

ON RULES OF INFERENCE IN KANT'S LOGIC

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1. INTRODUCTION²

The article aims to provide a reconstruction of the status of hybrid syllogistic inferences and their rules in Kant's formal logic, in the more general framework of the debate on the normativity of Kant's logic for thought³. I will begin by outlining the formal features of Kant's inferences of reason and I will make some comments on the notion of inferential validity. I will then explore in detail the status of syllogistic modes in the second and third figure, and of rules and principles for the reduction to the first figure for hybrid syllogistic modes. For each deduction in these configurations, Kant provides a rule. The rule for each figure contains the procedure, which is necessary for syllogistic deductions in that configuration to meet the requirements for inferences of reason to be valid. The procedure does not 'materially' turn a hybrid syllogism into a valid inference, but it transforms formally the whole configuration in a valid inference in the first figure. In the third section, I will present some interpretations of hybrid syllogistic inferences: they have been discussed both in the context of the debate on the normativity of Kant's logic for thought (by Tolley and Lu-Adler in particular) and within the debate on the completeness of Kant's categorical syllogistic (by Kirk Wilson and Capozzi). Finally, I will discuss the rules I previously analysed, in the broader framework of the logical use of the faculty of Reason as explained by Kant, to give a plausible interpretation of their function.

I will conclude that rules for indirect syllogisms as in *JL* § 71 and § 72 (Log, AA 9: 127) perform a specific function for hybrid syllogistic modes, i.e. they just amount to a description of the process of reduction that occurs in thought, as applied to 'potentially valid' inferential configurations. In the end, this account turns out to be compatible with Kant's claim that deductions in those figures are not valid rules of inference as such.

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2. THE LOGICAL USE OF REASON AND ITS INFERENCES

This article revolves around hybrid syllogistic modes in the second and third figure and their corresponding rules for reduction in Kant's logic. Hybrid syllogistic modes belong to Kant's formal logic, but it is not clear whether they are full-fledged rules for drawing valid inferences of reason or not⁴.

Kant's pure general, or formal⁵ logic comprises laws of logic, which are rules to think objects in general. They hold with necessity and they are universally valid *a priori*; their validity is independent from specific differences between objects, for what pertains to their content; in addition, they do not include empirical or psychological principles (KrV, A 54/B 78). Rather than being an *organon* for particular objects of knowledge, laws of formal logic only serve as a *canon* for the faculty of the Understanding and for the faculty of Reason. They cannot expand our cognition of objects (Log, AA 9: 13 / *JL*: 529; KrV A 53/B 77; Refl. 1628, AA 16: 44-46). Laws of logic cannot produce new truths and do not establish objective validity of cognitions, but they possibly allow for an assessment of the formal correctness of the structures of reasoning⁶, and therefore constrain cognitive activities performed by different cognitive faculties. For instance, establishing the logical truth of a judgement is the same as verifying the conformity of said cognition with the formal criteria established within logic itself for judgements (see Refl 2155, AA 16: 254). In other words, in the formal use of the Understanding conceived in a broader sense as the source of the spontaneity of thought (see KrV, A 51/B 75), said faculty has its form as an object of cognition. By this means, it verifies the formal correctness of its judgements, as well as the correctness of the inferential transitions between them⁷.

Kant discusses the status of syllogistic inferences relating it with the cognitive faculty, whose activity these logical forms constrain, i.e. the faculty of Reason: Kant identifies inferences of reason with syllogistic deductions. Aristotelian syllogisms are among the logical forms Kant imports from traditional logic, on which the form of logic in the *Critique of Pure Reason* and in the writings on logic is based⁸.

Reason is defined by Kant in the first place as the faculty of "drawing inferences mediately" (KrV, A 299/B 355). Being the only example of mediate inferences in traditional logic, Reason infers mediately by means of syllogistic deductions.

A categorical syllogism is, according to the tradition, a valid deductive form, which is composed of three categorical judgements in the form 'S is P'. In the syllogistic deduction three terms, or concepts, (S, P and M) are combined, and are unified by means of the copula in categorical judgements, in which the subject term is subordinated⁹ to the predicate term (see Log, AA 9: 122-123 (§ 62) / *JL*: 617).

M is P

S is M

S is P

The essential task of the faculty of Reason is to provide cognition through principles, and said task is shared by both its logical and its transcendental use (KrV, A 300/B 357)¹⁰. The faculty of Reason unifies judgements under general rules, in order to reach increasing levels of generality and unity in knowledge (see KrV A 648/B 676). Among other possible definitions, judgements can be defined as rules, as well as functions by means of which it is possible to unify representations (KrV A 68/B 93; Log, AA 9: 101 (§ 17) / *JL*: 597)¹¹. Likewise, inferences of reason can be taken as forms of unification, in which judgements are unified in thought under principles¹². In the passages in which Kant is presenting the general features of Reason in the *KrV*, one reads that the cognitive nature of inferences is similar to judgements¹³. Despite this similarity in function, the form of unification in thought under principles, which is peculiar to the faculty of Reason—and which is given in the deductive form of syllogisms—is distinctive. It involves the cognitive labour of three faculties:

In every syllogism I think first a rule (*the major*) through the understanding. Second, I subsume a cognition under the condition of the rule (*the minor*) by means of the power of judgment. Finally, I determine my cognition through the predicate of the rule (*the conclusio*), hence *a priori* through reason (KrV, A 303/B 360 / Engl. tr. 390).¹⁴

