some authors declare that their publication or argument is intended to contribute to answering a higher-level question; others have no idea at all about this, but simply orient themselves to the fact that research is being conducted *de facto* on the specific question they are dealing with. Still other authors, though very few, make this kind of consideration the explicit subject of a part of their publication. In the search for the fundamental questions, these are valuable, but not definitive indications. They must be subjected to a critical evaluation by the philosophical metatheorist himself: 1. Can an allegedly fundamental question not after all be classified as subordinate to a more fundamental question? 2. Is this question important enough to be a fundamental question of philosophy? It is precisely this second critical criterion that refers to evaluations and thus also practical justifications of what is important. These assessments and justifications must ultimately be made by the

metatheorist, but on the basis of the philosophical theses and arguments found and the explanations found about the hierarchical relationships.

At this point it becomes clear what is meant by "idealizing hermeneutics". *Hermeneutics:* On the one hand the metaphilosopher tries to understand the merely assumed or also stated or actually existing hierarchical relations of questions. *Ideal:* On the other hand, however, he does not simply take over what is empirically found, but rather evaluates the actually existing or assumed relationships and formulations of questions and attempts to construct an ideal from this, which takes over much of what is empirically found, rejects some of it critically, and supplements other things. The ideal aimed at is a system with one (or a few) highest and philosophically important questions and subordinate questions, which illuminate partial aspects or aim at premises for the answer to the superordinate question. The importance of these topmost questions is practically justified. And the thesis is that a certain type of question is actually the central question, i.e., the related answer has a very high value for humans and is at the top of a hierarchy of questions. The central argument within the metatheory is the justification of the value judgement about the high value of the central question. Through idealization, the idealizing-hermeneutic theory of philosophical theories and arguments becomes a normative theory in the broad sense; it is suitable as a model for the construction and evaluation of philosophical theories and arguments.

The combination of hermeneutics and idealization has the following sense. The point is to establish a good, indeed the best system of philosophical questions and theses and thus a theory of what a good philosophical theory is. But if one wanted to answer this question *a priori*, one would ignore the wealth of knowledge contained in the philosophical theories that actually exist. The knowledge contained therein should be incorporated into the development of the philosophical metatheory. These insights are contained in the construction of the philosophical theories themselves and in the philosophers' pronouncements on them. But the real insights are mixed up with many misconceptions and are incomplete; many developments are carried out only intuitively and are far from always being understood by the philosophers involved. Here, the metaphilosopher has to sort out, filter, according to his justified reflections on the importance of philosophical questions and on the hierarchical relations between questions. And he has to put together the remaining pieces plus additions to form a complete ideal.

Even leaving aside applied philosophies such as applied ethics or special theories of science, there are over 20 sub-disciplines in philosophy, each with its own specific central – one or more – questions. But many of these questions are structurally similar, and the answers to them must be justified by the same kind of argument. In order to separate argumentation-theoretically essential statements from those about a plethora of individual cases, in a next large step the various central individual questions must therefore be ordered according to types, for example types such as universal generalization or instrumental judgment of optimality. With this step one moves from the level of a theory of different philosophical theories to a theory of different philosophical theory *types*. Good theories of the same type then also use arguments of the same type. With this step, the basic structures of the individual theory types and also those of the associated arguments can be better clarified, because analogies can already be evaluated or established at this level. In addition, the analogization can also reveal gaps, superfluous pieces or other misguided developments at the level of the metatheory of a single philosophical theory.

The just described idealizing hermeneutics in developing a theory of philosophical theory types itself already exemplifies one of the philosophical theory types to be presented in what follows, precisely that of idealizing hermeneutics. And the advantage of this is that the approach presented here already contains its own metatheory and justification. A justification is provided without leading to a regress; and circularity of justification is avoided

by the use of practical arguments, which themselves are again based on the psychological structure of our decisions.

What is gained by such an idealizing-hermeneutic theory of philosophical theory types and philosophical argumentation? 1. First of all, this theory provides a well-founded normative ideal, a positive and justified guideline for the construction of methodologically sound arguments that are appropriate to the goals of philosophy. 2. By emphasizing the central role of certain arguments within a theory, an idealizing-hermeneutic theory of philosophical arguments helps to identify better these arguments in practice and in the interpretation of arguments, if they are only rudimentarily present, or if they are to a large extent wrong or if they are misunderstood by the author or by many recipients. For example, the corresponding philosophical text may simply consist of a sketch of a good or better instrument compared to other alternatives, but without much arguing that this is a better instrument than others or specifically than those known so far. 3. Finally, a normative theory of philosophical argumentation allows one to evaluate and understand existing philosophical arguments more precisely.

3. Types of philosophical theories - an overview [3]

According to the above description, the systematic first step of the idealizing-hermeneutic theory of philosophical theory types is to determine the fundamental questions of philosophy. Here let me just say this much about this: There is presumably not *the one* question of philosophy. Attempts to determine precisely one such question – for example, the question of the ontology of all things or of the (all-encompassing) formal semantics – always seem to exclude at least half of philosophy. Rather, each sub-discipline of philosophy has its own question or even several questions that cannot be reduced to one another and whose object is also hinted at in the title of this discipline. For the search for philosophical theory types, it is now important that the top answers to these questions are formally similar in different sub-disciplines; for example, universal hypotheses of law or value judgements about instruments. And around each of these formally similar main theses there is a circle of subordinate theses that are also formally similar across different sub-disciplines. These types of central theses with the corresponding subordinate theses then form the core of a theory type. The theory type also includes the methods for justifying these theses and the respective arguments themselves. My attempt to systematize such theory types and reduce them to a few has led to four philosophical theory types. These will now be briefly introduced and then characterized in more detail in the following sections.

1. Descriptive-nomological theories identify basic structures, nomic characteristics and regularities of man and the world. Descriptive-nomological theories continuously merge with psychological, social science and natural science theories. However, they can be distinguished from these sciences in the intention they pursue and the nature of the laws [4] they aim to establish: While, for example, the natural sciences – formulated slogan-like – with a technical intention strive, among other things, to determine the elementary laws of nature with which all events can be explained, philosophical descriptive-nomological theories, with a (self-)enlightening and orienting intention, strive for knowledge about the invariant specifications of our existence, so to speak about the limits of the area in which we

3 A preceding version of the theory of philosophical theory types outlined below has been published in Italian: Lumer 2011b. A current complete English version is only available in manuscript form so far: Lumer 2020.

4 These laws need not be strict, they can also be statistical. Also "nomological" in the name "descriptive-nomological theory" for this kind of theory is to be understood in this broader sense, i.e., descriptive-nomological theories also include theories with statistical laws.

can move. For this purpose, measured by today's scientific standards, an overview knowledge of a specific area of laws or a knowledge of molecular laws is often sufficient. This knowledge is mostly needed in turn in idealizing-hermeneutical or technical-constructive philosophical theories. – Disciplines with descriptive-nomological theories include philosophical anthropology, general theory of action, philosophy of mind, theory of pre-linguistic cognition, cosmology, but also certain parts of social, state, and legal philosophy, in so far as they determine regularities of the natural phenomena and social structures under study. Descriptive-nomological theories correspond to a large extent to the ideal of methodical naturalism in philosophy; however, here they are considered only as one of several philosophical types of theory.

2. Idealizing-hermeneutic theories aim at self-enlightenment about the practical sense of certain types of actions, of action products, action and decision rules, conceptual systems, epistemological models, ontological constructs, etc., i.e., of objects that humans can directly influence and shape. While descriptive-nomological theories aim at a nomological self-enlightenment about the area and the limits within which we move and the leeway within them, idealizing-hermeneutical theories inform us about the way we move in this area in a practically rational way, how we make reasonable use of the empirically given leeway. Although this philosophical self-enlightenment contains empirical components, it is not meant to be purely empirical, psychological or sociological. Rather, it aims, for one thing, at (better) understanding one's own *well-founded* intentions, goals, what one *actually* wants to achieve with these objects, in order, among other things, to be able to pursue the really worthwhile goals more purposefully. For another, it serves to filter out the *ideal* means that have already been used to achieve these goals. From the understood actual goals and means, an ideal is constructed which, in the best case, has already underlain – possibly even only partially – what we have actually created. Idealizing-hermeneutic theories are thus on the one hand to a certain extent *empirical*, in that they seek to understand a factual practice, actually used means etc. On the other hand, they are *normative* in a broad sense, more precisely: evaluative and consultative, in that they select only the best from this material and construct an ideal from it. – Idealizing-hermeneutic theories are developed in the following philosophical disciplines, among others: ethics, philosophy of science, aesthetics, philosophy of language, epistemology (as far as it refers to pre-linguistic models of knowledge and linguistic cognitions), ontology, in logic and argumentation theory, but also in the action-theoretical theories of freedom and responsibility. – Typical fundamental questions of idealizing-hermeneutical philosophical theories are, for example: What is the sense of morality? What is the "logic" behind the criteria for good scientific practice? How is good language constructed, and then why is it good? Which among the common forms of argumentation or improved versions of it are good and why?

3. Technical-constructive theories in philosophy aim at developing good, versatile instruments. They often tie in closely with the results of idealizing-hermeneutic theories. Idealizing hermeneutics usually already (roughly) defines the purposes, the standard outputs of the instruments to be developed. Technical-constructive theories then critically examine to what extent the other results of idealizing hermeneutics can be directly taken over or how far they only have a heuristic value for one's own construction activity. In the latter case, technical-constructive theories – taking into account the idealizing-hermeneutic ones – define certain good standard outputs of epistemological models, actions, action products etc. and then develop general descriptions (rules, criteria) for forms of cognition, action or product structures that optimally realize these outputs, e.g., logical, argumentation rules, moral norms, scientific rules, descriptions of language structures, rationality criteria. In this development, technical-constructive theories can in particular also use the knowledge from descriptive-nomological theories in order to determine margins for the instruments to be developed and

the consequences of such instruments. The structures described are either well-constructed techniques or tools by which a number of purposes can be achieved when needed – such as criteria of knowledge or argumentation – or the descriptions represent rules of action which should be followed permanently – as in the case of the criteria of rationality and morality. Since even the best factual structures found can usually be improved, all philosophical disciplines with idealizing-hermeneutic theories also have technical-constructive theories (the above list of disciplines, under 2, could therefore be repeated here: ethics, philosophy of science ...); if there is little to improve, the transition between the two is fluent.

