

On “Since”

(draft, 2025)

Vladimír MARKO, FiF UK, Bratislava

Abstract.

What is the logical property (if there is some definitive one) of connective “since”? The text aims to provide a recapitulation of historical sources and contemporary perspectives regarding this connective. Even through the ages we could find almost the same kind of approaches and interpretations, we are not obtaining some unique and definitive answer to our question. This text intends to examine historical sources and developments related to since-sentences or subconditional, alongside contemporary observations, and to provide a summary of the principal characteristics of these approaches.

Keywords: subconditional, paraconditional, inferential conditional, factual conditional.

1. Conditional

By conditional sentence we are claiming that one thing is contingent on another. In natural language, it is compound sentence where *the main* (consequence) clause’s impact is determined by *the subordinate* (conditional) clause. The logical formulation of (material) conditional proposition stresses the truth values of included propositions. The conditional sentence is compound statement that asserts relationship of two components, the antecedent and the consequent, and states that the whole conditional is true if a consequent has either the same value as an antecedent or a sole consequent is true (independently of an antecedent). It can be presented by the relationship between variables directed by functional connective ‘*if*’ – ‘if p , q ’, where p presents antecedent and q consequent component. In almost the same manner, connective ‘since’ is usually seen as a kind of introducing conditional proposition, stating some dependance of included sentences, like in the case with connectives ‘*if*’, ‘*for*’, ‘*because*’, ‘*unless*’. The main difference is that the *since*-sentence in its antecedent sequence additionally expresses some reason, cause or presence of some fact on which its consequent sequence depends. According to one interpretation, let us call it *the traditional one*, both *if*-sentence and *since*-sentence are conditionals. While an *if*-sentence has open, hypothetical character, a *since*-sentence explicitly asserts or stresses *presence of its antecedent*. The *if*-sentence is typically considered to be truth-functional, whereas the *since*-sentence is not. In a *since*-sentence, the

antecedent is asserted as confirmed, allowing the truth value of such a conditional to be truth-functionally equated with conjunction. However, in that case, any traces of conditionality, which claim a dependence between two sentences, would disappear.

The earliest effort to define the logical properties of conditional sentences can be traced back to the Stoics. We learned it mainly from secondary sources. Two formulations come to us from Diogenes Laertius, who cites Chrysippus and Diogenes of Babylon (D.L. vii, 71):

D1. Of non-simple propositions, a conditional (proposition, συνημμένον ἄξιωμα) is ... one linked by the hypothetical connective 'if'. This connective declares that the second follows from (ἀκολουθεῖν) the first. For example, '*If it is day, it is light.*'

A few lines later we could find the criterion of truth for this kind of conditional (D.L. vii, 73):

D2. Thus, a true conditional is one the contradictory of whose consequent conflicts with its antecedent. For example, '*If it is day, it is light.*' This is true, since '*Not: it is light*', the contradictory of the consequent, conflicts with '*It is day.*' A false conditional is one the contradictory of whose consequent does not conflict with its antecedent. For example, '*If it is day, Dion is walking.*' For '*Not: Dion is walking*' does not conflict with '*It is day.*'

In other words, the truth of conditional is illustrated by equivalence with its conjunctive counterpart (or 'connectedness criterion', συνάρτησις): '*if p than q*' is interchangeable with '*not both: p and not q*'. We can find the same criterion in Sextus (*ph* ii, 111). On other place (related to the sign-inference) he gives a formulation that fully corresponds with Philonian material implication (S.E. *am* viii, 112-18; 245-7; 447; 449; *ph* ii, 104-5; *Simp. phys.* 1299,36). Illustrative example is at D.L. vii, 81: "a truth may follow from a falsehood, e.g. from '*The earth flies*' will follow '*The earth exists*,'" while Sextus gives an example in form of 'duplicated proposition' 'if *p, p*' in (S.E. *ph* ii, 104-5; cf. S.E. *am* viii, 112-18).