It is possible to analyse the structure of categorical inferences of reason as follows: In the minor premise of an inference of reason stands a judgement, which contains a condition – for instance the subject term of a categorical judgement (S). Through the faculty of Judgement, the condition is subsumed under the rule (M is P), i.e. the major premise of the inference, which is provided by the Understanding. The judgement that comes out as a result in the conclusion (S is P), is drawn by the faculty of Reason. In the case of the logical use of the faculty of Reason, the faculty is actively employed just for the purpose to confer a “logical form” to our cognition (see KrV, A 306-B 362/3), which follows a “law of subjective economy”. As for the logical use of the faculty of Reason, there is no need to assess whether principles, universal judgements in the major premise of the syllogism, are objectively valid, and their genetical origin is not under discussion in a formal context. This problem would need further analysis, only if one were dealing with principles of sciences, such as in the case of the real use of reason. For the sake of the case that will be discussed in this paper, namely as for the logical use of the faculty of Reason, it shall be stressed that the major premise must contain a generic “formal principle”. The principle should help delivering conceptual knowledge obtained *a priori*¹⁵.

Let us go on by examining more deeply the formal structure of inferences of reason, focusing on ‘perfect’ categorical inferences of reason. Perfect syllogistic inferences are deductions that are formally in accordance with the configuration described above.

According to Kant, the “formal principle”—the rule, in the major premise of a (categorical) inference of reason, must be expressed through a universal judgement: “A rule is an assertion under a universal condition. The relation of the condition to the assertion, namely, how the latter stands under the former, is called the exponent of the rule” (Log, AA 9: 121 (§ 58 Note) / *JL*: 615). Further requirements for perfect, or “legitimate” inferences of reason are given in *JL* § 69 (Log, AA 9: 126), in which Kant specifies that the minor premise must

contain an affirmative categorical judgement. The model for perfect syllogistic inferences can be defined, following Kirk Wilson, as a ‘rule-subsumption- result model’:

Rule: Any M is (is not) P
 All /Some S is M
 Result: Therefore, Any/Some S is (is not) P
 (Wilson 1975: 404).

Before considering the notion of validity, it is convenient to hint at another aspect that is relevant for inferences of reason, which regards the relation between the premises and the conclusion of those deductive forms. I am speaking of the distinction between matter and form of syllogistic inferences, which Kant features as follows: “The *matter* of inferences of reason consists in the antecedent propositions or premises, the *form* in the conclusion insofar as it contains the *consequentia*” (Log, AA 9: 121 (§ 59) / *JL*: 616)¹⁶. This distinction is crucial, in that Kant takes the *consequentia* to be the judgement in the conclusion, which has to be correctly inferred as a consequence of the inferential process of derivation, whereas the premises are the matter of the inference. Again, on this issue, one may notice that in his late writings on logic Kant theorises a twofold notion of inferential validity. The first notion of validity has to do with inferences of reason in general, and it expresses what Kant calls the “principle of rationality or of necessity” (Log, AA 9: 120 (§ 57 Note) / *JL*: 615): this principle, which is not to be ascribed exclusively to categorical inferences of reason, expresses the functioning of the logical use of reason as I have introduced it above.

The universal principle on which the validity of all inference through reason rest may be determinately expressed through the following formula: *What stands under the condition of a rule also stands under the rule itself*. Note. The inference of reason premises a *universal rule* and a *subsumption* under its *condition*. Through this one cognizes the conclusion *a priori*, not in the individual, but as contained in the universal and as necessary under a certain condition. And this, that everything stands under the universal and is determinable in universal rules, is just the principle of *rationality* or of *necessity* (*principium rationalitatis sive necessitatis*) (Log, AA 9: 120 (§ 57) / *JL*: 614-615. See also Refl. 3201, AA 16: 710).

The second definition aims to cover the notion of validity just for categorical inferences of reason:

Principle of Categorical Syllogisms: The Principle on which the possibility and the validity of all categorical syllogisms rests is this: *What appertains to the characteristic of a thing, that appertains also to the thing itself; and what contradicts the characteristic of a thing, that contradicts also the thing itself* (*nota notae est nota rei ipsius; repugnans notae, repugnat rei ipsi*) (Log, AA 9: 123 (§ 63) / *JL*: 617-618).¹⁷

Its formulation describes the transitivity of predication in categorical judgements; to ascribe or to exclude that a property belongs to the property of a concept, implies the ascription or the exclusion of the same property to that concept, and to the concepts that are contained under it. This relation depends on the intensional semantics for concepts in Kant’s logic, in which concepts are organised in a genus-species hierarchy based on their intensional content (see Log, AA 9: 95 (§ 7) / *JL*: 593)¹⁸.

3. HYBRID SYLLOGISTIC MODES AND THEIR RULES

I have presented so far inferences of reason, clarifying their functioning and their cognitive role in the logical use of this faculty. After that, I have put in connection the general tasks of the faculty of Reason with the deductive form of syllogisms. Finally, I have provided some information on the notion of inferential validity.

Kant's acceptance of the logical forms inherited from traditional logic, in particular his acceptance of the rules of Aristotelian syllogistic, produces important consequences for the aims of this argument. Some inferential rules, in fact, such as syllogistic modes in the second and third figure¹⁹, cannot be fully conceived in accordance with the logical use of Reason, as it is featured in the *KrV*. Relevant interpretive problems arise from this discrepancy, and I will tackle them in the following.