4. Ontic-practical theories attempt to make statements about fundamental spheres, levels, forms and structures of reality which are basic for our understanding of the world, our possibilities of action and planning of action, but which lie beyond our world of experience: the existence of the (physical) external world, of other minds, theoretical entities, higher beings or the constancy of the laws of nature. Because these realities are completely beyond our experiences, transcend them, for the justification of such ontic statements procedures are necessary that are not primarily or not at all empirical; they are *transcendental* in the general sense: lying before every subjective experience and making the cognition of the objects in themselves possible. (Kant's own determination of 'transcendental' is already more specific, but also more cautious; he is concerned with the *type of cognition*, not yet with the cognition of *reality* itself: "I call all cognition *transcendental*, which is not concerned with objects, but with *our type of cognition* of objects, *insofar as this* is supposed to be possible *a priori*" (Kant, CPuR, B 25, my translation, C.L.). Kant's attempts at transcendental justification are deductions from analytical statements. Since, in my opinion, not a single one of them is argumentatively valid, this is apparently not a promising method of justification. (The analytical statements are mere postulations and too arbitrary, or the deductions are not conclusive.) More promising transcendental justifications are *practical* justifications in the style of Pascal's wager, which try to show: Despite the absence of any empirical proof of the existence of these hypothetical parts or structures of reality, it is better to behave as if they existed. (Pascal's argument (for the thesis that it is better to act as if God existed) is itself not valid. Here, however, we are dealing with the *type* of argument used by Pascal, which is epistemically effective and for which there are quite important argumentatively valid and adequate instances (Lumer 1997).) Without a minimum of empirical knowledge, even the practical arguments cannot show that these realities exist (*p*); but they can show that it is better to count on them firmly, to behave as if they existed (*p*). (To avoid misunderstandings: This is *not pragmatic*: It is not assumed that if one behaves in such a way and this produces good results, this shows the truth of the hypotheses (*p*), i.e., the existence of these realities. Even if this behaviour is successful, the truth of *p* still remains unproven; even the repeated success of inductively obtained forecasts, for example, does not show that the inductively based prediction will work the next time). – Ontic-practical theories exist in or are suitable for ontology, cosmology, epistemology, philosophy of mind, philosophy of religion, philosophy of science and philosophy of nature.

This list of four types of theories and the further elaboration are, as I said, idealizing-hermeneutic. Thus, they try to capture ideal types that are recognizable to some extent in existing philosophical theories, but which are de facto mostly only partially realized or often only appear as a possible vague and unclear goal or are only reflected in some aspects of the existing theories. There are only very few theories already presented in the literature that correspond to these ideals, or corrispond to them at least to a fairly large extent, or even only according to the intentions of their author; some examples will be given below. Many of the theories already proposed do not even come close to these ideal types. The aim of the list is therefore by no means to categorize all existing philosophical theories – on the contrary, the vast majority of them cannot be subsumed here.

4. Types of philosophical theories – further explanations

In this section, the types of philosophical theories that have just been presented in an overview are explained further. In sections 6-9, finally, the theses of these types of theories will be presented as well as the associated arguments.

4.1. Descriptive-nomological theories

What is the sense of descriptive-nomological theories? In addition to the information about ourselves and the structures of the world, which is both intellectually important and crucial for our self-understanding, descriptive-nomological theories in philosophy also provide empirical information required in the idealizing-hermeneutic and technical-constructive theories; in this sense, they have a supply function: Rational decision and desirability theory as well as the theory of free decisions require, for example, action-theoretical information about the nature and leeway of our decisions. Ethics needs moral-psychological information about motives for moral action. Theories of the person in practical philosophy need information from the philosophy of mind about mental causation or about the cohesion of consciousness. Normative epistemology needs cognitive-anthropological information about the basic building blocks, functioning and capacities of our cognition. Normative philosophy of law, political philosophy and social philosophy each require empirical information from the empirical parts of these philosophies about the functioning and regularities of law, politics and society. Etc. The possibilities and consequences of subjective intervention in all these areas must be clarified. Other descriptive-nomological theories such as cosmology, on the other hand, seem to serve solely to inform us about our world and thus indirectly to enlighten us, without having such technical supply functions.

Examples of descriptive-nomological theories may be: large parts of Hume's "Treatise of Human Nature",[5] Hutcheson's "Essay on the Nature and Conduct of the Passions and Affections" and more recently the theory of action in Brandt's "Theory of the Good and the Right" (Brandt 1979, ch. II; III; V; VII) and certain works of experimental ethics and philosophical moral psychology (e.g., Doris et al. 2010) or Solomon's analysis of emotions "The Passions" (<1976> 1993).[6] In all these works, empirical theories of anthropological regularities are established, which then serve as a basis for normative considerations.

4.2. Idealizing-hermeneutic theories

The aim of idealizing-hermeneutic philosophical theories is, first of all, *self*-enlightenment in an even narrower sense than in descriptive-nomological theories, namely self-enlightenment about human practice, about general practices or practices applied in specific groups, about institutions, rules or instruments used there: systems of knowledge, logical and linguistic rules, criteria for science and scientific methods, rules of argumentation, ethical norms and evaluation systems, political institutions, criteria for freedom, responsibility and practical rationality, etc. That such self-enlightenment is necessary at all is due, among other things, to

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5 In particular, a large part of Book III is intended as a moral psychology. But there are also clearly normative pieces in it, e.g., the defence of the subjects' right of resistance (Hume <1739-40> 1978: III.2.9), whose method is far less clear.

6 The fact that a work is cited here or in the following as an example of a type of theory analyzed by me does not mean that it fully meets the standards developed here or is essentially true. It only means that it is characterized by an objective that essentially corresponds to the type of theory presented here.

the fact that such practices and instruments were developed in a historical process by many participants and that the individual subjects and users are largely unaware of the reasons for these practices and instruments. These reasons are not laid down and, if they are, they are scattered and unknown to many. The rules and criteria for the practices and instruments are also not codified, so that the practices and instruments themselves are anything but uniform, many of them are also bad practices or only partially good. As a result, there are even complete misjudgements and major intersubjective differences as to what constitutes good practice and what the reasons for it are.

Apart from the mere explanation of the practices and instruments and the reasons for them, idealizing hermeneutics also directly pursues practical goals, namely to assemble ideal instruments from historically found, only partially understood, heterogeneous and often bad or useless material. Idealizing hermeneutics must therefore not only know the individual practices and reasons for them, but must also evaluate these reasons practically and determine the best instruments, or first compile ideal instruments from the parts of the existing practices and instruments that are found to be good or optimal. At this point there is then a seamless transition to the technical-constructive theories (see below).

This conception of idealizing-hermeneutic theories is based on an instrumentalist and constructivist understanding of many objects of philosophy. According to this, epistemology for instance has the task to develop good rules of cognizing, by whose observance as many important truths can be recognized as reliably as possible. The theory of science has analogous tasks regarding scientific rules of knowledge. The fully developed approaches in argumentation theory see argumentation anyway as a means to achieve a certain end: rationally justified beliefs, consensus, acceptance of an opinion. In ethics the goal is not so obvious, it could be the creation of a socially binding value system, which would then be the basis for resolving conflicts and planning social projects; but in ethics the determination of the sense of morality itself is still an open task of idealizing hermeneutics. Etc.

The idea of idealizing hermeneutics is to put together an ideal instrument from the best justified pieces of reasonable practice. Such a research project uses two main types of knowledge. Firstly, the reasons, ultimately the intentions, behind certain existing practices and instruments or even individual actions must be identified. For if there is a causally relevant sense behind these practices and instruments, it can only be present in the intentions of the respective subjects. However, these intentions are often unknown, not even the inventors of these instruments are known. Then, above all, the possibility remains to find the objectively best reasons for the instruments, i.e., to determine why and in what respect they are good. The key to all further findings, especially for later systematic research in *technical-constructive* theories, is to determine the purpose or, more precisely, the standard output of the respective practice or instrument. Secondly, the reasons thus identified, but also the practices and instruments or pieces of them, must be evaluated. After all, the aim of *idealizing* hermeneutics is to filter out the best from existing practice. Finally, these pieces may need to be put together and completed to form an ideal organic whole. For this purpose, tentative completions are developed for these pieces, which are then also evaluated, so that the best complete instrument is determined. If the intentions of the inventors of the instruments cannot be ascertained and only the good reasons for the instruments and practices are identified instead, the emphasis of the research shifts to the second part of the research process: which of these hypothetical reasons are good reasons in the sense that they represent a correct positive evaluation of the instrument or elements of the instrument in question?

Examples of existing idealizing-hermeneutical theories may be: Aristotle's "Organon", Frege's "Begriffsschrift", many a philosophical-historical work written with systematic intent – such as Lenzen's reconstruction of Leibniz's logic (1990) –, or current reconstructions of parts of our epistemic procedures such as Goldman's (1979) discovery of reliabilism or

Bayesian reconstructions of various non-deductive inference procedures (e.g., Bovens & Hartmann 2003).

4.3. Technical-constructive theories

The goal of technical-constructive philosophical theories is to construct versatile, useful techniques or to develop rules or criteria for the construction of such tools. Many technical-constructivist theories have an idealizing-hermeneutic counterpart; the main task of technical-constructivist theory is then only to examine critically and, if necessary, optimize the instruments supplied by the idealizing-hermeneutic counterpart. The transition between idealizing hermeneutics and technical-constructive theory is fluent because, for example, the idea of an improved version is already discernible in some instruments that may be little known. Conversely, however, it can also be said that there are few already known instruments that could not be improved, which then is a technical-constructive task. However, there are also technical-constructive theories without an idealizing-hermeneutic counterpart, especially in the field of relatively formal theories: for example, many-valued logics, possible-world semantics, probability theory, quantitative utility theory or game-theoretically based ethics.

The systematic starting point in technical design is the specification of a desired standard output and the corresponding (approximate) input of the respective instrument. The specification of the standard output is therefore often the most delicate and controversial point in the research process as well as in the philosophical discussion. If for this aim the results of idealizing hermeneutics cannot be referred to, only general criteria for its determination remain: The standard output should be a good, multifariously fruitful, generally humanly interesting type of event or state, or a criterion for it from the subject areas of philosophy. In some philosophical disciplines, several instruments are developed at the same time; accordingly, several standard outputs must then be determined. The next step after understanding or determining the standard output is to understand or invent the functioning or operating principle of the instrument being searched for, i.e., how, under common conditions, a standard input that is not too costly can be transformed into that output.

Many examples of theories that have been carried out and are based on technical-constructive ideas can be found in the constructive blueprints of political philosophy, beginning with Plato's "Politeia", at least to some extent also in the utopian state blueprints of Thomas Morus, Campanella or Fourier, for example, or in modern inventions of institutions such as Hobbes' theory of the strong state, Montesquieu's principle of the separation of powers or Grotius' international law and the idea of a league of nations – to the extent that these institutions were conceived as good instruments. But technical-constructive theories can also be found in other philosophical disciplines, for example in Gauthier's (1986) ethics of cooperation for individual utility maximization, in Bentham's applied utilitarian ethics of punishment (<1780 / 1789> 1982, chapters 13-17), in Brandt's rational utility theory his conception of utility that is stable with respect to new information and criticism by facts (Brandt 1979, section I.2 (pp. 10-16); chapter VI (pp. 110-129)), or in Beth's (1955) theory of semantic tableaux for testing predicate-logical inferences.

