

# Reductionism in Fallacy Theory

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ABSTRACT: (1) The aim of the paper is to develop a reduction of fallacy theory, i.e. to "deduce" fallacy theory from a positive theory of argumentation which provides exact criteria for valid and adequate argumentation. Such reductionism has several advantages compared to an unsystematic action, which is quite usual in current fallacy but which at least in part is due to the poor state of positive argumentation theory itself. (2) After defining 'fallacy' (3) some principle ideas and (4) the exact criteria for (argumentatively) valid and adequate arguments of the "practical theory of argumentation" of the author are expounded. These criteria will be used as the positive basis for the following reduction. (5) In the main part of the paper a systematization, definition and explanation of the main types and many subforms of fallacies of argumentative validity and (6) adequacy is developed, following the list of positive conditions of validity and adequacy. In addition to many new types of fallacies, this systematization contains the most important of the traditionally known and named fallacies; these are explained and the criteria for some of them are corrected or put more precisely.

KEY WORDS: fallacies, reduction of fallacy theory, definition of 'fallacy', valid and adequate arguments, systematization of fallacies, practical theory of argumentation, *petitio principii* (begging the question).

## *1. What Does "Reduction of Fallacy Theory" Mean? - The Scope of this Paper*

In contemporary theory of argumentation fallacy theory has become a subdiscipline on its own, rather separated from positive and systematic approaches to establishing criteria for good arguments. This at first glance is a bit strange, and another approach seems to be more natural: First there should be a positive theory of good arguments, among others, providing exact criteria for good arguments; then 'fallacy' should be defined as an argument not complying with these criteria; finally, there should be a systematization and explanation of fallacies in relation to those criteria. And given the historical fact of a wealth of fallacy theory, an additional task should be: to define exactly and to explain the falsity of all traditionally known and scrutinized types of fallacies with respect to the criteria for good arguments (and the justification of such criteria), or to reject their assumed fallaciousness, and to decide open questions in fallacy theory. I call this project the "reduction of fallacy theory". [405|406]

The advantages of such a reduction are rather obvious: The explanation why something is a fallacy is not *ad hoc* but justified by a positive theory of arguments; there are exact criteria for dividing fallacious from correct arguments; a complete systematization of fallacies may be developed; etc.<sup>1</sup> But up to now there are only few attempts at a reduction of fallacy theory. One reason for this is the poor state of positive argumentation theory itself, viz. that there are even fewer

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<sup>1</sup> van Eemeren and Grootendorst list up such advantages - claiming them for their own approach (Eemeren / Grootendorst 1995: 142 f.).

attempts to develop exact criteria for the correctness not only of deductive arguments but of several other types of arguments and arguments in general as well. Even existing endeavours to reduce fallacy theory suffer from this disease, e.g. the pragma-dialectical approach.<sup>2</sup>

I have developed such a positive theory of arguments, the "practical theory of arguments", which provides exact criteria for the correctness of several types of arguments and for arguments in general and which gives epistemological reasons for these criteria.<sup>3</sup> In what follows I shall sketch a reduction of fallacy theory on the basis of the practical theory of arguments.

## 2. *What are Fallacies? - A Definition of 'Fallacy'*

What do I mean by "fallacy"? A rather common and, I think, completely right idea in current fallacy theory is that logically invalid arguments are not the only type of fallacy and that there are informal fallacies as well. But some important theorists now extend the expression "fallacy" to false moves in discursive dialogical argumentation (e.g. Eemeren / Grootendorst 1995: 136; Walton 1991: 224). Some reasons they offer for this are: Otherwise the purpose of argumentation could not be taken into account (Eemeren / Grootendorst 1995: 133 f.; Walton 1995: 232); only this would make it possible to treat the pragmatic aspects of arguments and fallacies (Walton 1991: 224). But this is not true: Purposes and pragmatics exist already on the level of monological argumentation when an arguer, e.g. in a book, presents an argument to an addressee for convincing him. In spite of that prominent account in fallacy theory I use the term "fallacy" exclusively for incorrect arguments or incorrect use of arguments, with "argument" meaning something that consists of a thesis, an indicator of argument and further judgements describing grounds for the thesis; the latter judgements I name "reasons (for the thesis)". False dialogical moves I call "incorrect debating"; one big subclass of incorrect debating consists of fallacies. I shall restrict my analysis to fallacies in the expounded sense - not denying that we need a theory of correct and incorrect debating too. Theories of correct or incorrect debating presuppose theories of correct argumentation and of fallacies. But these theories instead can be developed independently of those theories; and not all fallacies are forms of incorrect debating, e.g. fallacies in books often are not because they are not part of a debate. [406|407]

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<sup>2</sup> So one main weakness of the pragma-dialectical approach to fallacy theory is its reliance on rather unclear, vague and open rules for the argumentation stage of critical discussion, e.g. if it is said that only "appropriate argumentation schemes" may be used (Eemeren / Grootendorst 1995: 136), which then are cursorily explained (Eemeren / Grootendorst 1992: 96 f.) without giving even a hint to criteria for their correctness. This lack of clear criteria, surely, is due to van Eemeren's and Grootendorst's swinging between a consensus theory of argumentation (cf. e.g. Eemeren / Grootendorst 1984: 163 f., Rule 7; Eemeren / Grootendorst 1992: 166) and elements of and allusions to a more objective, epistemic view of correct arguments (e.g. Eemeren / Grootendorst 1992: 164). - For a critique from an epistemic point of view see: Siegel / Biro 1995: 290-294.

<sup>3</sup> The general theory is developed in: Lumer 1990a. An English description of some main ideas is: Lumer 1991; a German analogue is: Lumer 1990b. Lumer 1992 and Lumer 1995 are extensions and applications of the general theory to further special types of arguments. Lumer 1988 treats the application of the theory in a theory of dialogical argumentation.