2. Subconditional, Causal Conditional, Argument

At Diogenes Laertius, below the place where if-conditional (συνημμένον) is introduced, now appears the syntactical formulation of since-conditional, or *subconditional* (παρασυνημμένον). The source is attributed to Crinis, an unremarkable Stoic writer of the manual with a common name, *Dialectical handbook*. The formulation he presents is predominantly regarded as representative of the school. Crinis says (D.L. vii, 71):

C1. A subconditional (παρασυνημμένον) is ... a proposition joined subconditionally by the connective 'since' (ἐπεὶ), with an antecedent proposition and a consequent proposition.

For example, '*Since it is day it is light.*' This connective declares both ($\tau\epsilon$) that the second follows from ($\acute{\alpha}\kappa\omicron\lambda\omicron\upsilon\theta\epsilon\acute{\iota}\nu$) the first, and that the first is the case ($\acute{\upsilon}\phi\epsilon\sigma\tau\acute{\alpha}\nu\alpha\iota$).

Several lines later he additionally tries to give a truth-functional formulation of subconditional proposition (D.L. vii, 74):

C2. A true subconditional is one which has a true antecedent and a consequent which follows from ($\acute{\alpha}\kappa\omicron\lambda\omicron\upsilon\theta\epsilon\acute{\iota}\nu$) it. For example, '*Since it is day, the sun is above the earth.*' A false subconditional is one which has a false antecedent or has a consequent which does not follow ($\acute{\alpha}\kappa\omicron\lambda\omicron\upsilon\theta\epsilon\acute{\iota}\nu$) from the antecedent, such as '*Since it is night, Dion is walking*' said in daytime.

Crinis' interpretation of subconditional in C1 is compound of two parts. It corresponds to the 'since' statement. Besides, it affirms that the antecedent ' p ' of the conditional is the case or is true. Subconditional proposition '*Since p , q* ', unlike conditional, captures two propositions – both '*if p , q* ' and ' p '. In C2 we have that conjunction of these propositions has truth conditions corresponding to conjunction (T,T).

Some analogy with subconditional could be found in another non-simple kind of propositions as it is *causal conditional* ($\acute{\alpha}\iota\tau\iota\omega\delta\epsilon\varsigma$) construed by connective 'because' (D.L. vii, 72) – '*Because it is day, it is light.*' Here the antecedent is the cause of the consequent, and presented as actually present, like in the case of subconditionals. This proposition is "true if its conclusion really *follows from* ($\acute{\alpha}\kappa\omicron\lambda\omicron\upsilon\theta\epsilon\acute{\iota}\nu$) a premise itself true". Here a phrase *follows from* might also suggest inference ("*because p , therefore q* "), but Crinis' definition of an argument seems that does not support this interpretation.

For the Stoics subconditionals are kind of conditional statements and some commentators on Aristotle note instances where they can simply substitute hypothetical connective. For example, Simplicius (*in de cael.* 552.31-553,22) commenting the first book of Theophrastus *Prior Analytics*, says that at the place, where appears antecedent that is

“not only true but also manifest and undisputed ($\acute{\epsilon}\nu\alpha\rho\gamma\acute{\epsilon}\varsigma$ καὶ ἀναμφίλεκτον) they use subconditional connective 'since' ($\acute{\epsilon}\pi\epsilon\iota$) instead of hypothetical ($\sigma\upsilon\nu\alpha\pi\tau\iota\kappa\acute{o}\varsigma$) connective 'if' ($\epsilon\iota$)...”

and that Aristotle himself (*cael.* 298a27-b5) uses “*since*” instead of “*if*”, willing to emphasize that antecedent is evident and clear, while “more recent thinkers” start to use the term subconditional ($\pi\alpha\rho\alpha\sigma\upsilon\nu\alpha\pi\tau\iota\kappa\acute{o}\varsigma$).

3. Single premise argument

Subconditionals resemble *single-premised* arguments (μονολήμματοι λόγοι, Alex. *in top.* 8.16). However, Crinis is clear in differing conditional and argument: an argument “consists of premise or premises, an additional premise, and conclusion” (D.L. vii, 76; cf. S.E. *ph* ii, 135-37; *am* viii, 302-5 and 414-17). According to his definition, an argument is composed of conditional sentence (*‘If it is day, it is light’*) as the premise, an additional sentence confirming antecedent of conditional (*‘But it is a day’*) and conclusion (*‘Therefore [ἄρα], it is light’*). But in C1 he claims that we have two conjoined propositions – *‘if p, q’* and *‘p’*, where we are on a halfway toward conclusion that *‘q.’* However, the last sentence, conclusion, even if it could be directly deduced from the conjunction of two propositions packed in subconditional, is not explicitly assumed by his formulation of valid argument.