4.4. Ontic-practical theories

Questions about 1. the existence of the external world, 2. the existence of other minds, 3. the constancy of the laws of nature, 4. the reality of theoretical entities and 5. the existence of higher beings are philosophically more or less very old. In everyday life, the first three questions are consistently treated as positively answered; and a revision of this attitude is

hardly conceivable. In this respect, philosophical speculation about these questions is merely theoretical in the sense of "idle". Nevertheless, at least for the anthropological self-understanding it is not insignificant whether there are real reasons for these practical answers, or whether Hume's sceptical, naturalistic assessment is correct that these implicit answers are based only on psychological tendencies. As is well known, the question of the existence of theoretical entities is not closed in the philosophical debate, but is probably practically irrelevant, whereas for many people the question of the existence of higher beings is not closed even in everyday life and is certainly relevant for action. These questions are *ontic* in their content, they ask about the existence or structure of something. (At least) most of them, however, are *transcendental* questions, which therefore cannot be answered by empirical means.[7]

In the history of philosophy there have been various attempts at transcendental arguments, i.e., to answer the transcendental questions argumentatively without the – just missing – empirical arguments. The best known is Kant's analytical-synthetic approach, about which I already said above that it cannot be successful. Pascal's wager – i.e., the justification of the thesis that it is practically better to behave as if the transcendental thesis were true – on the other hand introduces a type of argument that could well be successful and represents a compromise: On the one hand, it leaves the actual transcendental question – 'does this (structure of) reality exist?' – unanswered; there is simply no empirical basis for answering it. (If there is such an empirical basis, then – according to the validity criteria for Pascal arguments (Lumer 1997, p. 339, PP3) – this type of argument must not be used at all; the argument would be invalid.) On the other hand, it shows that our behaviour of simply assuming that these questions are answered in a certain sense is quite rational: it is *practically* rational; and this is shown with practical arguments. This type of argument therefore provides methodologically sound answers to transcendental questions, perhaps not satisfactory, but at least sufficient. For this reason, this type of philosophical theory is called "ontic-practical". So far I have not found any other methodically sound procedures for answering transcendental questions. If they exist, then there are several types of ontic-transcendental theory types (i.e., not only the ontic-practical). In the following I can give very few examples of ontic-practical theories. Therefore, this proposal of an ontic-practical philosophical theory type is the most precarious of the four proposals for philosophical theory types made here. But it is also the least important because of the low practical relevance of the actual transcendental question – in contrast to the very relevant practical question.

An example of an ontic-practical argument is Pascal's wager (Pascal <1669> 1936, pp. 954-957). Kant also develops ontic-"practical" arguments, but in a different, namely deontological meaning of "practical": If pure practical reason establishes imperatives that however require the truth of certain ontic assumptions, and these assumptions do not contradict the findings of pure theoretical reason, then pure theoretical reason must also accept these assumptions. Among the assumptions thus practically founded are the existence of freedom (Kant, CPrR, A188; abstracts: A82; A79; A97), the immortality of the soul (Kant, CPrR, A219-220) and the existence of God (Kant, CPrR, A224-226). In this context Kant uses "practical" with the following meaning: Pure practical reason establishes an imperative – which, however, has certain preconditions, which should therefore be assumed to be true. It does not mean, as here: It is better (and thus also a requirement of practical reason) to behave as if certain assumptions were true. I myself have outlined ontic-practical Pascal-arguments

7 Personally, I assume that the first four questions are indeed transcendental; the fifth question, however, is not, in my opinion, transcendental if it is additionally assumed that the higher beings have an influence on our world. Such an assumption introduces an empirical component into the theory of higher beings, which also makes this theory open for empirical confirmation or indeed falsification.

for the existence of the external world, for the regularity of the world, i.e., the constancy of the laws of nature, and for the existence of theoretical entities (Lumer 1997, pp. 332-334; for the constancy of the laws of nature see also: Lumer 1990b, pp. 671-674).

4.5. Alternative conceptions of types of philosophical theories

The listing of good theory types is implicitly also a listing of basically good methods in philosophy. The proposals just made are therefore in competition with common ideas of methods in philosophy. In discharging my dialectical duties, I can only give a critical note on two important ones, explaining why I did not include them in the list of valuable theory types. Of course this note does not replace a detailed discussion of these methods.

Methodological naturalism in philosophy at least assumes that there is a continuity of methods from the natural sciences to philosophy, if the adequate methods in philosophy are not immediately assumed to be those of the empirical sciences. As the above presentation of descriptive-nomological theories in philosophy shows, according to which the methods of the corresponding empirical sciences must be used for these theories, methodological naturalism is definitely preserved in the present theory of philosophical theory types. The main problem of methodical naturalism is then that it considers empirical methods as *the* methods of philosophy and does not restrict them to one part of philosophy. In this way, all normative (in the broad sense) parts of philosophy are then lost; or methodological naturalists derive an ought from an is, thereby violating Hume's law. A further problem is that in a pure methodological naturalism a criterion for delimitation from the empirical sciences is missing: Which empirical regularities or developments are especially "philosophical" and why, so that their investigation is regarded as philosophy and not as natural science in a broad sense? (It was assumed above that descriptive-nomological theories in philosophy have a function as a supplier for other philosophical theories. Of course, this possibility does not apply if such other philosophical theories allegedly do not exist at all.) Methodical naturalism thus seems to abolish philosophy as such.

Methodical intuitionism, which is currently very widespread especially in practical philosophy, bases its central philosophical theses on intuitions. *Intuitions* are tendencies or inclinations to agree to a proposition, or are even firm convictions of the proposition, which we have not gained through a process of reasoning and for which we cannot initially give epistemically or otherwise rationally good reasons. Characteristic of intuitions – as long as they remain such – is that the way to acceptance of the respective proposition remains in the dark for the subject. There are at least three main versions of methodical intuitionism.

1. Intuition as intuitive cognition (e.g. Ewing, Moore, Prichard, Ross; recently Audi, Huemer, Stratton-Lake): The classical version of intuitionism sees intuitions as cognitions of more or less evident truths. In ethics, this position is often combined ontologically with a strong moral realism. Problems of this version are: *1.1. No truth:* Classical intuitionism provides no criteria for how to distinguish false from true intuitions. Every intuition here automatically becomes "knowledge". But then there is no difference between truth and falsehood anymore and therefore no cognition. *1.2. No cognition:* It is precisely the intuitive character, the obscurity of the origin of acceptance that prevents an intuition from having a cognitive character. Certainly, we do not gain all our cognitions by inference. In the case of the non-inferential and more or less automatic ones, however, there is a reconstructable mechanism of cognition that ensures the correct content of cognition. In the case of visual cognition, for example, we can reconstruct that light rays fall on the perceived object and are reflected, penetrate our eyes, are translated into electrical signals on the retina, etc.; thus, the correct origin and reliability of visual cognition can be explained. However, because of the purely intuitive nature of intuitions, there is no comparable, reliability guaranteeing

explaining reconstruction of them. *1.3. Variability:* In fact, in most of the fields dealt with by philosophical intuitionism, intuitions are intersubjectively very different – to a much greater extent than in the case of facts with proven cognitive potential – and also change biographically or even depending on the framing. *1.4. Complex, partly cognitive origin: Moral* ideas and beliefs are based on (i) an intersubjectively different morality conveyed by the respective socialisation agents, (ii) the subject's confrontation with it and with competing morals and (iii) autonomous sources of morality such as compassion and respect. If moral ideas then appear merely as "intuition", then this entangled origin of our ever subjective morality makes it rather unlikely that they simply represent an immediate access to moral truths (of whatever ontological kind).

2. Intuitions as unfounded opinions of the respective author: More recent forms of intuitionism no longer make the objectivist claim to knowledge of classical intuitionism, but see in the intuitions only the attitudes of the philosophical author, who, however, usually hopes to find a broad interpersonal agreement. Nowadays this version of intuitionism is often linked to a more sophisticated coherentization of intuitions, as is supposed to be achieved by Rawls' (or Putnam's) reflective equilibrium (Rawls <1971> 1999, §§ 4; 9). Problems of this kind of intuitionism are: *2.1. Irrelevance of the intuitions of individuals:* What is the relevance of the intuitions of a particular author? This author may hope that others share her intuitions or make her elaboration their own - intuitively. What would be gained by this? *2.2. Subjectivism without persuasiveness:* Argumentatively, such intuitions do not help. Either someone is already convinced of these intuitions, in which case he does not additionally need the intuitions of others. Or he is not convinced; then the intuitions of the other person have no epistemic power to convince him. *2.3. Renunciation of justification where justification is possible:* The abandonment of the claim to knowledge, as it was raised by classical intuitionism, is simply the renunciation of justification. Due to the reflexive equilibrium, the resulting intuitions may at least be coherent, but they are therefore not justified. If they are presented as justification, then every intuition is begging the question. And if the absence of a justification is admitted, then the justification is just missing; and this is too little, if more can be said about the issues under discussion, that is, if good arguments can be put forward: In the history of philosophy there have been and still are sophisticated rational debates on these issues between reflective people with subtle arguments that provide real justifications and do not stop at intuitions. Simply dispensing with justified answers is not a rational solution to open philosophical questions. Such solutions include developing good instruments or making and confirming strong and practically useful hypotheses. *2.4. Variability:* Interpersonal differences and personal biographical changes of intuitions as well as framing effects (Sinnott-Armstrong 2008) are preserved even if the epistemological character is renounced and more sophisticated procedures such as reflective equilibrium are used (see critique 1.3 above).

3. Intuitions as a subject of experimental folk psychology: The most recent variant of intuitionism has emerged from its connection with experimental philosophy (e.g., Kahane). Instead of determining the intuitions of a particular philosopher more precisely, the intuitions of the population on certain philosophical questions are determined – often in a subtle, indirect way. Such a research approach becomes methodological intuitionism when the majority opinion thus found is seen as *the* answer to the philosophical questions – for example, what are the criteria for intentionality. (One can also examine folk-psychological intuitions, e.g., moral intuitions, for another purpose, namely to determine how they emerge, in order to explore, generally, the ways of moral judgement formation. This type of research is not philosophical intuitionism, but is part of descriptive-nomological moral psychology. However, most experimental philosophers who research folk intuitions do not clearly explain their point of view regarding either of these two possibilities – which of course casts doubt on

the sense of their research.) This form of intuitionism is also subject to various objections: *3.1. Populism:* If the philosopher is exchanged for the majority of the population as a supplier of opinions, this does not make the position thus supported any better. It is not unlikely that the opposite is true: The majority of the population has normally thought much less about the usually quite subtle philosophical questions than professional philosophers; accordingly, their answers are often more crude. *3.2. No epistemic character and variability:* The mere fact that the majority's intuitions on these questions almost never approach 100% and are often interculturally different shows that they do not arise from any halfway reliable epistemological procedures. Other symptoms of this are framing effects (Sinnott-Armstrong 2008). *3.3 Renouncement of justification where justification is possible:* Even recourse to majority intuitions to answer philosophical questions is a surrender of the claim to knowledge and a renunciation of justification with the problems already mentioned under 2.3. *3.4. Subjectivism without persuasiveness:* Even an intuition shared by a larger group is, if this agreement is not a proof of cognition, argumentatively useless (see critique 2.2 above).

5. Argument types in philosophical theories - A glossary

In the following sections, the important theses of the four theory types are presented and it is worked out how one can argue in their favour. The types of arguments recommended here refer to the Practical Theory of Argumentation, an epistemological approach to argumentation theory developed by me. But there are also suggestions for similar types of arguments in some other argumentation theories. The theory of philosophical argumentation presented here also makes sense when using these similar types of arguments. In order to avoid interruptions in the subsequent presentations, the required argument types are briefly presented here in the form of a glossary.