Categorical syllogisms, in the logical form that has been described above, are inferences that present different configurations. Said configurations are called figures, and they are equivalent to inference schemes. In each syllogistic figure, the *terminus medius* (M), which permits the derivation of the conclusion, must always stand in the premises of the inference, but it stands in a different position in the different categorical judgements. Valid syllogistic modes, i.e. valid deductions, obtain by substituting categorical judgements that differ for quantity and quality in the premises of each configuration.

The three syllogistic figures are displayed, for example, in *JL* § 68 (Log, AA 9: 125-126; see also Refl 3256, AA 16: 740-742):

M is P	P is M	M is P
S is M	S is M	M is S
S is P	S is P	S is P

Indirect modes, whose terms do not stand as in the initial configuration, can be proved valid through a 'reduction to the first figure'. Reduction to the first figure is a proof of their validity, which obtains either by applying the rules of conversion to the judgements in the premises or by considering different principles of reduction²⁰. The proof of validity that Kant establishes in the published writings on logic goes as follows:

The condition of the validity of the three latter figures, under which a correct modus of inference is possible in each of them, amounts to this: that the *medius terminus* occupies a place such that from it, through immediate inferences (*consequentias immediatas*), their position in accordance with the rules of the first figure can arise – From this the following rules for the three latter figures emerge (Log, AA 9: 126-127 (§ 70) / *JL*: 621; See also *DfS*, AA 2: 50-51 (§ 3) / *FS*: 92-93).

Kant argues in favour of an original position on the matter of validity for indirect syllogistic modes²¹. In traditional logic, a syllogistic deduction is valid, even if it is not reduced to a formally 'perfect' syllogistic mode in the first figure. Syllogistic modes in the second, third and fourth figure are intrinsically valid, and their validity is just "made evident" through their reduction²². According to Kant, on the contrary, indirect or hybrid syllogistic modes –

ratiocinia hybrida (see Log, AA 9: 125 (§ 65) / *JL*: 619; DfS, AA 2: 55-56 (§ 5) / *FS*: 55-57), are not intrinsically valid. Their validity is produced – and not merely shown by means of a proof – through a modification in the form of a judgement in the premises. This modification, as explained in *JL* § 70 (Log, AA 9: 126-127), is a condition for the validity of deductions in those configurations.

The apparently dismissive attitude that Kant shows towards indirect syllogistic modes is partially in contrast with the existence of some rules that are *ad hoc* for each figure, in order to obtain valid deductions (Log, AA 9: 127-128 (§§ 72-73) / *JL*: 621-622. See also V-Lo/Philippi, AA 24: 474). In what follows, I will make some hypotheses on the status of those rules. Let us report the rule for the second figure:

In the second figure the *minor*¹ stands rightly, hence the *major*¹ must be converted, and in such a way that it remains *universal (universalis)*. This is possible only if it is *universally negative*; but if it is *affirmative*, then it must be contraposed. In both cases the conclusion becomes *negative (sequitur partem debiliorem)*.

Note. The rule of the second figure is, What is contradicted by a mark of a thing contradicts the thing itself. Now here I must first convert and say, What is contradicted by a mark contradicts this mark; or I must convert the conclusion, What is contradicted by a mark of a thing is contradicted by the thing itself, consequently it contradicts the thing (Log, AA: 127 (§ 71) / *JL*: 621).

In earlier writings on logic and in the *KrV*, Kant argues that schemes for syllogistic modes in the second and third figure are useless; or rather, they express a useless complication (see DfS, AA 2: 56 (§ 5) / *FS*: 99; *KrV*, B 141 Note). Kant writes that hybrid syllogisms cannot be used as inferential rules *per se* and therefore they support the claim on the false subtlety of traditional syllogistic logic; this harsh judgement follows from Kant's interpretation of the developments of Aristotelian logic in modern logics. While said developments have surely caused a technical refinement, at the same time, according to Kant, they have not produced any notable improvement in the status of logic as a discipline (see DfS, AA 2: 56 (§ 5) / *FS*: 99). However, Kant concedes that it is possible to show that syllogistic modes in these figures are such, that they can be reduced to valid syllogistic modes in the first figure, so they can be proved valid. What one should conclude is that these modes are 'enthymematic' modes in the first figure (see Log, AA 9: 131 (§ 80) / *JL*: 625), so they are valid modes in first figure, which contain a premise that is not expressed. Validity for these modes obtains by applying "only in thought" (DfS, AA: 91 (§ 3) / *FS*: 93) an immediate inference to a judgement in the premises (Log, AA 9: 116-119 (§§ 46-54) / *JL*: 610-614)²³: after the hidden premise obtains, one can draw a valid conclusion.

Rules for syllogistic modes in the second and third figure exhibit this cognitive operation and prescribe different steps to be followed in the reduction. For syllogistic modes in the second figure that can be proved valid, an immediate inference must be applied to the major premise (Log, AA 9: 127 (§ 71) / *JL*: 621); for valid syllogistic modes in the third figure, to the minor premise²⁴. It is controversial, however, to talk about "valid syllogistic modes", which are not in the first figure: quite likely Kant would not accept this idea in full. Thus, it seems possible to argue that rules for hybrid syllogistic modes – and their Notes – cannot be straightforwardly

conceived as rules that support the intrinsic validity of hybrid syllogisms. Finally, all that being said, it is still not clear how these rules constrain thought, if they are able to do so.