A good starting point for defining "fallacy" is Johnson's definition: "A fallacy is [1.] an *argument* [2.] that violates one of the criteria / standards of good argument and [3.] that occurs with sufficient frequency in discourse to warrant being baptized" (Johnson 1995: 116).<sup>4</sup> My main concern about Johnson's definition is that it does not encompass fallacies consisting of an inadequate use of perhaps good arguments, e.g. presenting an argument with true premises which the addressee does not know to be true. (One might object to this criticism that in such cases the fault lies in the addressee and not in the argumentation so that there is no fallacy. But this would lead to demand omniscience from addressees before there could be an inadequate use of an argument. Addressees are as ignorant as they are; and the arguer has to take that into consideration if he wants to rationally convince them. From the point of view of reaching this aim, it is a fault of the arguer not to take into account the limitation of the addressees' background knowledge - in particular if the arguer knows about this limitation. More generally, the fault consists in using a perhaps good argument in the wrong situation.) For enclosing such fallacies of inadequate use we must define 'fallacy' as a two-adic notion with the situation (consisting of an addressee and the time) being the second variable and introduce a further disjunctive condition that the argument in this situation does not fulfil its standard function. But what is a good argument if not an argument that at least in one situation can fulfil the standard function of arguments? But if the argument cannot fulfil the standard function in any situation, neither can it do so in the specified situation. So if we have introduced the disjunctive condition the original condition [2], that the argument must be a good one, is already implied and thus superfluous. - A minor concern with Johnson's definition is that the frequency of a type of incorrectness should not determine if some sort of incorrectness is a fallacy or not; such a type of incorrectness may be so stupid and wrong that it is very rare - but nonetheless fallacious. Frequency considerations are reasonable when deciding if a particular subtype (out of the infinite number of possible subtypes of fallacies) should be given a special *name* (cf. below) but not for a general definition of 'fallacy'. Therefore I drop Johnson's condition [3]. The resulting definition then is:

$x$  is a *fallacy* in situation  $l$  (consisting of an addressee  $h$  and the time  $t$ ) iff 1.  $x$  is an argument and 2.  $x$  in  $l$  does not fulfil the standard function of arguments.

Condition 1 of this definition of 'fallacy' requires that for a fallacy to exist there must at least be an argument  $x$ , which may be a good one or not. Condition 2 then specifies what is wrong: (the use of)  $x$  in  $l$  does not fulfil the standard function of arguments. This may occur in two ways: 1.  $x$  does not fulfil the standard function in  $l$  and does not do so in any situation because  $x$  is argumentatively invalid, i.e. logically invalid, not sound etc. (see below). Such fallacies I call "fallacies of (argumentative) [407|408] validity".<sup>5</sup> 2.  $x$  does not fulfil the standard function of

<sup>4</sup> Johnson's definition is much better than e.g. Hamblin's that "a fallacy is an argument which appears to be valid but is not" (Hamblin 1970: 12): 1. Hamblin's definition seems to unduly restrict fallacies to formal fallacies. 2. An argument already is a correct argument or something that someone believes or claims to be a correct argument; therefore the condition that the fallacy appears to be valid is superfluous.

<sup>5</sup> Some theorists think that fallacies of argumentative validity are the only type of fallacies. Above I have argued that this is not true. But one could regard such fallacies as fallacies in a narrow sense and other fallacies as fallacies in a broader sense.

arguments in  $l$  but there is at least one other situation  $l_d$  where it does or would do, which means that the argument  $x$  as such is not bad (it is argumentatively valid) but only inadequately used in  $l$ . Such fallacies I call "fallacies of adequacy".

### 3. *Positive Theory of Arguments - A Rush through the Practical Theory of Arguments*

The definition of 'fallacy' which I have just developed is neutral with respect to different positive theories of argumentation in that it does not specify what the standard function of arguments is. This specification must be provided by a positive theory of arguments. This is not the place for developing and defending such a theory. Instead I shall rely on my own practical theory of arguments and sketch some of its main features.

According to the practical theory of arguments, the standard function of arguments is to rationally convince an addressee. And to "rationally convince" means leading the addressee to get the knowledge that the thesis of the argument is acceptable, i.e. true, probable or verisimilar (in the sense of "being near to truth"). This leading works in such a manner that verbal material is presented to the addressee which he can examine; and if he has examined this material with a positive result he has acquired the intended knowledge. The material which he has to examine, of course, are the explicit and implicit reasons of the arguments, and the examination consists of checking if these reasons are true. In good argumentation these reasons are chosen in a way that the addressee can immediately check their truth: He already knows that they are true, and he must only remember this; or they are analytically true, and he can immediately recognize this; or they are of a sort that he believes the arguer that they are true.

But why does recognizing the truth of the reasons of correct arguments amount to recognizing the acceptability of the thesis? This is guaranteed by the fact that such arguments are based on *epistemological principles*, e.g. the deductive epistemological principle: 'A proposition is true if it is logically implied by true propositions'; or the genesis of knowledge principle: 'A proposition is true if it has been verified correctly'; or the interpretative epistemological principle: 'A proposition is true if it is part of the only possible explanation of a known fact' etc. So epistemological principles are general propositions that propositions are true under certain conditions. There are efficient epistemological principles which when applied really guarantee the acceptability of the thesis; and there are inefficient epistemological principles. It is a task of epistemology to examine and prove the efficiency of epistemological principles; such proofs are ultimately based on the truth definitions of propositions. Of course, good arguments are based only on efficient epistemological principles. And the [408|409] various types of arguments differ in on what epistemological principle they are based: Deductive arguments are based on the deductive epistemological principle; genesis of knowledge arguments (like arguments from authority) are based on the genesis of knowledge principle, etc.