General remarks on the Practical Theory of Argumentation: General presentations of the Practical Theory of Argumentation as an approach to an epistemological theory of argumentation are: Lumer 1990a; 2005. According to this approach, the standard function of argumentation is to guide cognition in order to arrive at a rationally justified acceptable belief. The arguments work through conditions of epistemological principles for the acceptability of the respective thesis. An overview of different types of arguments is given in: Lumer 2011a.

1. Deductive arguments: In deductive arguments (Lumer 1990a, pp. 180-209; 2005, pp. 221, 235-236) the conclusion is deductively derived from true premises.

Deductive arguments for predictions are a special case of deductive arguments with strict, i.e., certain empirical laws as premises.

Deductive arguments of descriptive statistics: Descriptive statistics uses statistical principles, especially definitions, and calculates certain statistical key figures arithmetically in purely deductive steps. Correspondingly, statements in them such as 'The *p*-value of this correlation is greater than 0.99' are determined purely deductively – even if the individual deductive steps are no longer perceived due to the use of computer programmes that perform these calculations.

2. Probabilistic arguments: The thesis of a probabilistic argument (Lumer 2011c) is a (conditional) probability judgement; the reasons include statistical statements or other probabilistic judgements.

Indicatory arguments / arguments from sign (Lumer 1990a, pp. 221-223) infer from an indicator to the presence of another event or state by means of a strong statistical correlation (red litmus paper as an indicator of acidity; the making of an assertion as an indicator that the speaker believes in the assertion).

Genesis of knowledge arguments (Lumer 1990a, pp. 246-260) contain a (more or less abbreviated) report on the verification of the thesis by another person and the transmission of this information to the current speaker. Then it is possible to infer, probabilistically, from the current statement to the existence of the facts described in the thesis as the presumed starting point of this chain.
Probabilistic arguments for predictions: The thesis is a prediction; at least one of the premises is a mere statistical empirical law.
(Explanatory) interpretive arguments (Lumer 1990a, pp. 223-246; 1992; 2010, pp. 147-154) are arguments that seek hypothetical explanations for known facts (e.g., corpse with gunshot wound, person sighted in the vicinity etc.) and then determine the probabilities of possible hypothetical explanations according to Bayes' Law. Usually the actual thesis is a small excerpt from one of these explanations (e.g., *s* was the killer), whose probability is equal to the sum of the probabilities of the hypothetical explanations in which it occurs.

3. (Prudential) practical arguments (Lumer 2014; 1990a, pp. 319-408) are arguments for value judgments; they follow decision-theoretical principles; they list the advantages and disadvantages of the evaluated object and summarize them in an overall evaluation. – Simple theories of practical arguments rely on intuitive, not necessarily well-founded or even wrong information-based preferences about aspects of the respective objects. In contrast, more critical evaluation procedures rely holistically on fully informed reflection (Brandt 1979: part I (= p. 1-162)) or on critical reconstructions and applications of basic evaluation criteria (Lumer <2000> 2009, pp. 350-427, 521-528).
(Prudential) practical arguments for the justification of instruments (Lumer 2011a, p. 24) are complex practical arguments: Various instruments are evaluated according to the basic criteria / principles of practical argumentation. The best of them is then determined in a deductive argument. – A special procedure for this is the *multi-attribute utility theory* (e.g., Keeney & Raiffa <1976> 1993; Watson & Buede 1987), according to which all compared instruments are measured and evaluated in certain dimensions, a certain weight is given to the single dimensions and from this the total value is then determined. Multi-attribute utility theory, however, still relies on intuitive, not necessarily justified preferences about aspects of the respective objects.
Practical arguments for evaluations on the basis of the fulfilment of adequacy conditions (Lumer 2011a, p. 25) are a method for justifying value judgements if quantitative measures of desirability cannot be used. Adequacy conditions for desirable properties of the objects to be evaluated are established beforehand. The argument then lists which of these conditions of adequacy a certain object fulfils and to what extent.
Practical arguments for welfare-ethical value judgements: (Lumer 2011a, p. 25) The thesis in this case is a moral value judgement. The assessment is based on welfare-ethical desirability criteria, i.e., definitions of moral desirability according to which this desirability is composed in a certain way of desirabilities for the individuals concerned.
Pascal arguments (Lumer 1997) are practical arguments for theoretical theses. They are arguments for a value judgment of the kind that it is optimal to behave as if a certain thesis *p* were true. They presuppose that no theoretical information about *p* is available, so that no probability can be established. The argument then follows the criteria for decisions under uncertainty where the same probability is assumed for all possible worlds in which the relevant consequences can occur (Laplace probabilities). The evaluation units are then expected utilities with Laplace probabilities.

This list is not complete. In philosophy, all valid argument types can be used at some point. But this list contains the valid types of the arguments most frequently used in philosophical theories.

6. Theses and arguments in descriptive-nomological theories

According to the above outline (sections 3.1; 4.1), descriptive-nomological theories contain the following types of essential systematic statements or theses:

TDN1 (= Thesis, Descriptive-Nomological, type 1)*: Definitions*: Like all theories descriptive-nomological theories contain definitions or conceptual specifications of important terms. These definitions are at the same time explications of the philosophical concepts that are relevant for the theory.

TDN2: Axioms: The systematic, central and theoretical statements, i.e., the axioms of the theory, are empirical laws.

TDN3: Theorems: More specific, molecular, and universal theorems, which are particularly interesting for philosophy, are derived from the axioms. The exact content of the sought-after axioms and theorems can still be more precisely determined for the individual descriptive-nomological theories.

TDN4: Confirming empirical material: The empirical material confirming the theory (including failed attempts to refute it) such as experiment reports, statistical elaborations and observations provides the necessary foundation.

TDN5: Optimality of the axiom system: The optimality of the nomological axiom system (simplicity, explanatory power, empirical confirmation etc.) is proven in comparison with other theories.

TDN6: Explanatory application of the laws: 1. Complex interrelationships that are philosophically interesting and especially important for our self-understanding, or 2. other philosophically interesting events or developments from the subject area of the theory, or 3. other phenomena from the subject area of the theory that are interesting for philosophy are compiled and explained with the axioms and theorems.

The *methods* of descriptive-nomological theories in the creation of the theory core (TDN2-4) are first of all those of the corresponding empirical sciences. In most cases, but not necessarily, philosophers will not carry out their own methodologically sophisticated empirical investigations, but will, among other things, take up results from these individual sciences. Alongside this, descriptive-nomological theories of philosophy have theoretical-axiomatizing functions: They formulate theories, theory sketches, models or parts of theory sketches which, among other things, answer the central empirical questions of the technical-constructive disciplines in one way or another. Proofs of the optimality of theories (TDN5) are based in particular on criteria from the theory of science, but also follow the specific functional specifications from the supplier function of the respective theory for the idealizing-hermeneutic and technical-constructive theories. They then use these criteria and specifications within a practical argument to justify instruments. The systematically concluding explanations (TDN6) follow the guidelines of the philosophy of science for explanations, e.g., they are deductive-nomological in essence. The definitions developed in the theory (TDN1) are, apart from their formal correctness, justified by the fact that with the terms defined in this way the synthetic statements of the theory, i.e., above all the axioms and theorems, can be formulated in a handy and precise way. This requirement for justification also applies analogously to the definitions in the other theories presented here (see below TIH1, TTC1 and TOP1). – In the appendix, the specification of the arguments to be used in descriptive-nomological theories, which is only hinted at here, is explained in detail. This also applies to the other three theory types.

7. Theses and arguments in idealizing-hermeneutic theories

Idealizing-hermeneutic theories, according to what has been said above, contain the following *types of essential systematic* statements or *theses*:

TIH1: *Definitions*: The theory contains definitions or terminological specifications of important terms that are used to formulate the synthetic statements of the theory. These definitions are at the same time explications of the philosophical terms relevant to the respective theory.

TIH2: *Description of the structure*: The structure *S* of the ideal instrument is described.

TIH3: *Reality of the structure*: The relation of the instrument to real practice is established by theses of the type: 'The structure *S* is a factually realised instrument' or: 'The structure S_f is part of *S* and part of a factually realised instrument' or: 'The structure *S* is an instrument composed of pieces actually used and supplemented elements'.

TIH4: *Function*: The functions of the instrument are described: With which input does the structure lead to which output?

TIH5: *Way of functioning*: The functioning of the instrument, i.e., how it transforms the input into the output, is explained.

TIH6: *Subjective reasons*: The connection with the intentions of the users of the instrument is made by theses of the kind that the adoption of a certain function or of a certain output for certain subjects was an important subjective reason for the realization of the structure *S* or its parts S_f.

TIH7: *Hypothetical reasons*: In addition, hypothetical reasons can also be given that the advantages of certain functions of *S* or S_f in certain standard situations would be good reasons for the realisation of these functions.

TIH8: *Objectivity of the reasons*: The aforementioned *reasons* must be assessed as more or less good and important.

TIH9: *Standard output*: One of the core theses is the determination of the standard output O_s: The output O_s (from the functions described in TIH4) is the standard output of the instrument *S*, i.e., the output that is objectively most important or at least very important (see TIH8), is often aimed at (TIH6), has been produced in most uses of *S* that are considered successful and is the cause of further, secondary outputs, which are, however, less frequently aimed at.

TIH10: *Ideal instrument*: Finally, the central thesis is the evaluation of the instrument: *i* is the best / a very good one among those instruments for the realization of the standard output O_s that are already factually realized or at least are modelled on factually realized instruments and contain essential elements from factually realized instruments.

Idealizing hermeneutics, as already expressed in the name itself, is conceived as a hybrid theory, a mixture of hermeneutic components and idealizations that are oriented towards instrumental requirements. Accordingly, the *methods* used in idealizing-hermeneutic theories are also heterogeneous. 1. For one thing, they aim at the compilation of existing instruments (TIH3) and their interpretation: for what reasons have they been realized? (TIH6). 2. For another, they determine objective functional relationships (TIH2, TIH4-5) and 3. evaluate them (TIH7-8, TIH10). TIH9 is itself a hybrid thesis containing hermeneutic and evaluative components.

1. The most thorough and, so to speak, last instance justification to prove the presence of other persons' subjective reasons are (explanatory) *interpretive arguments*. Their aim is to determine the mental causes of actions or action products; for these causes contain the subjective reasons, the sense, on account of which the agent has performed the action. Thus, one seeks the explanations of the actions or action products.