Later Stoic authors sometimes diverge from orthodox doctrine. Antipater is noted for the concept of a single-premise argument (Apuleius, *int.* 184.16-23; Alex., *top.* 8,14-9,8; S.E. *am* viii, 443; Varro, *sat. men.* frg. 291). It has the following form: *‘if p, so q’*. Apuleus noted that Antipater viewed the *proposition* such as *“You see, so you live”* as a *complete conclusion*.

Alexander of Aphrodisias asserts that arguments relying on a single hypothesis or on one duplicated term are neither syllogisms (*an. pr.* 17,13-30; 20,11), nor useful (*ib.* 18,21), but these formers could be true: “they need some external term and premise for their conclusion” (*ib.* 22,25). The utility of argumentation is connected to a specific purpose, which is the demonstration and acquisition of demonstrative knowledge. For example, a sentence *“you are breathing, therefore, you are alive,”* could be accepted as a syllogism “because the hearer himself adds the second premise – *everyone who is breathing is alive* – which is well-known.” If this unspoken premise is *well-known*, hearer can assemble this inference set himself, by adding a missing premise (*ib.* 17,22). Commenting enthymeme, he adds that it is *not syllogism in strict sense* and emphasizes that “here too a syllogism appears to come about through one premise, because the other one is known and added by the jury or audience” (Alex. *top.* 9.10). In the case of sentence “This man deserves to be punished, for he is a traitor,” it is evident for the juror that “every traitor deserves to be punished” To achieve full-flagged representation of this syllogistic form, juror himself adds this well-known premise, which is declared and affirmed by the law. Here Alexander echoing Aristotle’s words that people do not need to separately state some of the premises when they know it (Arist. *an. pr.* 70a15-25), and that “the orator’s demonstration is an enthymeme and this is, in general, the most effective of the modes of persuasion” (Arist. *rhet.* 1355a6). To be effective, a speaker should understand syllogism to use enthymemes properly and to select relevant epistemic supposition in persuasion.

4. Anaphoric function of “since” in Euclid

Acerby (2021:2) highlights Euclid's use of subconditionals in arguments and arguments chaining. Already proven conclusions or some selfstanding proposition is in further steps used either as assumptions or co-assumption for obtaining subsequent argument, *etc.* These derivations are chaining by subordinate connective ‘since’ that takes over either conclusion obtained in previous inference procedure or previously stated selfstanding proposition. The term ‘since’ is employed anaphorically here and refers to the supposition made in a previously established inferential construction (Acerby, 2021:163). A single argumentative form includes ‘since’ (ἐπεὶ), an existential antecedent claim (ἐστίν), and the inferential “therefore” (ἄρα):

Prop. vii, 26: In fact, since (ἐπεὶ γὰρ) each of A, B is (ἐστίν) prime to Γ , therefore (ἄρα) the \langle number \rangle resulting from (multiplying) A, B will also be prime to Γ .

Here at *prop. 26* ‘since’ introduces instantiation of antecedent and concludes instantiated consequent from previous

Prop. viii, 24: If two numbers are prime to some number, then the number created from (multiplying) the former (two numbers) will also be prime to the latter (number).

The if-then scheme from proposition vii, 24 is later referenced by ‘since’ in *the since/therefore scheme* in proposition vii, 26. Here, the antecedent is affirmed (ἐστίν) and the consequent is concluded from both propositions vii, 24 and vii, 26. In modern logic, *prop. vii, 24* can be understood as a universal proposition with a universal quantifier applied to a material conditional. The example in *prop. vii, 26* exemplifies the antecedent instantiation and consequent based on the previous universal *prop. vii, 24*. By introducing a connective ‘since’, we can read it as argumentative model. Here ‘since’ states a proposition supporting the antecedent of anaphorically assumed universal conditional proposition that (in conjunction with this hidden anaphoric proposition) enables implying of conclusion: “(‘If *p* than *q*’; and) *p*, so *q*.”