Epistemological principles are *general* criteria for the acceptability of propositions. For their application in an argument they have to be concretized for the specific thesis, i.e. their variables

have to be filled in. If you want to argue deductively for the thesis that Socrates is mortal one concretization of the deductive principle of knowledge (that a proposition is true if it is logically implied by true propositions) might be this: "That Socrates is mortal' is true if 1. 'that Socrates is mortal' is logically implied by 'all human beings are mortal' and 'Socrates is a human being' and 2. if the latter two propositions are true.' I call such concretizations of principles of knowledge "criteria of acceptability". The art of good arguing consists of finding such criteria of acceptability for a given thesis the conditions of which are fulfilled and which the addressee knows are fulfilled. An ideal argument then consists of the thesis, an indicator of argument and reasons in which the several conditions of such a criterion of acceptability are judged to be fulfilled. The ideal version of our example then would be: 'Socrates is mortal, because 1.1. all human beings are mortal, 1.2. Socrates is a human being, and 2. because these two propositions logically imply that Socrates is mortal.' The two premisses 1.1 and 1.2 are material reasons, and the last judgement is a formal reason. Of course, most arguments are not that ideal; the formal reason and even material reasons are omitted. But this is not problematic if enough reasons are left over for reconstructing the ideal version.

The process of acquiring knowledge guided by an argument then ideally works in this way: The addressee understands the judgements functioning as reasons and recognizes the underlying principle of knowledge by means of the indicator of argument or with help of other hints. The argument then gives him the criterion of acceptability which the arguer has in mind, or at least gives him so many parts of this criterion that the addressee could reconstruct the complete criterion. The addressee now has to verify if this criterion of acceptability really is a concretization of the principle. Then he has to check if all the conditions of the criterion of acceptability are fulfilled, i.e. if the reasons are acceptable. An argument is suitably chosen for rationally convincing the addressee only if he can immediately check the truth of the reasons. If the results of all these checks are positive he knows the thesis to be acceptable.

According to this analysis, arguments are instruments for rationally convincing by being guides for the acquisition of knowledge. Instruments have to fulfil their standard function; or more precisely: They must be *functioning*, i.e. they must be able to fulfil their standard function in at least one (specifiable) situation of application; otherwise they are not instruments in the narrow sense but only in the wide sense that someone [409|410] believes them to be instruments in the narrow sense. But even a functioning instrument is not apt to fulfil its standard function in every situation; it may be *inadequate* in this situation. All this is true for arguments as well. A functioning argument, i.e. an argument which can fulfil the standard function of arguments in at least one situation, I call "(argumentatively) valid". Argumentative validity is different from logical validity. In deductive arguments argumentative validity includes logical validity but it also includes the truth of the premises and more. In non-deductive arguments argumentative validity does not include logical validity. 'Argumentatively valid' is a one-adic notion: Arguments are valid or they are not. 'Adequate' instead is a three-adic notion: 'Instrument  $x$  is adequate in a situation  $l$  for fulfilling the function  $f$ .' But if I speak about the adequacy of arguments I often omit the third variable, presupposing that the standard function of arguments is meant, i.e. to convince rationally. A valid

argument may be adequate in one situation but inadequate in another, e.g. if the addressee does not know the reasons to be acceptable. But, according to what I have said about the functioning of instruments, valid arguments must be adequate in at least one situation; this requirement I call "adequacy in principle". Circular arguments are not adequate in principle and therefore not valid: Nobody could be rationally convinced by such arguments: Either he has not yet accepted the thesis, then he has not accepted one reason of the argument yet, so that he cannot immediately check if all the conditions of the criterion of acceptability are fulfilled; or he has already accepted the thesis, and then he cannot be convinced of it by the argument.

#### 4. The General Criteria for the Validity and Adequacy of Arguments

The exposition given so far should suffice for understanding the following definitions of 'valid argument' and 'argument' in general and the adequacy criterion for arguments. The definition of 'valid argument' and the adequacy criterion are the positive criteria on the basis of which the single types of fallacies will be defined.

*x* is a valid argument, i.e. an argument in the narrow sense :=

A0: *Domain of definition*: *x* is a triple  $\langle p^\circ, i, q \rangle$ , consisting of

A0.1: a set  $p^\circ$  of judgments  $a_1, a_2, \dots, a_n$ ,

A0.2: an indicator *i* of argument, and

A0.3: a judgment *q*;

$a_1, \dots, a_n$  (the elements of  $p^\circ$ ) are called the "reasons for *q*" and *q* is called "the thesis of *x*".

A1: *Indicator of argument*: *i* indicates that *x* is an argument, that  $a_1, a_2, \dots, a_n$  are the reasons and that *q* is the thesis of *x*; in addition *i* can [410411] indicate the type of argument, i.e. the epistemological principle the argument is based on.

A2: *Guarantee of acceptability*: There is an epistemological principle *e* and a criterion *c* for the acceptability which fulfil the following conditions:

A2.1: *Efficient (epistemological) principle*: the epistemological principle *e* is efficient; and

A2.2: *Concretization (of the principle)*: the criterion *c* is a concretization of the principle *e* for the thesis *q*, and the reasons  $a_1, a_2, \dots, a_n$  are judgments claiming of at least a part of the conditions of *c* that they are fulfilled; and

A2.3: *True reasons*: all conditions of *c* are fulfilled.

A3: *Adequacy in principle*: *x* fulfils the standard function of arguments; i.e.: there is a subject *s* and a time *t* for which holds:

A3.1: the subject *s* at the time *t* is linguistically competent, open-minded, discriminating and does not know a sufficiently strong justification for the thesis *q*; and

A3.2: if at *t* *x* is presented to *s* and *s* closely follows this presentation this will make *s* know that the thesis *q* is acceptable; this process of cognition will work as follows: *s*, using *e* and *c*, will recheck - among others - those conditions for the acceptability of the thesis *q* which are claimed to be fulfilled in  $a_1, a_2, \dots, a_n$ , thereby coming to a positive result.