2. The analysis of functional relationships in turn uses *nomological knowledge* from individual sciences, but above all also the results of the descriptive-nomological theories of philosophy; this is precisely the supply function of the latter.
3. The evaluation of the instruments and their components is carried out with the help of *practical arguments for the justification of instruments*, in which the advantages and disadvantages of the respective object of evaluation are identified and weighed against each other. There are variously precise and critical procedures for this. Beyond the simple naming and roughly estimating evaluation of advantages and disadvantages, as we do in everyday life, the multi-attribute utility theory already provides relatively complex quantitative methods of practical justification. However, especially when it comes to the evaluation of e.g., life plans or moral commitment, evaluation procedures with critical components that can call factual preferences into question are necessary. At the fundamental level, in the determination of the most basic evaluation criteria themselves, only simple practical justifications can be used in the end, especially in the form that conditions of adequacy for the justification criteria are established and proven to be fulfilled; these adequacy conditions list the desired advantages and, to be avoided, disadvantages of the instruments (Lumer <2000> 2009, pp. 241-427). – What has just been said applies to *prudential assessments*. Most of the instruments to be considered in philosophy must also be first and foremost prudentially evaluated: criteria of knowledge, logical systems, ontologies, criteria of practical rationality, autonomy, etc. In some areas of practical philosophy, especially in normative and applied ethics and political philosophy, instruments are also developed for moral purposes, e.g., virtues, normative systems, and systems of governance. In these areas, it makes more sense to evaluate the potential instruments morally. The criteria for moral evaluations are themselves instruments whose purpose, standard output, must be found and which can then be justified by means of comparative adequacy conditions.

8. Theses and arguments in technical-constructive theories

Technical-constructive theories contain the following *types of essential systematic* statements or *theses*:

TTC1: Definitions: The theory contains definitions or conceptual specifications of important terms that are used to formulate the synthetic statements of the theory and that represent the explications of the philosophical concepts pertinent to the theory.

TTC2: Standard output: The desired standard output of the technology to be developed is determined.

TTC3: Structure description: The developed instrument, i.e., the proposed structure of the constructed technology with which this output can be brought about, is described.

TTC4: Function description: The detailed function is also partly described: With which input does the structure lead to which output?

TTC5: Explanation of the way of functioning: The way the structure converts input into output is explained.

TTC6: Practical justification of the standard output: The standard output is justified practically by demonstrating that in many situations this output represents a desirable, multifunctional, fruitful and generally humanly interesting goal of action.

TTC7: Practical justification of the structure: The proposed structure is also practically justified by showing that with the help of the structure the standard output can often be achieved in the best possible way; within this justification, among other things, the function of the structure is also positively evaluated and this evaluation is justified.

TTC8: Applications of the instrument: Some technical-constructive theories in philosophy also have applied parts in which the developed instruments are applied to more

concrete problems. The best known applied theory is of course applied ethics; but applied parts also exist in epistemology (e.g., discussion of relativism or scepticism), philosophy of science (some special theories of science) or aesthetics (aesthetic discussion of special objects).

The specification of the standard output (TTC2) is an explanatory statement of intent; structure and function descriptions (TTC3 and TTC4), instead, are descriptions of the developed instrument. The justifications are given in the theorems TTC6 and TTC7. The function descriptions (TTC2 and TTC4) and their evaluations (TTC6, TTC7) are at the same time instructions for the use of the instrument presented in TTC3 and TTC4: How are which outputs realized with it? And when is it worth using the instrument, how good is the corresponding function?

With the exception of applications (TTC8), all types of theses of technical-constructive theories also appear in idealizing-hermeneutic theories, although in some cases with a slightly modified function. (The counterparts are: definitions: TTC1 – TIH1; standard output: TTC2 – TIH9; structure description: TTC3 – TIH2; function description: TTC4 – TIH4; way of functioning: TTC5 – TIH5; justification of the standard output: TTC6 – TIH8; justification of the structure: TTC7 – TIH10.) The reference to already known instruments and elements as well as reasons (TIH3, TIH6) is omitted in the technical-constructive theories; consequently, they are freer in determining the standard output and in the construction of the instruments themselves. This implies that the *methods* used to justify technical-constructive theories have already been dealt with in the presentation of idealizing hermeneutics: 1. explanations by means of nomological knowledge, especially from the descriptive-nomological theories of philosophy, 2. practical justifications. The previously necessary interpretations of actions to determine the intentions of the inventors or users of the instruments are no longer needed.

Technical-constructive theories are ultimately legitimized by the instruments with good output which they develop; this provides them with a clear and good justification. In contrast, the value of many other philosophical theories, apart from the technical-constructive and, of course, the descriptive-nomological, idealizing-hermeneutical and ontic-practical ones, is unclear and questionable.

9. Theses and arguments in ontic-practical theories

The theses of ontic-practical theories follow the conditions of the epistemological principle for Pascal arguments, i.e., the *Pascalian epistemological principle*:

PP0: For all $\{p_1, ..., p_n\}$, *s*, *d*, *t* holds true the following:

PP1: If $\{p_1, ..., p_n\}$ is a set of mutually inconsistent propositions which are altogether exhaustive alternatives, and

PP2: if *d* is *s*' database at the time *t*, and

PP3: if for all p_i from $\{p_1, ..., p_n\}$ the database *d* does not contain any theoretical evidence for p_i and $\neg p_i$, so that *d* does not provide any empirical probabilities for p_i and $\neg p_i$, and

PP4: if for all p_j from $\{p_2, ..., p_n\}$, from *t* onwards regularly behaving as if p_1 were true, on the database *d* and regarding only consequences relevant for orientation, has a higher expected desirability for *s* than behaving as if p_j were true and than behaving as being agnostic with respect to $\{p_1, ..., p_n\}$,

PP5: then on the database *d* it is *epistemically optimum* for *s*, with respect to the relevant alternatives, from *t* onwards to behave as if p_1 is true. (Lumer 1997, p. 339)

The central theses of ontic-practical theories then state that the conditions of this principle for epistemic rationality are fulfilled. These are the following conditions: PP1: p_1, …, p_n are mutually exclusive but together exhaustive propositions. PP3: The database does

not contain any empirical information about p_1, …, p_n or their negations, so that the database does not provide empirical probabilities for these propositions. PP4: To behave regularly as if p_1 of these propositions were true has, if one considers only the consequences for orientation, a higher prudential desirability than to behave regularly as if another of these propositions were true, or as if one were agnostic with respect to p_1, …, p_n. (PP5: According to the Pascalian epistemological principle, it is then epistemically optimal to behave as if p_1 were true.)

Ontic-practical theories therefore contain the following *types of essential systematic* statements or *theses*:

TOP1: Definitions: The theory contains definitions or terminological specifications of important terms that are used to formulate the synthetic statements of the theory. These definitions are at the same time explications of the philosophical terms relevant to the theory.

TOP2: Theoretical unrecognizability: The systematic initial thesis of ontic-practical theories is that the existence of the sphere of reality in question or a certain structure in such a sphere of reality cannot be recognized, not in principle (because of the basic types of our cognition) or not empirically (because this sphere of reality is inaccessible, such as the existence of other universes).

TOP3: Suitable set of alternatives: An important prerequisite for the justification of the central thesis TOP4 is that one disposes of a list of alternative possibilities regarding the existence or form of the reality sphere in question: p_1, ..., p_n are mutually exclusive and together exhaustive propositions about this sphere.

TOP4: Conditional optimality of the as-if behaviour: The most distinctive thesis of ontic-practical theories is: 'It is optimal (in the sense that it has the highest Laplacean expected desirability) to behave as if the reality sphere in question (= p_1) existed (namely better than to behave as if one of the alternatives to p_1 were true, or as if one were agnostic with respect to p_1 and its alternatives).' – This thesis must already consider all the relevant possible worlds and also all the relevant action alternatives. But it is a thesis about Laplacean expected desirabilities. This thesis itself leaves open whether it is rational in this situation to follow the Laplacean expected desirabilities. The condition for this rationality is the theoretical unrecognizability (TOP2). Only the following unconditional optimality thesis brings all these elements together.

TOP5: Epistemic optimality of the as-if behaviour: The central thesis of ontic-practical theories is: 'It is epistemically optimal to behave as if the reality sphere in question (= p_1) existed.'

The actually problematic theses of ontic-practical theories are those of the theoretical unrecognizability of the sphere of reality in question (TOP2) as well as those of the conditional optimality of the as-if behaviour (TOP4) and, to a lesser extent, those of the suitable set of alternatives (TOP3). The *methods* usually used to gain insight into the unrecognizability of the reality sphere in question are thought experiments, i.e., the analysis of possible worlds. In this case we have to consider possible worlds in which, on the one hand, everything we really recognize is contained, but in which, on the other hand, the reality spheres or structures of the reality in question do *not* exist (e.g., Descartes' evil demon or Harman's and Putnam's brain in a vat, which simulate the external world for us; Hume's billiard balls, etc., which in future will behave quite differently than billiard balls have done so far; Chalmers' zombies, which we cannot distinguish from people with consciousness) – which means that our information does not exclude this possibility or, conversely, does not prove the existence of the spheres of reality in question. Hence, for showing the unrecognizability, it must be shown by analytical means, deductive arguments, that these

worlds are possible, i.e., consistent. (This would *prima facie* only prove the possibility of such worlds and thus would make possible arguments uncertain that the realities and structures we actually assume exist; but it seems not to exclude the possibility that we could prove the high probability of these realities – so there is no reason to get worried. But what should such a probabilistic argument look like? Something like this?: 'In the past, in *m* of *n* cases it turned out afterwards that the reality in question p_1 does indeed exist. So it is likely to the degree *m*/*n* that p_1 will turn out to exist this time as well.' However, the well-constructed possible worlds, in which precisely everything we really recognize is always realized and the rest is varied, in fact show that also up to now the existence of the reality in question or of the structure of reality has *never* been proved (or in Hume's case: the basis for the use of this probabilistic inference has never been shown, namely the constancy of the laws of nature which is still continuing even now.)/] – The method to prove the conditional optimality of the as-if behaviour are Pascal arguments (Lumer 1997). – Completeness and mutual exclusion of possible worlds can be proved purely logically by deductive arguments – especially when logical permutation has been used for the construction of the possible worlds.

10. The theory of philosophical argument types as an idealizing-hermeneutic theory

Is the theory of philosophical types of arguments developed here, as claimed, an idealizing-hermeneutic theory? Yes. In the following, this answer will be justified in such a way that it will be shown that the present theory establishes and substantiates the theses essential for an idealizing-hermeneutic theory. However, I will not go into some less important theses for reasons of space.

Two peculiarities have to be taken into account when describing the idealizing-hermeneutic character of the theory developed here. 1. This article is primarily concerned with philosophical *arguments*, not with philosophical *theories*. But often these two aspects are difficult to separate, because philosophical arguments are supposed to be arguments with which the theses of philosophical theories are justified. Also in the following presentation both aspects often have to be presented. 2. In this presentation a general theory of argumentation is already assumed, the epistemological Practical Theory of Argumentation – which is itself an idealizing-hermeneutic theory. What this theory has to say about the justification of the individual types of arguments – e.g., about the optimality of the proposed structures, i.e., arguments – will not be repeated here; it will only be referred to here (especially by the references to the literature in section 5). The task of the theory presented here is primarily only to show which of these types of arguments can be used to substantiate the theses that have been shown to be essential for good philosophical theories. If these argument types are themselves ideal instruments, then this completes the theory of good philosophical theories in such a way that this argumentative part of philosophical theories is also ideal. (This is the (implicit) optimality thesis (TIH10) of the theory of philosophical arguments.)

TIH1: Definitions: In the theory of philosophical argument types, for example, the four theory types themselves are defined. The precise definitions of the types of arguments, however, are provided in the supplementary literature (see section 5).