5. The sign-inference

Aristotle suggests that stating one premise alone is merely *a sign* (σημεῖον). Adding another premise results in a deduction (*an. pr. 70a15-25*). An anaphoric expression can be expanded by making some implicit assumptions explicit. For example, the sign-statement “She is pregnant, because she is pale” serves as a one-premise inference: “*q, for p.*” This, as a hidden syllogism, involves three terms: “*A pregnant woman is pale*”; “*This woman is pale*”; therefore,

“*This woman is pregnant.*” Paleness is considered an indicator of pregnancy, referring to a demonstrative premise that is accepted anaphorically in such simplified inference procedure. This is similar to how Stoics use subconditionals. In *de fato*, Cicero examines “The Fabius argument” (*fat.* vi, 12 and vii, 14; *cf.* Marko, 2020) to illustrate a point of contention between Diodorus and Chrysippus. He presents several premises related to the argument. The main premise is based on correlations or observations derived from long-term Chaldean astrological records, which relate to the interaction of celestial and terrestrial events. Burnyeat (1982:213) interprets these generalizations, according to Cicero’s account and the examples presented in *de divination* (*div.* i, 16, 24-5, 109, 127), as “a long record of observed and remembered conjunctions, gradually corrected for error.” Cicero classifies this type of divination (*div.* i. xii, 34 and 72; [Plut.], *vit. hom.* 212) as *artificial*, distinguishing it from *natural* divination, which relies on the innate abilities of seers rather than observations. Here is how Cicero in *de fato*, vi, 12 exposes the argument. If this (universal conditional) observation is *true*,

C1. ‘If anyone has been born with the Dogstar rising, that one will not die at sea’

then it is true for any particular case,

C2. ‘If Fabius has been born with the Dogstar rising, Fabius will not die at sea.’

Cicero continues with Chrysippus’ alleged conception and introduces a subconditional proposition:

C3. *Since (quoniam)* it is supposed as *certain (certum)* in the case of Fabius that he *has been born* with the Dogstar rising, (*therefore,*) these (things) are also incompatible: ‘Fabius *exists*’ and ‘(he) *will die at sea*’.

The structure resembles to Euclid’s anaphoric case: “*Since p is (the case), therefore, q*” Yet this argument form is connected to more unique Stoic elements.

The first point concerns the Stoic doctrine of sign-inference. One type is a *commemorative* sign, which is *temporarily* non-evident and based on memory and experience (as in the case of smoke and fire, or when seeing a scar recalls a wound that proceed it; S.E. *am* viii, 153). Another type involves an *indicative* sign – one *not clearly associated* with a thing signified and *naturally* non-evident and unobservable (“*If sweat pours through the surface, intelligible pores of the flesh exist*”; S.E. *am* viii, 306). Here, a divinatory proposition corresponds to the idea of something’s being a sign, where the appearance of something that is assumed by the antecedent part of a conditional proposition *anticipates* the consequent, according to a certain divinatory correlation. Sextus informs that the Stoics held that “a sign is a proposition” and that they

introduced “the concept of a sign by saying that a sign is a ‘pre-antecedent’ (προκαθηγούμενον) statement in a sound conditional, *revelatory* of the consequent” (S.E. *ph* ii, 104-6; *am* viii, 245; cf. 272-3; cf. Philod. *sign.* i, 1-17). There is no consensus among scholars on whether this formulation serves as an indicative or correlative sign, or solely the latter (cf. Burnyeat, 1982:211, n. 45). According to Sextus’ exposition, an apparent indication, or sign, points to an underlying, non-apparent phenomenon, in accordance with generalized observation of correlations (or with ‘convincing but fallible’ *conditional*; cf. Sedley, 1982:250ff). Interpreting Sextus, conjunction of premises serves as a sign of conclusion and a demonstrative proof enables to reveal the knowledge that is non-evident. But there is open question, does the sign is proposition or has some peculiar status, not solely propositional but related to apparentness of evident thing (Sedley, 1982:243) or sole physical objects, since they must be observable (Mates, 1961:14-15). Sextus inform us about confrontations regarding corporeal or noncorporeal nature of sign and that there were even Stoics, like some Basileides, who held that “nothing is incorporeal” (*am* viii, 258). He even tries to formulate it through an argument, that sign, for example, like physical vocal sounds, signify something *signified* but *incorporeal* (λεκτόν), i.e. proposition, “and as propositions are signified, but not signifying, the sign will not be a proposition” (ib. 264) but corporeal signifying object.