4. THE NORMATIVE STATUS OF HYBRID SYLLOGISTIC MODES AND THEIR RULES

In this section, I will report a number of hypotheses with regard to hybrid syllogistic modes and on the specific function of their rules. The status of hybrid syllogistic modes has been discussed as part of the debate on the normativity of Kant's logic, although said rules have not played a central role as a case study in the debate²⁵.

- a) Tolley (2006 and 2007) seems to deny the existence of indirect syllogistic modes *qua* rules for thinking, as a consequence of his general claim on the normativity of Kant's logic. In Tolley's view, rules of Kantian logic are constitutive for thought, so each cognitive operation that is performed by the faculties must be conducted in accordance with a logical law or principle²⁶. Being these laws constitutive for thought, they discriminate between what is thinking and what is not thinking in a strong way²⁷, and they are not just mere 'standards of correctness'. In addition, Tolley (2006 and 2007) holds that syllogistic modes in the second and third figure cannot constitute rules for inferences of reason. Syllogistic modes in the second and third figure, despite the presence of specific rules for their validity—which prescribe how to draw the immediate inference that is necessary for the reduction—would not be rules for the logical use of Reason. That is the case, because they are not meeting the form required for the inferential processes that are involved in the logical use of this faculty²⁸, unless an appropriate immediate inference applies to their premises. The logical form of an inference of reason implies, in this reading, that these attempts of inferring through 'imperfect' sequences are not rules for thinking in Kant's formal logic, so they are nothing²⁹. Tolley recalls on this issue the distinction between form and matter of an inference, which has been sketched above in this paper. Interestingly, Tolley 'transposes' the process of reduction to the first figure, making use of this distinction. Even though some judgements organised in a sequence can contain the 'material' for an inference of reason, no valid inference can be drawn from them, unless this sequence allows for transformations in form, as a consequence of the application of an immediate inference. More precisely, nothing is thought by means of that sequence, until it is transformed in the right configuration of thought.

His position seems to go to extremes, by considering on the same line sequences of judgements from which no valid consequence results by means of logical transformations, and hybrid syllogisms that have not been reduced to the first figure, whose judgements are just left in their original form. In other words, Tolley does not seem to distinguish potential inferential validity from actual inferential invalidity of a sequence of judgements. As a final remark, one may summarise this position, by saying that Tolley seems to suggest the following interpretation of Kant's formal logic: either in the cognitive activity of inferring one follows a rule of inference, which is constitutive for such thought process, or a process of thinking is not an inference³⁰. Following

strictly this pattern of reasoning, one shall conclude that rules for hybrid syllogisms hold for syllogistic modes in the second and third figure. Since in these configurations no conclusion can be inferred, said rules are aimed at creating a cognitive operation of inferring in a ‘perfect’ syllogistic mode. They describe how to produce a valid configuration, but, since validity is just a prerogative for the formal configuration of ‘perfect’ syllogistic inferences, hybrid syllogistic modes are as such cognitively ‘nothing’ for Reason – they do not permit to draw genuine inferences.

- b) Tolley’s reading has been contrasted by Huaping Lu-Adler. Lu-Adler agrees with Tolley that rules of logic are constitutive for thought in Kant’s pure general logic. In addition, she argues that it is necessary to set an internal division among constitutive rules, that is, into structural and veridical rules: this distinction serves to the aim of accounting for defective episodes of thinking, namely for ‘illogical’ judgements or inferences³¹. Structural rules do not confer semantic values to judgements, and they cannot account for the transmission of semantic value from the premises to the conclusion in inferences. One may suggest interpreting Lu-Adler’s veridical rules as rules, which follow the Principle of Logical Sufficient Reason, that is, together with the Principle of Non-Contradiction, one of Kant’s criteria for formal truth (see Log, AA 9: 51 / *JL*: 559). This further distinction, which Lu-Adler seems right to make in the context of Kant’s logic, adds an important standpoint to the evaluation of Kant’s rules for hybrid inferences. In applying the structural/veridical distinction to inferences of reason, she identifies a structural rule in *JL* § 68 (Log, AA 9: 125-126)—the rule according to which the major premise of a valid syllogistic inference must contain an universal judgement, and the minor premise must contain an affirmative judgement. On the contrary, in the theory of categorical syllogisms, a veridical rule is the principle for the validity of categorical inferences of reason, so the second notion of validity reported in this paper. Against Tolley, Lu-Adler argues that hybrid syllogistic inferences are valid inferences of reason under every respect, since by means of them it is possible to draw, albeit indirectly, a valid conclusion³². This interpretation seems to imply that Notes to the rules in *JL* §§ 71-72 (Log, AA 9: 127) must be interpreted as variations on veridical rules. The same holds for the main texts of the paragraphs, which describe precisely the structural modifications to make, and they become in turn variations on structural rules. To sum up Lu-Adler’s position, one might say that she would interpret rules in *JL* §71-72 as describing full-fledged rules for thinking. If one follows them in a thought process, then one is able to correct the formal irregularities in hybrid inferences, thereby being lead to conclude in a valid inferential pattern in a syllogistic inference in the second or third figure. Lu-Adler seems to conceive these rules in close relation, if not identical, with inferential configurations for hybrid syllogisms. It remains unclear whether these rules have to be taken as constitutive for thought, or, if not, to which extent the validity of hybrid syllogisms relies on them.
- c) Finally, rules for indirect syllogistic modes have received attention also from inter-