TIH2: Structure description: The structure descriptions of the theories consist here in the descriptions of the theses of the four theory types together with the descriptions of the types of arguments required or suitable for proving them. In other words: The assignment of argument types to the individual types of theses of the good philosophical theories is – if one can presuppose a theory of these individual types of arguments – the actual argumentation-theoretical part of the structural description of the good philosophical theories.

TIH3: Reality of the structure: The reality of the proposed structure, i.e., of these types of philosophical theories, is shown by the examples from the history of philosophy at the end of sections 4.1-4.4. Some of these theories also use the arguments recommended here. (For the rest, the assignment of argument types proposed here is constructive: These are precisely the arguments fitting the respective theses.)

TIH4: Function: Within the descriptions of the individual types of theories, a lot has been written about what the function of such theories is: Descriptive-nomological theories are supposed to provide, among other things, the special knowledge not provided in the sciences, but necessary for philosophical arguments in the other philosophical theories. Idealizing-hermeneutical and technical-constructive theories develop good instruments for the individual fields studied in the philosophical disciplines: criteria for good arguments, for good scientific theories, moral evaluation, political institutions, etc. Idealizing-hermeneutic theories also help us to understand our practice in these fields, to understand the good reasons behind the practice and thus to continue this practice in a more targeted and adjusted way. Ontic-practical theories help us to improve our epistemic practice with positive effects for our other actions (the assumption of theoretical entities, for example, leads to ontically simpler, more elementary laws of nature, which in turn make possible the construction of technical instruments that exploit these laws). – The function of the arguments mentioned in this theory of philosophical arguments is to better justify the theses of each type of theory and thus to increase the probability of the truth of these theses. (If the author of a theory has given reasons for her theses in an argumentative way, she can better check whether they are true – which of course does not completely exclude errors in the checking –; if these arguments are presented to the addressees, the addressees can also check the truth of the theses and are either guided to recognize the truth of the theses or, in the negative case, possibly encouraged to criticize them publicly, which in turn initiates a process of improving the theory.) These functions of argumentation have not been discussed in this article; they belong to the general function of epistemologically conceived argumentation (as analyzed e.g., in Lumer 2005, pp. 219-220) and are applied here only to the specific case of argumentation for philosophical theses.

TIH5: Way of functioning: The way philosophical theories together with the arguments for their theses function is to guide the addressees' recognition of the theory so that they arrive at a justified belief in the theses of the theory. This way of functioning has not been specifically discussed here. It is again only a special case of the general functioning of argumentation as it is treated in the general theory of argumentation (Lumer 2005, pp. 221-224).

TIH6: Subjective reasons: The examples of philosophical arguments and theories cited from the history of philosophy that fit the types of theory and argument outlined here are implicitly at the same time information about the subjective reasons of the authors of these arguments. For, by default, one can assume that the authors believed that these arguments would prove their thesis.

TIH9: Standard output: The standard output of good philosophical theories and the arguments contained therein is the knowledge or the rationally justified acceptable belief of the recipients of these theories in the answers to the fundamental philosophical questions given therein. This has not been further discussed here because it is rather trivial.

TIH10: Ideal Instrument: The justification of the thesis that the proposed theory types and the arguments for their theses are optimal instruments is not presented in this article in one piece. Instead, a sufficient number of independent parts of such an argument is developed at various points. The fact that several types of theories have been assumed here has of course the disadvantage of a certain inhomogeneity within philosophy, but it has the advantage that really all of the fundamental questions of philosophy, which are very different in nature, can

be addressed and answered (and that not some of them have to be "twisted" or ignored) (see above, the beginning of section 3). The individual types of theory are then constructed in such a way that they answer the really important and genuinely philosophical questions which are not answered in the sciences and which in turn have a high practical relevance (see the sketches of the meaning of the individual types of theory in sections 3 and 4.1-4.4). The criticisms of naturalism and intuitionism (Section 4.5) implicitly show that the theory of philosophical theory types and methods developed here is better than those and thus the best of the three. (The criticism of naturalism, conversely, was, among other things, that it cannot answer most philosophical questions because it does not contain a procedure for justifying value judgements or practical proposals. And the criticism of methodological intuitionism was that it provides no justification for its answers, so that these answers will be false to a large extent.) The layout of the individual types of theory, i.e., their structure, is justified in such a way that in each case a few theses directly answer the philosophical question, while the other theses are important suppliers and clarify e.g., necessary prerequisites (see the beginnings of sections 6-9). (In the descriptive-nomological theories, the empirical laws (TDN2 and TDN3) and the optimality thesis (TDN5) are the central answers; in the idealising-hermeneutical and the technical-constructive theories, the structure descriptions (TIH2 and TTC3) and the proofs of optimality (TIH10 and TTC7, respectively) are the central answers; in the ontic-practical theories it is the unrecognizability thesis (TOP2) and again the optimality thesis (TOP5).) – The ideality of the *arguments* proposed in this article for philosophical theories was hardly discussed here; to prove this ideality, however, reference was made (in section 5) to the corresponding literature. The selection of the specific types of arguments proposed here for the individual types of theses, simply results from the fact that they are precisely those arguments by which, according to the rules of these arguments, these types of theses can best be justified.

11. Epilogue – The importance of practical arguments

One of the central theses – with only two types of central theses in each case – in the philosophical types of theory presented here is in each case an optimality judgement, which must then be justified in practical arguments (more precisely: practical arguments for justifying instruments). (In descriptive-nomological theories it is the thesis about the optimality of the axiom system (TDN5), in idealizing-hermeneutic and technical-constructive theories it is the thesis about the ideality of the instrument (TIH10 or TTC6 in connection with TTC7), in ontic-practical theories it is the thesis about the epistemic optimality of the as-if behaviour (TOP5)). This prominent role of value judgments and practical arguments in philosophical theories is surprising; it goes back to the instrumentalist understanding of philosophy implicitly propagated here and is in contrast to the more theoretical, contemplative, realistic or hermeneutic understanding of philosophy of many philosophers – at least for theoretical philosophy. But this theoretical understanding has begun to crumble – see e.g., Putnam's (2002, especially the first two chapters ("The empiricist background" and "The entanglement of fact and value")) claim of the co-presence of descriptive and evaluative components in all theories. Perhaps the theory developed here will also help – in accordance with the second advantage of an idealizing-hermeneutic theory of philosophical argumentation (last paragraph of section 2) – to discover the already existing traces of practical arguments in actually practiced philosophical thinking and thus to show that philosophy is already much more practical than it seems to be. If my reconstruction of the theory types is really an idealizing hermeneutics and not only my invention, then some traces of this kind should be found. Moreover, the theory developed here could also help to develop

better, practically oriented philosophical arguments and theories and to uncover the problems of existing alternative approaches.[8]

Appendix: Assignment of argument types to the different theses of the philosophical theory types

This appendix specifies more precisely which types of arguments can be used to justify which theses of the philosophical theory types. This assignment is mainly governed by the rules for the individual argument types, which, among other things, specify which types of theses can be justified by this argument type. However, the assignment also depends on the type of premises at hand. – This relatively trivial approach is made more complex by the fact that for various types of theses under the usual epistemic conditions, *complex* arguments have to be used, for which the premises are also further justified. With this kind of branching it sometimes becomes more difficult to identify the required lemmata and arguments for them.

A. The arguments in descriptive-nomological theories

Before the assignment of the types of arguments and other types of justifications – suitable for the justification of the theses of a descriptive-nomological theory – can be presented, it is necessary to explain how some terms are to be understood here: 'axiom', 'theorem', 'theoretical concept', 'theoretical entity' etc. Axioms and theorems are the core of an empirical theory describing the empirical laws. The *axioms* are a set of mutually independent law hypotheses, which are chosen as skilfully as possible so that their number is small and that the other law hypotheses, the *theorems*, can be derived logically from them. The axioms should also contain the basic, elementary laws of the theory, i.e., in a sense the core of the core. – To explain the observable, most empirical theories assume *theoretical entities* which are named by *theoretical terms* – such as 'electron', 'gravity', 'hydrogen', 'desire', 'joy' – and which cannot be perceived. (They are used to formulate more elementary connections, facts, which the theory assumes to be behind the perceptible.) Psychological, also folk psychological terms such as 'desire', 'belief', 'fear', 'lust', are also theoretical terms when applied to other people. Some axioms (but often also some theorems) use exclusively theoretical terms as empirical terms; conversely, some theorems use exclusively perceptual terms, whose reference we can thus (in principle) perceive directly. (If the theory includes theoretical entities, then it usually does not include axioms that use exclusively terms of perception as empirical terms.) Finally, there are necessarily axioms and usually also theorems with both theoretical and perceptual terms. These axioms and theorems are the so-called *bridge laws* that mediate between the theoretically hypothetized world and the empirically observable one. (Some of the bridge laws must be axioms, otherwise no statements, especially no theorems with perceptual terms, could be derived from the axioms. Examples of such bridge laws are: in action theory, laws of intention execution – a certain kind of intention (theoretical term) causes the intended movement (perceptible) under such and such conditions –, in perceptual psychology, laws about the generation of perceptual content (theoretical) from sensory stimuli (perceptible), in physics, laws of the effect of forces (theoretically) on movements of bodies (perceptible).) Law hypotheses in which theoretical concepts essentially occur can never be confirmed directly, by perception.

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8 An example of this: Some philosophers see the incompatibilism of theories of freedom of decision as ontically or metaphysically given. Against this one could then argue that such ontic or metaphysical facts do not exist, that incompatibilist theories fail to make the value of indeterminacy understandable, and that the point is rather to define 'freedom of decision' in such a way that this freedom has a practical value for us.

The following explanation of the individual justification possibilities in descriptive-nomological theories does not follow the numbering of the types of theses, because of the many terms and differentiations that need to be explained and because of the systematic order of the explanations that differs from the numbering of the types of theses.

TDN4: Confirming empirical material – justification: The confirming empirical material behind theorems consists of observational statements. Here, I basically distinguish between three types of observation. Observational statements can *1. be formulated by means of perceptual terms* and *a. be verified by direct perception* ('the pointer points to "9"', 'the respondent ticked option 3') or *b. be based on an interpretation of what was perceived* ('the X-ray image shows a fracture of the third cervical vertebra'; 'the aerial photograph shows the ground plan of a now buried dwelling'). *2.* Or they may already contain *theoretical terms of lower levels* ('the voltage is 12 V'; 'the substance is strongly alkaline'; 'the patient has a melanoma on the left cheek'; 'the subject was embarrassed'); in this case, as already mentioned, also the mental predicates ('believe', 'wish', 'be pleased') count as (low-level) theoretical terms.

Ad 1.a Perceptual observation of perceptual facts: In case 1.a, the statements of observation are substantiated by corresponding perception; this is a justification but not an inferential one, thus it cannot be substantiated and made verifiable by arguments.