The second point is that divinatory predictions must be formulated using specific *tense structures* – *if F. has been born (exists), therefore, F. will ...*

The third point is that this kind of conditional, based on correlations derived from empirical observations, can be translated into negated conjunction. They must meet the connectedness criterion (συνάρτησις): “if *p*, *q*” equates to “not both: *p* and non-*q*.” There are various misunderstandings regarding the nature of this criterion. Allen (2001:163) summarizes the difference between two forms of expression. The first sentence pertains to knowledge of the reasons *why*, whereas the second, conjunctive sentence, refers to knowledge of the facts *that*. If we are following Sextus (*ph* ii, 111), he says only that “Those who introduce *connectedness* say that a conditional (συνημμένον) is sound when the opposite of its consequent conflicts with its antecedent.” Sextus is not introducing any necessity or possibility that appears in Cicero’s exposition, where he concludes that:

C4. Therefore, this conjunction also is incompatible: ‘Fabius exists’ and ‘Fabius will die at sea’, since, *as has been stated*, it is *not possible* for it to happen.

Regarding the phrase “as has been stated”, Cicero did not previously mention anything on necessity or possibility unless one interprets the term *certain* (*certum*) in C3. as implying

necessity. Cicero last sentence in C4. corresponds with Galen (*inst. log.* 4.1-7). There he makes distinction between *incomplete conflict* (when the facts in conflict *cannot* exist together) and *complete conflict* (when if not being nonexistent *at the same time* it is *necessary* that one or the other do not exist). So, our connectedness criterion now transforms to: ‘*if p, q*’ equates to ‘not *possible* both: *p* and *q*’. Some modern commentators have inferred that the subconditional used in Cicero’s argument may be *stronger* than material implication (cf. also Boethius, *in. Cic. top.* 347/1244C). We don’t know does the Fabius example and connectedness is appropriate only for divinatory and medical observations as well as sign-inferences with actualized antecedents, for Cicero adds (*fat. vi*, 14) that “Chrysippus does not think this applies in every case”. Philodemus’ treatise *de signis* focused on inferences from signs. Unlike the Stoics, he frequently uses “*since p, q*” instead of “*if p, q*” to show the relationship between a sign and what it signifies. Besides, signs are not propositional but stressing existence while the consequent is simultaneous with antecedent. This is his example (ii, 25-iii, 9, ch. 5):

Ph1. Since (ἐπει) the men among us are mortal, all men are.

This sign-inference is obtained by experience and inductive method of similarity (ἐπιλογισμός). According to him, using this method will be valid:

Ph2. ...if we take it as a premise that *the men in unperceived places are similar to those among us in all respects* (V.M.), so that they are similar also in being mortal; without this premise it will not be valid. For if they are similar in all respects, we shall with the greatest correctness infer that they are similar in this respect too.

So, Ph1 is in fact a kind of argument enabled by the *additional* generalized premise of experienced similarity, assuming that “the men in unperceived places are similar to those among us in all respects”. Supposed premise enables the transition from the evidence, presented in the first part of the sentence, to a generalization that serves as the conclusion in the sentence.

6. Modern approaches

Goodman (1947⁴:4) appears to have been the first to introduce the term "factual conditional" in relation to ‘*since*’, as a counterpart to "counterfactual" proposition. It also assumes connection with a true conditional from which it is derived. Looking only at their truth-functional compounds, all counterfactuals are true, for their antecedent is false. They can be easily transformed to factual conditionals with a true antecedent and using contraposition of previous sentence. For example,

G1. If that piece of butter had been heated to 150° F., it would not have melted.

G2. Since that butter did not melt, it wasn't heated to 150° F.

Although both sentences are true, counterfactual G1 has a false antecedent, whereas subconditional G2 emphasizes its antecedent's truth. According to Goodman, for this reason counterfactuals should be evaluated based on the relationship between their components, not just their truth.