*x* is an argument (in the broad sense) :=

A4.0: *Domain of definition*: The domain of definition is the same as that of valid arguments.

A4.1: *Valid argument*: *x* is a valid argumentation, or

A4.2: *Seemingly valid argument*: there is a person *s* and a moment *t* with *s* at *t* believing or (explicitly or implicitly) holding the view that *x* is a valid argument.

A valid argument *x* is adequate for rationally convincing an addressee *h* (hearer) at *t* of the thesis (*q*) of *x* iff condition A5 holds:

A5: *Situational adequacy*:

A5.1: *Rationality of the addressee*: The addressee *h* (at *t*) is linguistically competent, open-minded, discriminating and does not know a sufficiently strong justification for the thesis *q*. And

A5.2: *Argumentative knowledge (of the addressee)*: A5.2.1: The addressee *h* at *t* knows at least implicitly the underlying epistemological principle *e* of the argument *x*; and A5.2.2: at *t* he (*h*) is able to develop the criterion *c* of acceptability (which is intimated in *x*) by means of his knowledge of the principle *e* if all the reasons of an ideal version of *x* are presented to him. And [411|412]

A5.3: *Acceptance of the reasons*: The addressee *h* at *t* knows that the propositions  $p_1, \dots, p_m$  are true, with  $p_1, \dots, p_m$  being the conjuncts of the antecedent of the criterion *c* of acceptability (intimated in *x*). And

A5.4: *Explicitness*: If in the reasons of *x* not all conditions of the criterion *c* of acceptability (intimated in *x*) are claimed to be fulfilled the addressee *h* at *t* is able to add the most important conditions of acceptability.

A5.5: *Sufficient argumentative power*: A5.5.1: The criterion *c* of acceptability (intimated in *x*) together with the subjective probabilities of the addressee (*h* at *t*) that the conditions of *c* are fulfilled provide a sufficiently high degree of probability of the thesis (*q* of *x*) - sufficiently high according to the desires of the addressee (*h* at *t*); and A5.5.2: in case of a nonmonotonic argument the database of the addressee *h* at *t* does not contain relevant knowledge which is not enclosed in the database presumed by the argument.

## 5. Fallacies of (Argumentative) Validity

The criteria presented in the last section provide the standards the violation of which leads to fallacies. This means all fallacies are and can be characterized as being violations of at least one of the specified conditions. And the easiest (and perhaps the only) way for arriving at a complete taxonomy of fallacies is to define main groups of fallacies the elements of which violate one of the general conditions for the validity or adequacy of arguments. Then more subgroups or more specific fallacies can be defined following the pattern of *genus proximum* and *differentia specifica* where the *genus proximum* always is a fallacy of the main group. Logically there is no limitation in inventing more and more fine grained types of fallacies. Pragmatically one should define and invent

names for special types of fallacies only if their extension is broad enough<sup>6</sup> or if it explains what type of error the fallacy stems from. Doing this one must not look for a further form of (non-trivial) completeness because completeness is already reached on the level of the main groups. Unfortunately, there is no traditional name for any of the main types of fallacies. So please excuse me for having invented names for them; but these names lean on the names for the conditions just outlined. Astonishingly, even for many of the second order types of fallacies we have no traditional names.

Some of the traditionally known fallacies can only be defined in a way that their *differentia specifica* refers to conditions of the validity or adequacy of specific types of arguments, such as deductive or genesis of knowledge arguments. One such type-specific fallacy is the *non sequitur* which can occur only in deductive arguments. Defining these type-specific fallacies exactly, requires reference to the positive conditions of the appertaining type of argument. Here there is not enough room to specify these conditions; [412|413] therefore, the description of these type-specific fallacies will often be rather sketchy.

But before discussing the single types of fallacies I would like to mention some moves or arguments which according to some theories are treated as "fallacies" but which according to my definition are not. *Argumenta ad baculum* or a simple *ad hominem* attack (which I distinguish from an *argumentum ad hominem*, cf. below) normally do not even look like arguments; there is no indicator of argument saying that because of a threat or negative properties of an opponent a thesis is true. They are types of incorrect debating. The *dialogical tu quoque*, that an opponent points out the fact that the proponent is acting against his own advice or claiming something which he has earlier denied, is a dialogical move too and, therefore, not an argument; but it is a quite legitimate move which should be understood as a request to the proponent to clear up this contradiction. (Later on I shall discuss an argumentative *tu quoque*, which is a fallacy.) Finally, *argumenta ad verecundiam* or *ad misericordiam* are arguments but *as such* are not fallacies, though certain forms of them are fallacies.

According to the two types of requirements for good arguing we must distinguish between fallacies of validity, which affect the argument as such and in any situation in which it is used, and fallacies of adequacy, which only can be attributed to the use of an argument in a given situation. The zero-condition for a valid argument (A0) requires that valid arguments must belong to a certain domain of definition. But this condition holds for invalid arguments as well. Because, according to my definition of 'fallacy', a fallacy must at least be an argument (used in a particular situation), there is no fallacy consisting of a violation of condition A0. According to condition A4.0, even invalid arguments consist of *judgements*, i.e. meanings of declarative utterances, (and an indicator of argument) and not of utterances or sentences themselves. That means before arriving at the argument much work of interpretation already may have been done; and a given sequence of utterances may be interpreted in two or more ways, thus providing two or more arguments. Such *\*unclarity of meaning* (with its many subforms like *equivocation*, *vagueness*, etc.) by itself would

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<sup>6</sup> Cf. above, the discussion in section 2, where frequency considerations were rejected for the general definition of 'fallacy' but found to be reasonable for naming single types of fallacies.



not be a fallacy but a semantic error, situated on a level already before the level of meaning on which arguments are located; the resulting arguments however may be fallacious. So later on we shall get to know the *fallacy* of ambiguity, which consists not of the ambiguity itself but of some other distortion resulting from the ambiguity of the utterances used to express the argument.