preters that have addressed Kant's syllogistic, and hybrid syllogistic modes, from the standpoint of traditional logic. Both of them, that is Capozzi (1982) and Kirk Wilson (1975), have acknowledged that Kant would not be required to state these rules explicitly. Still, they both appear to be able to account for them. Capozzi argues that these rules might represent a "scheme of a syllogism" (Capozzi 1980: 83, translation from Italian is mine) for the corresponding indirect figure, which might be of some help in figuring out how such deduction can be reduced to a valid syllogism in the first figure. We might report a scheme in the second figure:

P is M

S is M

S is P

After the conversion of the major premise, as in *JL* §71³³, the whole structure would be as follows:

1. P is M
2. M is P
3. S is M
4. S is P

Capozzi seems to suggest considering the entire inferential scheme, from (1) to (4). As it is possible to argue on the basis of the rules in *JL* §71-2, one may find that it consists in an inferential configuration, which can help understanding how to infer correctly the conclusion as derived from the premises in an hybrid syllogism. Thus, both *JL* §71-72 could be reasonably considered, under this respect, schemes for valid deductions.

Kirk Wilson gives an argument that is in agreement with Capozzi's (Kirk Wilson 1975: 409-410). He takes these rules to display an "inference-schema", in his words "a specification of the arrangement of terms and their formal properties" (*Ibidem*), by which means indirect syllogistic modes in the second and third figure are formally connected with valid modes in the first figure. The doubts regarding the role played by rules in *JL* §71-72 are solved by Kirk Wilson on the basis of this claim made by Kant (see *DfS*, AA 2: 56 (§ 5) / *FS*: 99-100): "Thus, the remaining three modes of inference, construed as syllogistic rules in general, are correct; but construed as containing a simple and pure inference, they are mistaken". Wilson interprets this passage as admitting the existence of inference schemes, which are different from the first figure. In these schemes, valid conclusions, which are not intrinsically valid as perfect modes, are possible (K. Wilson 1975: 410).

In both readings, rules for the second and third figure as inferential schemes, or 'schemes of a syllogism', count as inferential configurations that represent 'new' or expanded inference schemes in Kant's logic.

5. CONCLUDING REMARKS

In the traditional approach to syllogistic logic, syllogistic modes in the second and third figure are valid deductions. Given the premises, the conclusion follows with necessity based on logical grounds. In Kant's logic, syllogistic modes in the second and third figure as inferences of reason are not valid, at least until they are proved to be 'enthymematic' syllogistic modes in the first figure, i.e. deductions that have a missing or rather unexpressed premise. They are not valid by themselves. For Kant, they are not valid because the *consequentia* in accordance with the 'principle of rationality' can be drawn only in the correct formal configuration, and validity must be established exclusively based on the 'actual' form of an inference.

The rules that have been under examination in this paper are:

- 'Perfect' syllogistic deductions;
- Hybrid syllogistic deductions that are potentially valid, but invalid as long as they are not proved valid;
- Immediate inferences or inferences of the Understanding;
- Rules for turning a potentially valid hybrid syllogistic mode in a formally valid 'perfect' mode.

The problem at stake is how rules for hybrid syllogistic modes contribute to the validity of said modes. Let me briefly sum up the different options for interpreting these rules.

- Only perfect syllogistic modes are rules for inferring mediately through inferences of reason in Kant's logic, because they embody the relevant notion of inferential validity (Tolley): indirect syllogistic modes are not intrinsically valid rules of inference in Kant's logic. The specific rules for the reduction of hybrid syllogistic modes provide a procedure for producing a mental process of inference through Reason by means of a perfect syllogistic mode. They enable one to perform an act of inference seemingly out of 'nothing'. Nothing is inferred mediately in a sequence of judgements in a hybrid syllogistic mode, but inferring through Reason begins (and ends), just when the sequence is turned into a valid configuration in the first figure.
- Hybrid syllogistic modes are valid under condition, so their validity can be produced by means of the thought processes described in *JL* §71-72, under the condition stated in *JL* §70. According to the literature that has been examined in the paragraph 4 of this article, it seems reasonable to argue that rules in *JL* §71-72 may allow 'expanded' formal configurations to hold as rules of logic. They become schemes, in which it is possible to draw a conclusion in accordance with the logical use of reason. Therefore, hybrid syllogistic modes are valid inferences, although not intrinsically valid, and their corresponding schemes are these 'expanded' schemes of inference rather than the traditional figures.

Let me try to restate the main problem at stake, that is, the function of rules in *JL* §71-72.

If there is any validity for hybrid modes, even in the 'expanded figures', then it is seemingly derived from the combined use of different rules of Kant's logic. Rules for these modes prescribe the application of an immediate inference, following the instructions in *JL* § 70 (Log, AA 9: 126-127), which is the condition for their validity, and which is drawn by the Understanding.

It is controversial to state that this inference is part of the process of establishing the inferential validity of the entire sequence of judgements. One shall try to evaluate whether hybrid syllogistic modes in these new 'expanded' configurations can be considered valid rules of inference - i.e., whether they can be taken to represent inferential sequences, from which a valid conclusion can be drawn by the faculty of Reason.