Ryle considers that statements with both true antecedent and consequent, which are classifiable neither as hypothetical nor categorical, differs both from inferences and hypothetical statements. In the case of 'because' we have case of 'explanation'. However, though closely related to both arguments and hypotheticals, explanations are not arguments but statements. On the other side, sentences formed by 'so' (Ryle, 1950:249) – which implicitly or explicitly appears in subconditionals – are *arguments*. They are not statement, and 'so' is “not a relation word or relational predicate, or predicate of any sort”, but an inference (*ib.* p. 254). While *if*-sentence is a kind of ticket that enables inference (*ib.* p. 250), possession of ticket alone is not actually travelling. The case of single-sentence arguments represents kind of *application* of *if*-sentence or actualizing a capacity of such inference ticket. As Aune (1967:129) paraphrased it, arguments involve “putting a corresponding hypothetical statement to use”.

In analysis of natural language behavior and its pragmatics Strawson (1952:48) use to sort 'since' (together with 'so', 'consequently', 'because', 'for', 'it follows that' etc.) among “the group of kindred conjunctions”: “it is not (in general) to assert, but *to signalize a claim*, that one thing is a ground or a reason for another.” At other place he gives a weaker formulation and puts them among expressions “sometimes used to signalize steps, which we should rightly hesitate to call steps in reasoning, but which are of no less interest to the logician” (*ibid.*, p. 14). These expressions not always marking the transition from one statement to another as usual 'step in reasoning'. Sometimes we simply repeating what it is said by using other words, to make some formulation additionally concise and clear, etc. Their role in determining entailment is entirely dependent on their verbal contexts. These expressions can be considered presuppositions, meaning they are assumed by the speaker and expected to be known by the listener in context. They indicate a relationship between spoken and presupposed statements. Strawson approach could be comparable with that of Grice. Logical connectives in conversational contexts can sometimes follow reasoning steps that do not always have a definitive logical character. Their function depends on their conversational contribution and can be classified as *conversational implicature* (Grice, 1989:24-26). We can represent it as a kind of implicature trigger that turn attention in certain direction. Additionally, an act of

implicature in conversation relates to the complex process of confronting two beliefs, since to implicate something to listener is a way of expressing one's belief. From the opposite side, listener that receives some information that hints implicature tries to process it and to interpret it by putting in some known, supposed or expected context. Together with other received information listener proceeds toward inference act to locate or to acquire speaker's belief. Some implicatures are conventional, while others may appear as such, but are intended differently. For example,

He is an Englishman; he is, *therefore*, brave.

We can conclude that his being brave follows from the fact that he is Englishman. However, by putting together 'being an Englishman' and 'being a brave', I don't want to accentuate this implicature, even it sounds that it is implicated so. Even this implicature is problematic in logical and strictly speaking sense, it does not mean that the consequence I wish to stress fail to hold. We need more subtle analysis of language for eliminate misunderstandings. Grice (1989:374) concludes that "we need, two kinds of logic" for connectives we use. One, the logic of language, relaxed and not firmly binding. While other should be formal, one strictly regimented to reach effectiveness of logical inferences, at the cost of sacrificing some properties of vulgar logical connectives appropriate in daily conversation.

Since the early 1960s, Rescher has endeavored to develop a classification of conditionals based on their dominant properties. With respect to a body of relevant knowledge B (Rescher, 2007:15), he distinguishes:

- (1) *factual conditionals*: $p \in B$: p is known or accepted as true, in which case we have a "since conditional" rather than an iffy one: "Since p is true, q is."
- (2) *agnostic conditionals*: $\sim p \in B$: p is known or accepted as false: "If p were true, q would be."
- (3) *speculative conditionals*: neither $p \in B$ nor $\sim p \in B$: p is of unknown truth status: "If p is true, q will be."

Factual conditionals are based on supposed background knowledge. These are mirroring in *counterfactual conditionals* or *belief-contradicting* conditionals, with false antecedent. Between factual and counterfactual cases are *agnostic* and *speculative* conditionals with undecided antecedents, neither believed nor disbelieved, like material implication. The speculative conditional in principle has capacity to be easily equipped with corresponding supposition.

Many if-sentences exhibit similarities with since-sentences due to their reliance on some tacit supposition. When background information is required to validate a conditional relationship, it is constructed on an enthymematic basis. This approach facilitates the linkage between antecedent and consequent, thereby supporting the relationship in question (Rescher, 2007:22). Agnostic conditionals represent genuine *iffy* conditionals.