*F1: False indicator:* The indicator of argument *defines* which judgement is the thesis and which judgements are the reasons for it. Thus, there is not much room for fallaciousness. But an indicator may be false in specifying a different epistemological principle than the argument is actually relying on, e.g. if in a non-deductive argument 'from this follows' is used.- Sometimes in a sequence of utterances meant to give an argument we find two or more expressions functioning as indicators of argument; and they [413|414] may define different judgements as thesis or different sets of judgements as the reasons. According to my definition, arguments contain only one indicator. Therefore, in such a case the utterances contain two different arguments, with one of them perhaps being a fallacy. But the fact that the utterances can be interpreted in two rather different ways by itself is not a fallacy but an instance of unclarity of meaning.

*F2.1: Error of (epistemological) principle:* One major class of fallacies consists of arguments relying on no epistemological principle at all (F2.1.1: lack of principle) or on an epistemological principle which is not suitable as a basis for rational justification. The latter may occur in two ways: The principle appealed to is not efficient (F2.1.2: inefficient principle), or the arguer is alluding to an efficient principle but does not know it exactly and that is why his argument is grossly impaired (F2.1.3: distorted principle). Often it will not be clear to which of these subclasses a given argument belongs: The argument may be so confused that it is difficult to say if the arguer had no principle at all in mind, not even vaguely, or if he was relying on a confused principle; and if he had some form of principle in mind this must not have been a clear one. In such cases the argument itself often does not help very much to answer these questions. Lack of principle is not very interesting theoretically.

*F2.1.2: Inefficient (epistemological) principle:* Inefficient principles e.g. are: 1. 'If  $x$  and  $y$  are analogous with respect to  $F_1, \dots, F_n$  they are also analogous with respect to  $F_{n+1}$ .' That two things are analogous in certain respects is only a *heuristic* that they are analogous in further respects, but no proof.<sup>7</sup> 2. 'If an event  $e$  has very negative consequences then it cannot happen.' 3.

<sup>7</sup> Against this treatment of arguments from analogy one might object that there could be a weaker principle of analogy which would serve as a basis for valid arguments from analogy. Such a principle must be efficient, it should specify the degree of reliability it confers on the theses, and it should have only rather weak and formal restrictions, e.g. 'If  $x$  and  $y$  are analogous with respect to  $F_1, \dots, F_n$  and condition  $c$  holds then the probability that they are also analogous with respect to any further  $F_{n+1}$  is higher than 0.7.' Of course,  $c$  may be a rather strong and restricting condition so that the principle may already have been proven or confirmed empirically and may be empirically true. But in this case the principle is an empirical truth, e.g. a statistical law, and the argument is reduced to a normal probabilistic argument with a statistical premise. For being an epistemological principle  $c$  must be a rather weak and formal condition. But with respect to this case I suspect that there is no such efficient principle of analogy because the objects of our world are too different for such a principle to hold. Arbitrary objects analogous in some respects in general are (very) disanalogous in many other respects so that a rather general principle of analogy would be violated. Perhaps my suspicion will turn out to be wrong. But until now we do not know such a principle. Therefore, until today we have no efficient

'If an opponent  $s$  holds that  $p$  but earlier has held that not  $p$  then not  $p$  is true.' Arguments based on these epistemological principles are fallacies and are called: 1. "argument from analogy", 2. "argumentum ad consequentiam", 3. "tu quoque-argument", respectively.

*F2.1.3: Distorted (epistemological) principle:* The standard case of the fallacy of distorted principle is not that the arguer has a specific principle in mind but that he has only some vague idea of how one could argue; and this idea gets some backing from its resemblance to an efficient principle. Most often important parts, which would be necessary for the validity of the argument, are lacking; this type of the fallacy of distorted principle could be called "grossly insufficient evidence". For example a practical argument pleading for a certain alternative may contain reasons which could only prove that this alternative has positive value; i.e. the comparison to other, perhaps better alternatives is completely missing. (A good name for this fallacy would be: "good, hence optimum".) Or in an interpretative argument the fact that a set of hypotheses would explain some known fact is already taken as a proof that these hypotheses are true; i.e. the comparison with other possible explanations and the consideration of their probabilities is missing. The fallacies just described have no traditional names (though the last one in modern psychological literature is called [414/415] the "baseline fallacy"); but there are some types of arguments from distorted principles with conventional names. For some of them one can construct the distorted epistemological principles they seem to appeal to: The argumentum ad hominem seems to rely on the principle: 'If subject  $s$  is not reliable or a bad person and  $s$  holds that  $p$  then  $p$  is false.' Here one can find elements of a (negative) genesis of knowledge principle.<sup>8</sup> The fallacious argumentum ad ignorantiam, which simply appeals to the principle: 'If it is not known / proved / ... that not  $p$ , then  $p$ ;', is a case of grossly insufficient evidence again in the domain of genesis of knowledge arguments. The emotional argumentum ad personam or appeal to emotion seems to reason from the principle: 'If somebody  $s$  desires / appreciates that  $p$  and  $q$  would imply or make it more probable that  $p$  then it would be optimum for  $s$  to make efforts that  $q$ .' This would be a distorted version of a practical principle. (Better alternatives are neglected as well as other aspects of bringing about  $q$ .) Another type of practical argument with grossly insufficient evidence is the narrowing argumentum ad misericordiam which unduly ignores other relevant aspects of the considered alternative. And hasty generalization is a form of grossly insufficient evidence in the domain of generalizing arguments.