I suggest that Kant's answer would be negative. Moreover, one may ask whether these expanded schemes give rise to new syllogistic figures. Owing to Kant's conservative reading of Aristotelian logic, one may be skeptical about this suggestion too.

I rather suggest pursuing the hypothesis that these rules have a function with respect to a process that happens in thought, which is not limited to the process of drawing an inference of reason. I maintain that validity is established just from 'perfect' configurations, so the traditional division in figures remains untouched.

Rules in *JL* §71-72 surely concern the process of drawing the *consequentia*, and the missing premise is supposed to be part of the cognitive process that permits to draw the conclusion – even though, and this is the point I want to stress, its derivation is not part of the process of drawing the conclusion according to Reason.

Let me try to rephrase the argument. The rules in virtue of which it is possible to draw the *consequentia* – and therefore to establish the validity of the deductive argument, are displayed in *JL* §69 and in *JL* §70. Rules in *JL* §71-2 do not add any substantial information to the validity of syllogistic modes: they rather show how to actualise the potential validity of a sequence of judgements that is just formally irregular. This process of actualisation is composed of three steps:

- Step 1: after having applied the principles in *JL* §64 to sequences of three categorical judgements in different quantity and quality, some sequences remain, and they are in agreement with principles. Three categorical judgements are thought separately in this sequence.
- Step 2: following *JL* §70, the Understanding draws an immediate inference, which applies to the judgement in which the *medius terminus* stands in the wrong position. So, the act of thinking is here constituted by an immediate inference of the Understanding.
- Step 3: In virtue of the application of the immediate inference, three categorical judgements in a valid syllogistic mode in the first figure are part of the sequence. The faculty of Reason draws a valid inference.

Even if it is possible to keep track of the entire sequence of cognitive operations that produce formal modifications, one can draw a *consequentia* just in virtue of Step 3. The faculty of Reason is actively performing its task for cognition in this last step of the reasoning. Therefore, rules in *JL* §71-72 describe inferential sequences, whose conclusion is established as valid with necessity exclusively by means of Step 3: the faculty of Judgement subsumes the condition of the minor premise under the rule, and then the faculty of Reason draws the conclusion, not until the necessary formal modifications have been made.

To conclude: if one wants to support the thesis that they own intrinsical validity, hybrid syllogistic deductions should be proved valid as derived by a sequence of cognitive operations. The entire sequence I have reconstructed is composed of three steps: thinking separately three judgements (Step 1), drawing an immediate inference that is applied to one of these judgements (Step 2), and finally an inference of reason (Step 3). The entire inferential structure does not prove the validity of the conclusion, but enables one to infer in the Step 3: strictly speaking, nothing is inferred mediately before the last step, so one does not draw the conclusion of a valid inference of reason from the sequence in its entirety.

Therefore, I argue that rules for hybrid syllogistic deductions serve rather as ‘procedural’ norms for thinking a sequence of judgements and inferences, which after formal modifications reveals an intrinsically valid ‘perfect’ inference of reason.

The initial sequence is generated by principles. Those principles do not result from the cognitive labour of the faculties, but rather they apply in the calculus of valid inferential combinations. In light of this, and given the strong cognitive restrictions on inferential validity posed by Kant, I claim that one cannot derive from rules in *JL* §71-72 ‘expanded’ schemes for valid hybrid syllogistic modes.

Abstract: The article deals with the normative status of Kant’s general logic with reference to inferences of reason. I will pay special attention to indirect syllogistic modes in the second and third figure and to their corresponding rules. I will conclude by evaluating whether and how said rules constrain thought with respect to the logical use of the faculty of Reason.

Keywords: Kant, formal logic, rules of inference, inferences of reason.

Resumo: O artigo trata do status normativo da lógica geral de Kant com referência a inferências da razão. Darei especial atenção aos modos silogísticos indiretos na segunda e terceira figura e às regras correspondentes. Concluirei avaliando se e como tais regras restringem o pensamento com respeito ao uso lógico da faculdade da razão.

Palavras-chave: Kant, lógica formal, regras de inferência, inferências de razão.

LIST OF ABBREVIATIONS

FS: Kant, I., *False Subtlety of the Four Syllogistic Figures*, in *Theoretical Philosophy, 1755-1770* (transl. and ed. by D. Walford in collaboration with R. Meerbote), Cambridge: Cambridge University Press, 1992.

JL: Kant, I., *Jäsche Logik*, in *Lectures on Logic*, (Ed. M. Young), Cambridge: Cambridge University Press, 1992.

KrV: Kant, I., *Critique of the Pure Reason* (transl. and ed. by P. Guyer and A.W. Wood). Cambridge: Cambridge University Press, 1998.

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NOTAS / NOTES

1 Davide Dalla Rosa completed his PhD at the University of Padova (Italy) with a dissertation on Kant's formal logic. Besides Kant's logic, his research interests concern philosophy of language and philosophy of perception.

2 I presented a seminal version of this paper in the realm of the WFAP Graduate Conference on the Normativity of Logic, which took place at the University of Vienna in June 2019. I want to thank both the organisers and the participants for having raised helpful questions. Their questions urged me to focus more on validity for indirect syllogistic inferences, and I am very grateful to them for this.