R1: If that spoon is made of silver [and we don't know this one way or the other], then it will conduct electricity.

This conditional is validated by recognizing that the conjunction of the antecedent "That spoon is made of silver," along with the background information "Silver conducts electricity," logically supports the consequent as a conclusion. The background information uses an enthymematic basis to conditionally link two sentence components. In the context of enthymematically provided information the supposition of p makes possible the derivation of q . Such additional (not always fully articulated) substantive information enables transfer from antecedent to consequent. Based on the same background knowledge previous sentence can be easily reshaped to this form:

R2: Since that spoon is made of silver, it will conduct electricity [due to the conductive properties of silver].

This mode of conditionalization Rescher presents by enthymematic implication $[S] \rightarrow$ specified in the following way:

$p [S] \rightarrow q$ or equivalently, $(p + S) \vdash q$.

An antecedent enthymematically implies consequent relatively to set of *available* propositions or the enthymematic manifold S *if and only if* the former (the antecedent), "when duly conjoined with various S -members to provide an enthymematic basis, provides for the logico-conceptual deducibility of the latter" (Rescher, 2007:37). When S is the set of our belief commitments B , then suppositional $[S] \rightarrow$ transforms to *doxastic* implication $[B] \rightarrow$, i.e. "p is believed".

$p [B] \rightarrow q$ or equivalently, $(p + B) \vdash q$

It is a matter of logico-conceptual deductibility whether a given statement follows from other statement(s)? However, certain contingently characterized propositions such as beliefs – that form part of the knowledge background of a proposition – from which a given fact follows, are not strictly logical in nature. Rescher intention is to find some basis for unified theory of implication that could encompass varieties of its constructions. He asserts that despite the

variety of implication constructions, they all originate from a single fundamental concept, specifically enthymematic implication. He further contends that a significant range of implementations can be unified under the overarching principle of enthymematic implication (pp. 40-41).

To resume Rescher remarks on our topics. Expressing factual, since-conditional we can merely append the antecedent to our existing knowledge and proceed inferentially from that point (ibid. p. 80 and p. 103).

Summary

What can we conclude from this brief overview of various perspectives on since-conditionals? Let's summarize some observations by answering several questions.

Is a subconditional truly conditional? Rescher (2007:16) explicitly states that “only *iffy* is *genuinely* conditional – and *agnostic*. Factual ‘conditionals’ are “*so in name (and form) only*: there is nothing really *iffy* about them...” The position corresponds with that of Mackie (1973:74) – even since-conditionals are so closely related to conditionals, “sentences constructed with ‘since’ rather than ‘if’ are not strictly conditionals”. Factual conditional (subconditional) denotes a form of dependency and suggests relational proximity among its components. Although it may resemble conditionals, it does not constitute a true conditional. Is ‘since’ considered a conjunctive connective in relation to truth-functional analogy with conjunction? As previously noted, Cicero credited the Stoics with the assertion that divinatory observations must be expressed through conjunctions, as they are based on the correlations of phenomena. While subconditional may appear like conjunctive due to its similarity in truth-functional values, it is not truth-functional connective and neither conditional nor conjunction. Rather, it functions as a condensed argument that encapsulates more inference steps in the background. The primary characteristic is that while the truth of the antecedent is asserted, its connection to the consequent is established externally and it is based on an assumed proposition that is not included in the expression itself.

Is subconditional a single-premise argument? From one side, a simple repeating premise in the conclusion can be valid from a logical standpoint – for example, ‘*p, therefore p*’, ‘*p, therefore p or q*’ etc. From the other side, in the cases of ‘since-conditionals’ as ‘(*since*) *you see, so you live*’ (Apuleius, *int.* 184.16-23), we will not agree with Antipater single-premise solution. If the antecedent of expression is considered true, it requires additional assumptions to be adequate or full-fledged argument, even though it may sound acceptable in its condensed form, commonly tolerated or functional in usual communication.