*F2.2: False concretization:* Concretizing a principle of knowledge means to fill in its variables with singular terms in such a way that the same variables must be substituted by the same singular terms; and this may go wrong. There are three main classes of such false concretization: 1. F2.2.1: Insufficient evidence: At least one reason which, according to a correct concretization, must

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foundation for arguments from analogy, and principles of analogy already in use are not efficient so that arguments relying on them are not valid.

<sup>8</sup> There are arguments claiming that a certain argument of the genesis of knowledge type for the thesis  $p$  is bad because the informant is not reliable. The thesis now is that the *argument* for  $p$  is bad (and not that  $p$  is false). This indeed is an argument, and it may be valid and adequate. But this is not what normally is meant by "argumentum ad hominem". It could be called "argumentum ad testem", i.e. argument to the witness.

be part of the argument is missing. In a deductive argument this occurs in the form that one premise which, according to the judgement on the logical implication, is necessary is not contained by the argument: ' $p_1 \& \dots \& p_n \Rightarrow q$ ;  $p_1$ ; ...;  $p_{n-1}$ ; therefore,  $q$ .' Insufficient evidence is different from enthymematic argument: The missing reason, according to the rules of enthymematic argument, may not be omitted. But because in valid deductive arguments the judgement on the logical implication may be dropped we often cannot decide if the argument is a case of insufficient evidence, false reason or *non sequitur*. In non-deductive arguments there are fewer problems of differentiation. 2. F2.2.2: *Ignoratio elenchi*: The reasons are reasons for a different thesis than that of the argument. In the deductive case we have an argument of the form: ' $p_1 \& \dots \& p_n \Rightarrow q$ ;  $p_1$ ; ...;  $p_n$ ; therefore,  $r$ .' Subtypes of the *ignoratio elenchi* are the straw man fallacy (the thesis of the argument is that a certain claim or theory is false; but what is actually criticized is a different claim or theory) and fallacious ambiguity of the thesis with its subforms fallacious equivocation and fallacious amphiboly (i.e. the *ignoratio* results from the fact that the expression of the thesis has two meanings, one actually being the thesis and the other being argued for). F2.2.3: Missing fit: One intension which, according to the epistemological principle, should be held identical in two places in the reasons of the argument actually is exchanged. [415|416] The deductive version of missing fit looks like this: ' $p_1 \& \dots \& p_n \Rightarrow q$ ;  $p_1$ ; ...;  $p_{n-1}$ ;  $r$ ; therefore,  $q$ .' In the deductive argument the intensions which are exchanged, against the principle, are complete propositions; in other arguments these may be only parts of propositions, e.g. numbers in practical or probabilistic arguments. A subtype of missing fit is fallacious ambiguity of the reasons (or more exactly: ambiguity of the expressions of the reasons or missing fit from ambiguity), again with the subforms of fallacious equivocation and fallacious amphiboly of the reasons; in this case the missing fit stems from the fact that some expression for the reasons has two meanings; one meaning occurs in one part of the argument, the other meaning in another part, though it should be the same meaning.

F2.3: *False reason*: The reasons of an ideal argument are judgements that the propositions  $p_1$ , ...,  $p_n$  are true where  $p_1$ , ...,  $p_n$  are all the conditions of a criterion of acceptability for the thesis. If one of these reasons actually is not true the argument cannot support the thesis. A traditionally known fallacy which is a subtype of the fallacy of false reason is a certain form of the *argumentum ad populum* which I call "emotional argumentum ad populum": The reason is false but popular and is already accepted by the addressee. Another subtype of this kind is the descriptive argumentum ad personam: The reason is false, and the arguer knows it, but the addressee accepts the reason. These two types of fallacies do not refer to any specific type of reason; other subtypes of false reason however do. The reasons which can be part of an argument are quite heterogeneous. But a good first distinction is that between formal and material reasons: Formal reasons should be analytically true and they judge the structural conditions of the criterion of acceptability to be fulfilled. Material reasons, on the other hand, refer to the more contingent parts of the criterion of acceptability. The formal reason of a deductive argument is the judgement that the premises logically imply the thesis; of course, this formal reason usually is omitted. The material reasons in a deductive argument are the single premises, including the implicit premises. The deductive version of the fallacy of false *formal* reason then is the non sequitur (with many subforms like affirming the consequent or

denying the antecedent); and the deductive version of the fallacy of false *material* reason is the fallacy which could be named "false premise"; one special case of such a false premise is *post hoc ergo propter hoc*. Non-deductive arguments have a more complex structure than deductive. Therefore for the non-deductive arguments we have many more (type-specific) subtypes of the fallacy of false reason, though there are only a few traditional names for them: e.g. appeal to false authority, which occurs in genesis of knowledge arguments and means that the (implicit) material reason that the witness being the source of the thesis is an expert in this field is false. A special case of appeal to false authority is the form of the *argumentum ad populum* which I call "winning argumentum ad populum": The argument tries to win a not-yet-convinced addressee to support the thesis by pointing out the popularity of the thesis; i.e. the *populus* [416|417] is taken as an authority. A rather frequent subform of the appeal to false authority which has no traditional name is the appeal to holy scriptures, e.g. the Bible: 'p is true because this is written in the Bible, book x, verse y.' In this case the authors of such texts are taken to have supernatural knowledge by divine inspiration, which is no guarantee for being an expert according to current scientific standards.