3 A rich debate testifies the important role played by Kant as source of inspiration for the discussion on the normativity of logic. See at least MacFarlane (2000), Tolley (2006) and (2007), Leech (2017), Lu-Adler (2017). Conant (1991) has also stimulated new attention for Kant's logic with his thoughts on logical aliens, which Nunez (2019) discusses with reference to Kant. On the question of normativity in Kant's philosophy in general, see Pollok (2018).

4 Kant sketches the differences between formal (pure general) logic and the other logics in KrV, A 52/B 76 and following. See MacFarlane (2000: 81-84) for a thorough examination of the distinctions, which results in the taxonomy of the different logics in Kant at p. 83.

5 On the interplay between generality, formality and normativity of Kant's pure general logic, see above all MacFarlane (2000). For instance, MacFarlane (2000: 80): "By 'general,' I will argue, Kant means 1-formal, while by "formal," he means 3- formal. I will then claim that formality is not, for Kant, a defining feature of logic, but rather a substantive consequence of the generality of logic, given Kant's other philosophical commitments".

6 On this issue, see Vanzo (2018: 172), in which the Author casts some doubt on the validity of the same claim in the *FS*, given that Kant does not state explicitly that syllogistic inferences cannot be used for invention of new truths.

7 See also on this matter KrV A 131/B 170. In referring to the laws of Kant's logic as "standards of assessment" for the correctness of our cognitive operations, I am following mainly MacFarlane (2000). However, I am not distinguishing between rules of formation and rules of inference, or between structural or veridical rules, as Lu-Adler (2017) does. I am just considering this matter in a very general and introductory way.

8 On the completeness of Aristotelian logic according to Kant see KrV, B VIII.

9 I prefer using 'subordination' rather than 'subsumption', given that I am dealing here with the logical use of reason.

10 On the logical use of reason, see also Willaschek (2018: chap. 2).

11 On judgements as functions of unification, see the formalisation in Wilson (1972: 18). On functions in Kant's logic, see Shamoon (1979: 32).

12 KrV, A 300/B 357: "Thus every syllogism is a form of derivation of a cognition from a principle. For the major premise always gives a concept such that everything subsumed under its condition can be cognized from it according to a principle. Now since every universal cognition can serve as the major premise in a syllogism, and since the understanding yields such universal propositions *a priori*, these propositions can, in respect of their possible use, be called principles".

13 KrV A 307/B 364: "Second, reason in its logical use seeks the universal condition of its judgment (its conclusion), and the syllogism is nothing but a judgment mediated by the subsumption of its condition under a universal rule (the major premise)". This was also Kant's claim in DfS, AA 2: 59 (§ 6) / *FS*: 103, in which he identifies Understanding and Reason as faculties that are both subordinated to the capacity to judge. The claim has been substantially modified throughout the years and the different writings on logic.

14 For a definition of inferences of reason see Log, AA 9: 120 (§ 56) / *JL*: 614: "An inference of reason is the cognition of the necessity of a proposition through the subsumption of its condition under a given universal rule"; an almost identical definition can be found in Refl. 3196, AA 16: 707. In the same passage in the *Jäsche Logik*, Kant writes that inferences of reason are divided just through relation (Log, AA 9: 122 (§ 60 Note 1) / *JL*: 616) in categorical, hypothetical and disjunctive. The division follows the judgement that stands in the major premise of the inference, which can be respectively categorical, hypothetical or disjunctive.

15 KrV, A 300/B 356-357: "I would therefore call a 'cognition from principles' that cognition in which I cognize the particular in the universal through concepts. Thus every syllogism is a form of derivation of a cognition from a principle. For the major premise always gives a concept such that everything subsumed under its condition can be cognized from it according to a principle. Now since every universal cognition can serve as the major premise in a syllogism, and since the understanding yields such universal propositions *a priori*, these propositions can, in respect of their possible use, be called principles".

16 On matter and forms of inferences of reason see also form example V-Lo/Blomberg, AA 24: 284; in Refl 3210, AA 16: 713 Kant writes that a deductive argument can be formally correct (Form) even if it follows from false grounds – "*unrichtige Gründen*".

17 The same definition of validity is given in DfS, AA 2: 49 (§ 2) / *FS*: 91.

18 On the intensional semantics for concepts in Kant's logic, see Anderson (2015: second chapter).

19 Throughout this paper I will not deal with the fourth syllogistic figure and the valid modes in it.

20 In different lectures on logic, Kant uses principles for describing how reduction to the first mode obtains. These principles

follow the consonant letters in the medieval names of the syllogistic modes. I will not go into the details of this method here – Kant uses the method in *Logik Pöhlitz* among the others. Principles as in *JL* §64, 618-9 (*ex puris particularibus nihil sequitur*), on the contrary, are used in order to discriminate between possible triads of judgements in which categorical judgements are combined, for the purpose to obtain the traditionally valid modes. On these latter principles, see also V-Lo/Busolt AA 24: 674, V-Lo/Pöhlitz, AA 24: 591. It has to be noted, that principles considered under both these respects are different from principles as in the description of the cognitive activity of reason in terms of “cognition from principles”.

21 I am not considering another important difference between Kant's account of reduction to the first figure and traditional syllogistic, namely that Kant does not mention indirect deductions – proof by contradiction and *ecthesis*.