Ad 1.b: Interpretive observation of perceptual facts: In case 1.b, the content of the observation would in principle also be directly perceptible (one could remove the tissue covering the fracture and look at the fracture directly; or one could remove the layer of earth above the building and look at the remaining foundation walls). However, what is in principle directly perceptible is actually not perceived (for various reasons), but is only represented by (standardized) indicators and must be "inferred" from there. This "inferring" can be based on an observation training, in which standardized indicators and direct perception or other feedback are compared, which is then perfected up to automation, so that the observer in an advanced stage does not consciously infer, but "perceives" that which is merely indicated (the physician "sees" certain white lines on the X-ray as fractures). In this case the observer will often not be able to reconstruct the basically inferential relationships. Or it is in fact an inferring in the broad sense, which consists of conscious cognitive steps, in the most complex case of an interpretive explanation of the directly observed ('the rectangle visible on the aerial photograph is interrupted on one narrow side for about 1 m; this could indicate an exit from a building, which would rule out that it is a walled pit'). Such an "observation" can then be reconstructed as an *interpering argument*.

Ad 2: Interpretive observation of (low-level) theoretical facts: In the second case a theoretical statement is "inferred" from the directly observed. Here, too, there are different levels of inferring with more or less many conscious cognitive, inferential steps, which are then also open to an argumentative presentation. *a.* In the simplest case the observer reads a theoretically formulated measured value ('the voltage is 12 V'). Such observation statements are based on a low level theory of the measuring instrument, how this informs about theoretical facts. The designer of the measuring instrument could then provide the explanation for the transition from the observed to the theoretical facts indicated by it, but the actual observer usually does not. *b.* In more complex cases, the observation requires training in which certain phenomena – directly observed or only represented by media – are cognitively linked to associated theoretical facts whose existence is otherwise guaranteed. If the recognition of the linkages is sufficiently automated, the observer at some point "sees" directly the theoretical phenomena (the dermatologist "sees" the melanoma where others see a black-brown skin spot; the chemical laboratory technician "sees" the acidity of the tested substance in the colouring of the litmus paper) and then often cannot give any information about the inferential bases of this automated link. If, instead, the observer can still reconstruct

the inferential path, then it can be presented as *deductive argument* or as *indicatory argument*, in which the theoretical facts are deduced from perceptual statements (exact colour tone, distribution pattern of the colour etc.) with the help of a bridge law. *c.* In even more complex cases, the observer must infer the theoretical basis of what he has directly observed (e.g., by differential diagnosis, in which the physician excludes a series of *prima facie* possible diagnoses by specifically searching for secondary symptoms), or in the most complex cases again by an explanatory interpretation with hypothetical explanations of the directly observed, of which the best (i.e., the most probable among the conclusive hypothetical explanations) is then used as the theoretical proof of the existence of the phenomenon described in the explanation (e.g., a physicist explains the lines shown in a bubble chamber photograph as traces of different types of elementary particles, depending on their curvature; the psychologist explains the faltering in a subject's response as the result of an embarrassing touch). The quintessence of this final determination of the "observed" theoretical phenomenon can be presented as an argument, in the case of differential diagnosis as a *deductive argument* (based on differential diagnostic schemes developed in the literature), in the explanatory interpretation as an *interpretive argument*.

Shifting of the boundaries between these observation types: The boundaries between the *perceptual facts* that can be recognized by interpretive observation and those perceptual facts that are beyond observation, even interpretive observation, shift due to, among other things, the invention of new observation instruments such as binoculars, telescopes, microscopes, ..., X-ray apparatus, ultrasound apparatus ... or measuring instruments such as tachometers, laser range meters ... Also the boundaries between the *theoretical facts* recognizable by interpretive observation and those which are beyond observation are shifted by the invention of new observation instruments and measuring instruments: voltmeters, electron microscopes ... or the invention of diagnostic guidelines.

TDN3: Theorems – justification: In principle, theorems can be justified in two ways, 1. either they are logically derived from axioms, or 2. they are directly justified by observation and subsequent statistical processing of the observed data. In more sophisticated theories that postulate theoretical entities, the axioms that describe, among other things, the behaviour of these theoretical entities cannot be directly justified by observation. Rather, in this case only certain theorems can be confirmed by observation, which then form the empirical basis of the theory. The corresponding axioms are then substantiated with the justification of the whole theory (TDN5).

Justification of empirical theorems by observation: If empirical theorems are justified by observation, the observation data (i.e., the confirming empirical material) are the premises from which the confirmation values (*p*-value, χ^2 etc.) for the general hypothesis, the theorem, are calculated with the help of descriptive statistics (by deductive inferences, which nowadays are usually drawn by a software programme). The calculation of the confirmation values consists of deductive steps, which can be represented in *deductive arguments of descriptive statistics*.

The justification of empirical theorems by deduction from axioms: Apart from observation, additional theorems can later, when the axioms have already been justified, be obtained by deduction from the axioms, i.e., be justified in *deductive arguments*.

TDN5: Optimality of the axiom system – justification: The empirical laws justified by observation – which will later be theorems – are the empirical basis for *theory formation*, i.e., for the development of an axiom system and theorems derived from it. Although the empirical laws justified by observation are the starting point for theory formation, in the axiom system they are usually "only" theorems that can be derived from the axioms, whereas the axioms in theories with theoretical entities cannot be observed directly. The purpose of developing such a theory, especially a theory that hypothesizes theoretical entities in its

axioms beyond the observable entities, is to determine the more elementary, fundamental processes and laws that can no longer be observed behind the observable regularities; what is observed is then only the surface. For once the more elementary laws have been determined, a wealth of other ultimately observable regularities can be deduced from them, for example, at structures that have not yet been realized (including technical instruments) or at known structures in new situations (for example, predictions of human behavior in environments or situations that have not yet been studied, for example, being confronted with new information). In order for empirical theories, axiom systems to fulfil this function, they must fulfil two groups of conditions. The first group (GDN1-GDN3) contains necessary conditions. Often several competing theories or variants of theories are developed. These are evaluated according to the second group of conditions (GDN4-GDN8), and the best of them is proposed as the best tool for explanation and prediction.

I. Necessary (formal) conditions of a good theory: The core of the theory, namely the sets of axioms and theorems, must at least fulfil the following necessary (formal) conditions:

GDN1 (= Good Descriptive-Nomological Theory): Coherence: The theory must be coherent: i. The axioms must be irreducible; ii. they must be necessary and iii. sufficient to derive all the theorems, in particular all law hypotheses confirmed by observation; iv. the total set must be free of contradictions.

GDN2:Confirmation: The theory must be confirmed: i. At least some of these axioms and theorems are empirically confirmed; ii. if an axiom is not directly confirmed, there must be confirmed theorems that can be derived from it (and perhaps other axioms); if no confirmed theorem can be derived from an axiom alone, but several axioms are needed for this derivation, then this theorem must not follow from the other axioms alone.

GDN3:No falsification: The theory must not be seriously falsified.

II. Optimization conditions of a good theory: In addition to the necessary conditions, there are a number of dimensional optimization conditions that a theory can fulfill to a greater or lesser extent and thus also more or less well. The fact that they are "*optimization conditions*" means: They are not qualitative conditions that can or cannot be fulfilled, but comparative or quantitative conditions, which can therefore be fulfilled to a greater or lesser extent; their fulfillment is not necessary beyond an unspecific minimum, but is more or less good; the further they are fulfilled, the better. These optimization conditions are *dimensional* (mutually orthogonal) in the sense that the degree of fulfillment of one optimization condition is analytically independent of the degree of fulfillment of the other. A theory is better, the more of these optimization conditions it fulfills to a very large extent and the further it fulfills them. Typically, some of these optimization conditions are in competition with each other in such a way that a better fulfillment of the one is often only available at the price of a worse fulfillment of the other. Therefore, to decide between different theories, these theories must be evaluated by balancing them: The degree of fulfillment of the optimization conditions in the individual dimensions is ascertained and the importance of the individual dimensions is determined. The (mathematical) products of the degree of fulfillment and the dimensional importance are then calculated for the various dimensions and then summed up; the result is the desirability of the theory. Such optimization conditions are:

GDN4:Ontological simplicity of the regularities described in the axioms (few regularities; few types of entities; few entities involved in a regularity).

GDN5:Semantic simplicity of the axioms.

GDN6:Scope, i.e., how many phenomena of the phenomenon area of the theory are explained by the theory?

GDN7:Connectivity to other theories in neighbouring fields or disciplines: Is the same terminology used in some cases? Does the theory provide a good basis for other theories and axiom systems?

GDN8:Predictive power, i.e., can the theory not only provide explanations afterwards, but does it also deliver – as many and as accurate as possible – predictions?

The practical justification of the theory: The value and optimality of empirical theories compared to other proposed theories can be justified by means of *practical arguments for the justification of instruments* (for this purpose, the additional technical tools of multidimensional decision theory can also be used). – Within the practical argument, a number of other arguments can be used to prove that or to what extent the conditions for good theories are met: Proof of coherence (GDN1) is provided by *deductive arguments*. For the confirmation of the theorems (GDN2) reference is usually made to the literature; this is in principle a *genesis of knowledge argument*. However, some of the conditions cannot be positively proved to be fulfilled: lack of falsification (GDN3). (One will then make do with the fact that so far no falsification is known.) Ontological (GDN4) and semantic simplicity (GDN5) as well as scope of explanation (GDN6) are determined by counting the elements in question; this is not argumentative; a final *observation statement* is made about it. The ability to connect to other theories (GDN7) is justified by reference to the statements made in this theory and the terms used in it, with a source reference (*genesis of knowledge argument*) and subsequent *deductive argument*. The predictive power of the theory (GDN8) can be proven e.g., by a description of the precise parameters of this theory, reference to the observability of the variables in the antecedents of the corresponding laws and subsequent *deductive argumentation*. – The justification of the definitions and axioms of the theory is done within the overall justification of the theory.

TDN1: Definitions – justification: The formulation of the theory often includes definitions that help to express certain facts more simply, especially more elementary laws. If such definitions are additionally formally correct, their definition and use contributes to the ontological (GDN4) and semantic simplicity of the theory (GDN5). In this sense the definitions are co-justified with the theory as a whole (see TDN5).

TDN2: Axioms – justification: Especially the purely theoretical axioms of theory cannot be confirmed by observation. In theory, they have the role outlined above, namely to contribute to an explanation of the observed by means of more elementary laws and to enable more predictions. It must be possible to derive theorems from the axioms; this was one of the necessary conditions for a good theory (GDN1.ii-iii). If the theory as a whole has been proven to be optimal and thus justified (see TDN5), these axioms are also justified. – In pure observation theories, however, axioms are justified in the same way as observation theorems (see TDN3).

B. The arguments in idealizing-hermeneutic theories

TIH1: Definitions – justification: In argumentation theory, for example, terms such as 'argument', 'valid argument', 'ideal argument', 'fallacy', 'begging the question (*petitio principii*)' are defined. These are all key terms, which are used to describe things that are particularly important for the theory. But here two things must not be confused: (i) the justification of the structure of e.g., an ideal argument and (ii) the justification of the definition of the term 'ideal argument'. The former (i) is the subject of TIH10 (ideal instrument), not of TIH1. If the author develops a definition of the term 'ideal argument', in particular to include all the conditions for such an argument, and then considers why he uses this condition and why he considers that variant to be insufficient, it seems that he is justifying the exact definition. In fact, however, in doing so he justifies why an ideal

argument should look like this and like that (TIH10). The justification for the definition of 'ideal argument', on the other hand, is only pragmatic: It is useful for the formulation of the theory and later for its application to have a term that captures the structure of the ideal instrument in one word. There are many other pragmatic concerns that speak for or against the definition of a new term – if you name the parts, you can define the whole thing more easily later on; frequently occurring errors must also be able to be addressed in a catchy way; too many new definitions are beyond the capacity of memory ... Such pragmatic aspects can be weighed against each other in a *practical argument for justifying instruments*. The optimal solution is finally implemented.