*F3: Fundamental inadequacy*: "Fundamental inadequacy" means that an argument, though it may fulfil all the other validity conditions, is not apt to lead anybody in the standard way to a new and rational conviction. Of course, the most prominent type of fundamental inadequacy is circular reasoning, one necessary reason - this may be an implicit reason - of the argument being identical with the thesis. Often circular reasoning is identified with the *petitio principii* or begging the question. But I would like to distinguish a strict petitio, which is identical with an explicit circularity and which is a fallacy of validity, from the soft *petitio*, which is a fallacy of adequacy and will be treated below. I had introduced the requirement of non-circularity with instrumental reasons: If an argument is circular there is no situation where it could be used as an instrument for rationally convincing somebody of the thesis who is not already convinced (s. above and Lumer 1990: 55 f.; 68-70). A criterion for the strict deductive *petitio* exactly on this line has been formulated by Jacqueline and interpreted and defended by McGrath: A deductive "argument begs the question if it contains a premise which it is not possible to be justified in believing unless one is also justified in believing in the conclusion" (McGrath 1995: 351; cf. Jacqueline 1993: 322). This criterion leaves open if there are instances of the strict *petitio* different from formal circularity. But I conjecture that there are not: If the suspicious reason is different but quite similar to the thesis and even if it seems too natural to justify the reason starting from the thesis and not vice versa, e.g. in the case of '*p&q*' being the reason and '*p*' being the thesis, one might have arrived at the reason in a justified but unusual way, e.g. by an argument from authority, which does not take the route via the thesis.<sup>9</sup> But apart from circular reasoning there are other forms of fundamental inadequacy:

<sup>9</sup> Walton holds that not all forms of circular reasoning are fallacious; and he defends this view with several examples. But, I think, none of these examples is correct: 1. In the case of the economist (Walton 1995: 233 f.; Walton 1985: 263), if he really wants to defend his factual claim that people are leaving the state by pointing to the poor economy, i.e. if his turn really shall be an argument, then it is fallacious. This does not preclude that the same sequence of sentences is a valid *explanation*. 2. In case of only proving the equivalence of *A* and *B* by proving that *A* implies *B* and vice versa (Walton 1995: 234; Walton 1985: 263) one does not use *A* as a reason, one does not affirm *A* to be true even if one uses the formula "suppose *A* to be true". The reasons in

absolute shortness, i.e. the argument does not provide enough information for putting an experienced addressee in a position to unproblematically, i.e. using standard techniques of interpretation, complete the argument to an ideal argument. There is a difference between only *inspiring* an intelligent addressee to find the complete argument and providing him with sufficient information for constructing the complete version according to standard rules of interpretation. Only the latter form of argument is valid. The opposite of absolute shortness is redundancy: The argument contains superfluous reasons which do not contribute to the validity of the argument (the argument may be valid without them) and which are ignored when scrutinizing the thesis in the standard way, e.g. 'As premises I take all the things you know; from this follows  $p$ ; therefore  $p$ .' If two arguments for the same thesis are presented this is no [417|418] redundancy in the sense just defined. Moreover redundancy is different from something which may be called "talkativeness", i.e. the argument is surrounded by much irrelevant text so that the argument is difficult to be identified; but in practice talkativeness and redundancy often are hard to be distinguished. Talkativeness is a problem already on the semantic level (a problem of identifying the parts of the argument) and, therefore, no fallacy. Redundancy in the sense just defined instead refers to clearly identified arguments and is a fallacy because the superfluous reason is not used for recognizing the truth of the thesis (as required in A3.2) though it is alledged to be relevant for this aim; thus it may confuse the addressee. Or more generally, the superfluous reason is not functional and often even dysfunctional. Another form of fundamental inadequacy is disarray: Ideal arguments may contain very different forms of reasons and closed subsets of reasons which should be arranged in a connected way. Otherwise the addressee cannot be guided by the argument in recognizing the acceptability of the thesis.

## 6. Fallacies of Adequacy

*F5.1: False rationality*: Arguments are instruments for rationally convincing people. But if an addressee in the specific situation is not rational in the specified sense of A5.1 (i.e. not linguistically competent, which includes the ability to infer logically, not open-minded, not discriminating or does already know a sufficiently strong justification for the thesis), then it is useless to present an argument to him with the aim of convincing him.

*F5.2: Excessive (argumentative) demand*: A similar form of inadequacy is excessive argumentative demand: The addressee does not know the underlying epistemological principle, or the argument is too difficult for him to follow.

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such arguments instead are judgements on implications, e.g.: ' $A \rightarrow C_1$ ;  $C_1 \rightarrow C_2$ ; ...;  $C_n \rightarrow B$ ; therefore,  $A \rightarrow B$ ' etc. So in this case there is no circularity. 3. If we have independent reasons for  $R$  and then additionally want to defend  $R$  in a circular way (Walton 1995: 236), this second argument is fallacious; it gives no further evidence for  $R$  and cannot raise its probability. - But Walton is right in claiming that the same argument may beg the question in one situation but not in another. This may occur in cases of the soft *petitio*, which is a fallacy of adequacy (cf. below).

*F5.3: Unaccepted reason:* Adequate use of arguments for rationally convincing presupposes that the addressee already knows the reasons of the ideal version of the argument to be true; "already" here shall include an acquisition of that knowledge in the moment of arguing. The knowledge must rely on some sort of justification, but this justification may be rather weak. If the reasons, e.g., report only facts rather simple to verify the addressee may accept them because they are claimed by the arguer and because he trusts the arguer in this respect. If the addressee does not know one necessary (implicit or explicit) reason to be true even in this weak form then I speak of an "unaccepted reason", which is a fallacy of adequacy. The most prominent subtype of unaccepted reason is the *soft petitio principii*. Walton is right in arguing (with the help of a good example) that the same argument may be a *petitio* in one situation but not in another (cf. Walton 1995: 230-233; Walton 1991: 274) - but this is true only of the soft *petitio*. And it is difficult to spell out the conditions of a soft [418|419] *petitio*.<sup>10</sup> I do it this way: An argument  $x$  with the thesis  $q$  is a soft *petitio principii* in the situation  $l$  iff 1.  $x$  contains an unaccepted reason (in the sense just explained)  $a$  and 2.1. the (for the addressee) most obvious attempts to find a valid and adequate argument for (the unknown reason)  $a$  all contain the thesis  $q$  as reason, or 2.2. the unknown reason  $a$  is similar to the thesis and the (for the addressee) most obvious attempts to find a valid and adequate argument for  $a$  are to a great extent identical with the (for the addressee) most obvious attempts to find a valid and adequate argument for the thesis  $q$  itself, in particular they contain some same unknown reason. The point of this definition is not to refer to absolute possibilities of justification for the unaccepted reason, but to possibilities of justification which are at hand for the addressee. These possibilities may be different for different addressees.