22 Lear (1980: 5): “A syllogism is imperfect if it needs additional propositions set out, which are necessary consequences of the premisses, in order to make it evident that the conclusion follows from the premisses (An. Pr. 24b24)”. For very helpful comments on ‘perfection’ and indirect syllogistic modes see Gisela Striker's commentary to Aristotle's *Prior Analytics* (2009: 82-83).

23 Rules of conversion are immediate inferences connected to the category of relation, which modify judgements at a formal level. Immediate inferences that refer to the relations between the propositions in the Aristotelian square of oppositions modify the formal truth-value of judgments. Rules of conversion are formally expressible as follows: 1) No S is P \leftrightarrow No P is S; 2) Some S are P \leftrightarrow Some P are S; 3) All S are P \rightarrow Some P are S. Especially the last rule, the *conversio per accidens*, plays an important role in the syllogistic.

24 Log, AA 9: 127 (§ 71) / *JL*: 621: “In the third figure the *major*₁ stands rightly, hence the *minor*₁ must be converted, yet in such a way that an *affirmative* proposition arises therefrom. This is only possible, however, when the affirmative proposition is *particular*, consequently the *conclusion* is *particular*. Note. The rule of the third figure is: What belongs to or contradicts a mark also belongs to or contradicts some things under which this mark is contained. Here I must first say, It belongs to or contradicts everything that is contained under this mark”.

25 The logical law that has been mostly examined as case study for the normative nature of Kant's logic for thought is the Principle of Non-Contradiction. See for instance in Tolley (2006), 384, and Leech (2017).

26 Tolley (2006: 386): “Since we have found no correlate to our capacity for free choice in view within formal logic itself, for which logical laws could be normative, the ground for the more frequently drawn analogy between ethics and logic is thus obscured. Moreover, it would seem that we have actually found reason to think that no such grounds can exist, given Kant's claims that something which was not in accord with logical laws is not to be counted as a ‘thought,’ albeit a logically ‘bad’ one or one we ‘ought not to entertain, but rather not to be counted as a thought at all”.

27 See Tolley (2006: 390-391): “This is because, in general, the forms of judgment and inference and the laws which govern them do not sort acts of understanding into good and bad thoughts or good (valid) and bad (invalid) inferences”. Tolley cites to support his claim Wittgenstein's propositions in the *Tractatus*, in which Wittgenstein describes how the laws of logic set the boundaries of the discipline. For a clear explanation of the differences between normativity, constitutivity and constitutive normativity of laws of logic for thought, see Leech (2017: 351). On the interplay between normativity and constitutivity of logic in general, see Steinberger (SEP) and Steinberger (2017): in this latter paper, Steinberger declares that he disagrees with Tolley, since he thinks that constitutivity of logical laws implies their normativity. See Steinberger (2017: 149 fn.15).

28 Tolley (2006: 391): “Thus, in the end, hybrid inferences are not really ‘inferences’ after all, because they fail to express one of the ‘forms’ of inference”.

29 Tolley (2006: 390-391): “Things which cannot be seen to fit the logical forms of thinking and reasoning are simply not thoughts or inferences at all (just as no act of practical reason could consist in undertaking an immoral maxim). If we seem to ‘think,’ or appear to ‘infer’ and yet fail to do anything that accords with either judgmental or syllogistic structure, then no thought or inference has yet been achieved”.

30 Tolley (2007: 468): “What I want to suggest here is that we can think of the relation between hybrid and pure inferences on the same model, that it is only if we can ‘resolve’ the material of the hybrid inference, through the substitution-principles articulated by the rules for immediate inference (such as those of (PS) [*per subalternata*] and (CPA) [*conversion per accidens*] sketched above) that we can say of a given sequence of judgments that it has the ‘power’ of ‘unfailingly connecting’ its grounds with its consequence. Just as it is the case that not all judgments are analytic judgments, and so not every judgment can be transformed by substitutions into an explicit concretization of one of the formal principles of thought, so too is it the case that not all sequences of judgments are inferences in Kant's sense, nor can every sequence be transformed by substitutions into an explicit realization of one of the formal principles of inference”.

31 Lu-Adler (2017: 212).

32 Lu-Adler (2017: 212-213): “Having established these principles as the immediate ground of validity for syllogisms in the first figure, Kant argues that syllogisms in the other three figures must be somehow transformed to the first and then proven valid or invalid according to (A) [*nota notae est nota rei ipsius*] and (B) [*repugnans notae, repugnat rei ipsi*] (DfS, 2: 50-53). To illustrate, consider this inference in the second figure.

No mind is divisible;

All matter is divisible;

So, no matter is a mind.

On Tolley's reading, this triad of propositions only appears to constitute an inference, but really it does not (Tolley 2006: 391). Kant himself never denies that the triad makes up a genuine inference. Rather, he recognizes it as a valid inference and investigates what grounds its validity, namely 'what gives it its power to establish the conclusion'. His finding: it is only thanks to a tacit conversion- from the stated major premise to 'nothing divisible is a mind', whereby the inference is turned into the first figure- that the given triad represents a valid inference (DfS, 2: 52)".

33 No hint to the quantity of judgements is given here. Quality of the judgement in the major premise is always universal: to an affirmative universal judgement, it can be applied the immediate inference known as contraposition (Log, AA 9: 119 (§ 55) / *JL*: 614); to a universal negative judgement, it can be applied a simple conversion.

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