TIH2: Structure description – justification: The structure (with all the details) of the instrument proposed as ideal is justified in TIH10.

TIH3: Reality of the structure – justification: The thesis that the structure or pieces of it already exist is justified in the following way.

1. Existence of the structure: The existence of the structure can be justified as follows: 1.1. A structure itself contained in some text is cited (an example of an argument, an inference, a probability calculus, a linguistic phrase) and documented as genuine by a reference. This is an *observation statement* that is also made verifiable for others. 1.2. Or a structural description from the literature (the description of a political institution, a largely followed moral rule, a common scientific practice, etc.) is quoted and referenced. At least implicitly an *indicatory argument* is presented in addition to the observation statement, according to which the quoted description is an extremely strong indication of the existence of what has been described. 1.3. Or the author describes a structure she has experienced herself, which again is an *observation statement*. In all three cases, an additional *indicatory argument* is needed to justify that the structures thus documented as existing are due to the actions of a subject and thus to intentions – which then forms the basis for the assumptions about the subjective reasons (see TIH6) of this agent.

2. Interpretation of the structure: Occasionally it is not obvious that what is described realizes the structure *S* at all. In such cases it must still be explained and in the most blatant case even justified with *interpretative arguments*: which pieces of the described realize which elements of the structure.

TIH4: Function – justification: The exact description of the function of the instrument can only be justified in connection with the description of its way of functioning. The description of the function specifies for a number of possible relevant inputs which outputs the structure generates from them. To justify this description in detail requires a large amount of prognostic inferences about the many steps from the individual input under the conditions of the structure to the first intermediate step etc. up to the output. The overall argument for the individual function theses, that a certain input into the structure generates a certain output, is accordingly a *complex deductive argument* or *complex probabilistic argument*, which consists of a chain of *elementary deductive or probabilistic arguments* with which the predictions about the individual steps are justified. The individual predictions use strict or statistical empirical laws, especially those established in the descriptive-nomological disciplines of philosophy.

TIH5: Way of functioning – justification: The description of the instrument's way of functioning is usually only a generalised and simplified description of the various steps through which the structure generates the output from the input. It is therefore a summary of the most important steps of the transformation process described in the justifications of the function statements (TIH4).

TIH6: Subjective reasons – justification: If one is lucky as the author of an idealizing hermeneutic theory, one will find statements from the authors of one of the examined examples of the structures dealt with in the theory, why they realized the example object in

the respective form. Such statements are ideal indicators that this reason was actually part of the author's intention. And with an *indicatory argument*, this inference to the author's subjective reasons can be justified. If one has no such information, but has other relevant information about the author, such as her way of thinking, statements on similar objects, one can perhaps also infer from this information and the fact that the author has realized this structure, in an *interpretive argument*, on her subjective reasons for this realization.

TIH7: Hypothetical reasons – justification: Hypothetical reasons for the realization of the structure found are certain advantages and disadvantages that the realization of this structure normally has in this situation or in standard situations (compared to the realization of alternative structures), which therefore would also have been good reasons for the realization. If one knows a miniumum about the situation, one can justify the thesis that certain hypothetical reasons for the realization of the structure existed by means of a *practical argument*, based on the situation information: The practical argument shows that the realization of the structure in this situation was good or even optimal for the author because of these advantages and disadvantages, i.e., their good and bad consequences.

TIH8: Objectivity of reasons – justification: The subjective reasons (from TIH6) belong so far only to the hermeneutical part of the theory. In order to be able to include these reasons in the ideal part of the theory, i.e., to be able to use them as justification for the ideal structure or part of the ideal structure, they must be evaluated as more or less good or important. This judgement is the thesis of a valid *practical argument* for the use of the structure, i.e., for the thesis that the use of this structure was optimal, whereby this argument also contains the examined subjective reasons.

TIH9: Standard output – justification: The thesis on the standard output is: 'The output O_S (from the functions described in TIH4) is the standard output of the instrument *S*, i.e., (i) that output which is objectively most important or at least very important (see TIH8), is often (ii) sought (TIH6), (iii) has been produced in most uses of *S* considered successful, and (iv) is the cause of further, secondary outputs which are less frequently sought'. The thesis therefore actually makes four statements. The justifications for substatements i and ii have already been discussed. Substatements iii and iv can be justified firstly by direct reports on such successes by means of *indicatory arguments* (the report is a strong indicator for what it describes) – for which, of course, such reports must be available – and secondly, with appropriate knowledge of the situation, they can be substantiated by hypothetical *prognostic arguments*, i.e., *deductive or probabilistic arguments*, in which statements on the consequences are substantiated from information on a causative event – starting with the input –, on the situation and on empirical strict or statistical regularities.

TIH10: Ideal Instrument – justification: The central thesis of the theory is an optimality judgement that the structure in question is optimal (or at least very good) among the instruments for the realization of the standard output which have already been realized or which can be constructed from at least partially realized elements of such instruments. Such theses are usually based on *practical arguments for the justification of instruments*. However, other, more primitive *practical arguments for evaluations based on adequacy conditions* can also be used to justify such optimality judgments. This is in particular necessary if the instrument to be justified is the prudential or moral desirability criteria themselves. Finally, the optimality of the instrument can also be understood in moral terms – for example, when justifying moral norms, social institutions or political constitutions. Then, *arguments for welfare-ethical value judgements* can be used to substantiate the optimality thesis. However, all these practical arguments contain a wealth of premises which themselves require justification. A number of such premises concern statements about which structures must be included in the value comparison. These are, for one thing, alternative structures that have already been realised, about which theses analogous to TIH3 are advanced and also justified

in the same way. In the case of ideal structures which were composed just from existing mere partial structures, these alternatives are also various variants of the structure finally selected as ideal which were considered but rejected during construction. The evaluation that this one detail of the variant, which is different from the actually selected structure, would be worse because of this and that consequences, is then already the core of a *practical argument*, which is normally not carried out, but only hinted at, for the comparative thesis that an overall structure with this detail would be worse than the actually selected structure. Another important group of premises of the central practical argument concerns the consequences and implications of using the structure. For one thing, these premises are causal statements, hypothetical predictions that can be substantiated by corresponding *deductive or probabilistic arguments*. For another, they can also be analytical implications of the predicted consequences or implications based on certain social rules, e.g.: 'If the subject *s* has verified conditions 1, 2 and 3 as a consequence of using the instrument, then *s* has verified all necessary and sufficient conditions for the validity of the conclusion'. These statements are also based on deductive arguments, but with analytical statements or formulations of social rules as premises.

C. The arguments in technical-constructive theories

All types of theses of technical-constructive theories are, as already mentioned, also present in idealising-hermeneutical theories – with one exception, the applications of the instrument. Therefore, here only references to the treatment of the argumentative possibilities of justification in idealising-hermeneutic theory need to be provided.

TTC1: Definitions – justification: see TIH1.

TTC2: Standard output – justification: see TIH9.

TTC3: Structure description – justification: see TIH2.

TTC4: Function description – justification: see TIH4.

TTC5: Explanation of the way of function – justification: see TIH5.

TTC6: Practical justification of the standard output – justification: see TIH8.

TTC7: Practical justification of the structure – justification: see TIH10. A change compared to the idealizing-hermeneutical theories is that the comparison refers to any interesting structures, i.e., the limitation of the set of alternatives to already realized structures or structures of which essential elements have already been realized is not applicable. Thus, the proof of such a realization is also dropped.

TTC8: Applications of the instrument – justification: The applications of technical-constructive theories can be very diverse: If the instrument is a criterion, for example a criterion for prudential or moral desirability, for the validity of an argument or a good scientific theory, then the application of the theory mostly consists in the application of this criterion to concrete cases, which are then judged by the criterion. The corresponding arguments at the highest level are then usually *deductive arguments*; however, they can also contain as premises statements that can be substantiated in *practical or probabilistic arguments*. However, the application can also consist, for example, in not applying the criterion itself, but in referring to certain of its characteristics (e.g., for the proof of the relativism of moral commandments, a reference is made to corresponding relativistic components in the general criterion for moral commandments). These *arguments* are *deductive*.

D. The arguments in ontic-practical theories

How the theses of the ontic-practical theories can be justified, especially argumentatively, has already been largely clarified in section 9; however, some elaborations are still missing.

TOP1: Definitions: The definitions required in the theory are pragmatically justified, as in the other types of theory, by means of *practical arguments*.

TOP2: Theoretical unrecognizability – justification: The core of the argumentation for the theoretical unrecognizability of the reality or structure of reality in question is the construction of possible worlds that contain everything we really recognize, but in which this hypothesised (structure of) reality is missing. In the *design instruction* for these possible worlds, it is generally stated which conditions are fulfilled in this world: e.g., everything we have experienced so far is fulfilled in the world, and the physical laws apply; or the course of the world known to us up to this moment is contained in this possible world. Then the *test conditions* for the possible world are introduced: e.g., all persons present in the world who are not identical with the reflecting subject, or a part of them have no mental life; or from the current moment, billiard balls on the billiard table's bands are no longer repelled at the same angle as the angle of incidence, but are reflected in the direction of origin. The possibility of this world is then shown in a *deductive argument*, proving that the design instructions do not logically imply the negation of the test conditions (the inference from the design conditions to the negation of the test conditions is therefore invalid).

TOP3: Suitable set of alternatives – justification: Important conditions for the suitability of the assumed set of possible worlds are the completeness of this set and the mutual exclusion of the individual worlds. The completeness of this set means that the disjunction of these worlds is true ('$w_1 \vee w_2 \vee \ldots \vee w_n$' is true or $P(w_1 \vee w_2 \vee \ldots \vee w_n) = 1$). This can be proved in a *deductive argument* if the possible worlds have been constructed by permutation. (For every single part e_i of one world there is then the counterpart $\neg e_i$ in another world, so that the total set of permutations must be true.) Also the mutual exclusion that two of these worlds cannot be true at the same time (for all non-identical w_i and w_j holds true: '$w_i \& w_j$' is false or $P(w_i \& w_j) = 0$) is very easy to prove in this case by a *deductive argument*.

TOP4: Conditional optimality of as-if behaviour – justification: The conditional optimality of the as-if behaviour is proved by *Pascal arguments*, especially adapted to the needs of ontic-practical theories. Important premises of this argument are the statements about the consequences of the individual alternative actions (in particular: to behave as if p_1 were true). These are again (hypothetical) prognostic statements which can be substantiated by *deductive or probabilistic arguments* on the basis of the nomological statements assumed in the design instructions.

TOP5: Epistemic optimality of as-if behaviour – justification: The thesis of the epistemic *optimality* of the as-if behaviour is in the end simply derived in a *deductive argument* from the other theses of the theory and the Pascalian epistemological principle.

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