Is it subconditional enthymematic argument form? It appears that subconditional, as inferential ‘conditional’ or condensed form of argument, could be classified as enthymematic argument. This approach was also observed in Alexander's interpretation of Aristotle's position, which he argued as founded on “well-known assumptions.” In oratory, such assumptions do not always need a strict or precise form. Grice also believes that conversational implicature, even laying on broader or habitual assumptions, can facilitate communication. In such function the connective ‘since’ serves as a shortcut that depends on some shared or assumed knowledge of both the speaker and the listener. At the same time, it signalizes that some supposition is used in the inferring process. So, it is functional tool that enables linking of expressed part of speech with different parts of supposed or supportive background knowledge. This “since’ function of linking of hidden premises in enthymematic use can also appear in its *anaphoric* use. As we found in Euclid, there we are progressing in argumentation by recalling not tacit but previously used (explicit) assumptions as supposed. Here, instead of condensed and enthymematic form of arguing we used ‘since’ as *reference* to accepted previous premise(s) in the development of argument.

Bibliography

- Acerbi, F. (2021): *The Logical Syntax of Greek Mathematics*, Sources and Studies in the History of Mathematics and Physical Sciences, Cham: Springer.
- Allen, J. (2001): *Inference from Signs - Ancient Debates about the Nature of Evidence*, Oxford: Clarendon Press.
- Aune, B. (1967): If, *Edwards Encyclopedia of Philosophy*, Vol. 4, pp. 127-129.
- Barnes, J. (1980): Proof Destroyed, *Doubt and Dogmatism. Studies in Hellenistic Philosophy*. Edited by M. Schofield, M. Burnyeat and J. Barnes, Oxford: Clarendon Press. Oxford, 161-181.
- Brunschwig, J. (1980): Proof defined, in: Schofield, M., Burnyeat, M.F., and Barnes, J. (eds.). *Doubt and Dogmatism*. Oxford: Clarendon Press, 125-160.
- Burnyeat, M.F. (1982): ‘The origins of non-deductive inference’, in Barnes, Brunschwig, Burnyeat & Schofield (eds) *Science and Speculation: Studies in Hellenistic Theory and Practice*. Cambridge and Paris: Cambridge University Press and Éditions de la Maison des Sciences de l’Homme. 193–238.
- Gahér, F. (2022): Counterfactuals and Backtracking Counterfactuals. *Axiomathes* 32 (Suppl 2), 553–573.

- Goodman, N. (1947): The problem of counterfactual conditionals, *Philosophy* 44:113-128.
Repr. in *Fact, Fiction. and Forecast*. 4th ed., Indianapolis: Bobbs-Merrill, 1986, pp. 3-27.
- Grice, P. (1989): *Studies in the Way of Words*, Cambridge, Massachusetts, London: Harvard University Press.
- Mackie, J. L. (1973): *Truth, Probability and Paradox: Essays in Philosophical Logic*. Oxford: Clarendon Press
- Marko, V. (2020): On Cicero's 'Fabius Argument', *Filozofia*, 75, No 8, pp. 677 – 692.
- Mates, B. (1953, 1961²): *Stoic Logic*, Berkeley: University of California Press.
- Nasti, M. (1981): Logica scettica e implicazione stoica, in G. Giannantoni (ed.), *Lo scetticismo antico*, Naples: Bibliopolis, pp. 501-532.
- Nasti, M. (1984): Stopper on Nasti's Contention and Stoic Logic, *Phronesis*, Vol. 29, No. 3, pp. 313-324.
- Pizzi, C. (1980): 'Since', 'Even if', 'As if', in M.L. Dalla Chiara (ed.), *Italian Studies in the Philosophy of Science, Studies in the Philosophy of Science*, vol. 47. Dordrecht: Reidel. Pp. 73–87.
- Rescher, N. (2007): *Conditionals*, Cambridge, MA: MIT Press.
- Sedley, D. (1982): On signs, in J. Barnes, J. Brunschwig, M. Burnyeat, and M. Schofield (eds.), *Science and Speculation: Studies in Hellenistic Theory and Practice*. Cambridge and Paris: Cambridge University Press and Éditions de la Maison des Sciences de l'Homme, pp. 239-272.
- Stopper, M. R. (1983): Schizzi Pirroniani. *Phronesis*, xxviii, 265-297.
- Strawson, P. (1952): *Introduction to Logical Theory*, London: Methuen and Co. Ltd.