*F5.4: Relative shortness:* One of the fallacies of validity was absolute shortness. 'Absolute shortness' is defined with respect to an *expert*. But what is a not too short version of an argument

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<sup>10</sup> Walton defines the "fallacy of begging the question" this way: "[...] [1.] the conclusion to be established is [1.1.] either identical to one of the premises, [1.2.] or the premise in question depends on the conclusion, and [2.] the circular sequence of reasoning must be used illicitly in a context of dialogue (conversation) to escape the proper fulfilment of a legitimate burden of proof in that context." (Walton 1995: 230; cf. Walton 1991: 11 f.) Condition (1.2), at first glance, could be the condition for a soft *petitio*. Walton explains it epistemologically: The premise does not fulfil the requirement of "evidential priority": that it is "capable of being established without having to depend on the prior establishment of the conclusion, in the supporting line of argumentation backing up the premise" (Walton 1995: 234). But this explication amounts to the condition of McGrath and Jacquette, discussed above. 1. Though by its phrasing it is not restricted to strict circularity I argued that extensionally it is. So (1.2) cannot be the desired condition for a *petitio* beyond strict circularity. 2. The explanation "is capable of being established ..." speaks of an absolute possibility which is independent of the given situation. The resulting fallacy then should be one of the argument itself (or in my terminology: a fallacy of validity) and not a context-dependent fallacious use. I.e. condition (1.2) does not cover Walton's own idea of a context-dependent form of the *petitio*. 3. Context-dependency is introduced by condition (2), which in the quote is rather unclear. The explication given later on says that in some contexts evidential priority is not required, e.g. not in hypothetical reasoning (Walton 1995: 234). I have already criticized the claim that hypothetical reasoning is circular and that there is any form of not fallacious circular reasoning (cf. footnote 9). But there is another problem: The (alleged) non-fallaciousness of Walton's examples of circular but not fallacious reasoning does not depend on the context but on the argument itself. Therefore, condition (2) already from the beginning is not apt to cover the soft, context-dependent *petitio*.

for an expert might be still too short for an addressee not being an expert: He cannot follow the argument in the sense of being able to fill in the omitted reasons. The argument then is an instance of relative shortness.

*F5.5: Unaccepted weakness:* F5.5.1: (Unaccepted) weakness of the argumentative figure: Arguments differ in strength, i.e. the resulting degree of subjective probability which they can provide for their respective theses may be quite different. If the resulting subjective probability is too low with respect to the degree desired by the addressee, using this argument is an instance of the fallacy of unaccepted weakness. Low probability of the thesis stems from the low probability of the reasons or from low relative frequencies asserted in the reasons, which then are transferred to the thesis. Genesis of knowledge arguments, and arguments from authority in particular, are notoriously weak arguments; they are always considerably weaker than the direct argument or verification they are reporting on. In many situations in science the strongest available evidence is demanded. Then arguing from authority, which is one level more indirect, hence weaker, than the argument developed by the authority himself, is an instance of unaccepted weakness, which can be named "false appeal to authority" (which is different from appeal to false authority). In the case of a false appeal to authority the authority can be an excellent expert and the argument valid and adequate in other situations. - F5.5.2: Incomplete evidence: Another case of unaccepted weakness, which may be called "incomplete evidence", can occur in probabilistic and other forms of nonmonotonic arguments. That an argument is nonmonotonic means that the addition of further reasons, though these do not refute the reasons already used, may lead to a thesis which contradicts the old thesis. (A famous example of a nonmonotonic argument is: 'Nearly all birds can fly; Tweety is a bird; therefore Tweety (probably) can fly.' The new reasons are: 'Tweety is a penguin' and 'no penguin can fly'. The new thesis is: 'Tweety cannot [419|420] fly.'). Therefore, a rational use of nonmonotonic reasoning and nonmonotonic arguments must include all relevant knowledge as reasons.<sup>11</sup> So if the addressee has relevant knowledge which is not included as a reason in the argument (e.g. the knowledge that Tweety is a penguin) then the evidence incorporated in the argument is incomplete, i.e. unacceptably weak for the addressee: The argument with its poor incorporated evidence is not apt as a basis for his reasoning rationally in that it may lead him to conclusions which are wrong in the light of a reasoning on the basis of his greater knowledge. Incomplete evidence is a fallacy of adequacy because the argument itself may be argumentatively valid, but it is apt to rationally convince only addressees with (in this respect) less evidence.<sup>12</sup>

I am at the end of my rush through the main groups of fallacies, which are defined following the positive conditions for the validity and adequacy of arguments, given by the practical theory of arguments. I hope to have shown that taking this theory as a basis the reduction of fallacy theory

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<sup>11</sup> Carnap does call this demand "requirement of total evidence" (Carnap 1950: 211). Cf. e.g. the discussion in Hempel's "Inductive Inconsistencies" (in: Hempel 1965, in particular p. 64).

<sup>12</sup> As a further condition of adequacy one might introduce a request that in case of nonmonotonic arguments the *arguer* too should use all his relevant knowledge as reasons of the argument, thereby providing the addressee with the arguer's best knowledge. But I think this is a condition for honesty and not for convincing rationally; and e.g. in pedagogical contexts it may not even be dishonest to violate this condition. Therefore, to me it does not seem to be a fallacy if someone violates this condition.

works and provides reasonable and exact definitions also of the major types of traditionally known fallacies. [420]

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