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Dicisigns

Peirce's semiotic doctrine of propositions

"I do not, for my part, regard the usages of language as forming a satisfactory basis for logical doctrine. Logic, for me, is the study of the essential conditions to which signs must conform in order to function as such."

Kaina Stoicheia, 1904

Introduction

Peirce's doctrine of propositions – "Dicisigns" – has been strangely neglected. To take an example: no single paper title in the 50-odd years of publication history of *Transactions of the Charles S. Peirce Society* involves the notion of Dicisign, and only a small handful of papers address the doctrine under the headline of "propositions".¹ Compared to the voluminous literature on Peircean sign types such as the icon-index-symbol trichotomy, the type-token distinction, or the types of inferences, Dicisigns are close to being neglected. In the development of 20 C logic, Peirce's philosophy of propositions - unlike his logic formalizations and many other ideas of Peircean logic - has had little influence, if any.

Yet, Dicisigns not only form an early and fairly elaborated doctrine of propositions – independent of that of Bolzano, contemporaneous with those of Brentano and Frege, and earlier than those of Russell, Wittgenstein, the positivists, etc. Dicisigns also take a very central place in the mature Peirce's semiotics and epistemology, closely related to his

doctrine of diagrammatical reasoning. Peircean Dicsigns differ, in important respects, from received doctrines of propositions, and aspects of the Dicsign doctrine may add to the current discussion of structured propositions and reinvigorate the connections between logic and semiotics, giving the former more cognitive relevance and taking the latter away from relativism.

Already in the period from 1880-85, Peirce constructed his linear formalizations of propositional logic and first order predicate logic - following immediately, but unknowingly, in Frege's 1879 footsteps.ⁱⁱ These few years apart, Frege and Peirce independently discovered predicate logic with polyvalent predicates and quantification. As has gradually become known, it was Peirce's rather than Frege's much more cumbersome formalization of the *Begriffsschrift* which came, via Schröder, Peano, and Russell, to be taken as the basis for modern formal logic. So Peirce's elaborated doctrine of the Dicsign, primarily developed only in the years around 1900, takes these formal logical breakthroughs of the years around 1880 as their background: the distinction between a quantification part and a Boolean part of propositions (today: the prefix and matrix parts, respectively) becoming central to Peirce's later analysis of the two functions of Dicsigns. But why did Peirce actually care to develop, on the top of these achievements in formal logic, a doctrine of Dicsigns? Two reasons may be inferred. One is that, during the same period, he developed the competing set of logical formalizations known as Existential Graphs, giving, on several points, a new perspective on propositions. The other is that, in this period, he developed his general semiotics, highlighting an interest in which sign vehicles are capable of performing which logical functions, taking him to generalize basic sets of distinctions to cover all signs, thus his old icon-index-symbol trichotomy and the classical logical term-proposition-argument triad.

In this paper I shall reconstruct and discuss Peirce's theory of Dicsigns with a special emphasis on the extension of empirical sign vehicles capable of instantiate propositions or quasi-propositions – as Peirce's interest in this issue forms the most important difference in his

doctrine to mainstream ideas of propositions. So let me begin by outlining the extension of Peirce's Dicisign concept.

The extension of the Dicisign concept

Dicisigns are signs, to put it bluntly, which say something about something. This is, for a pragmatist, absolutely central – which is why Dicisigns are taken to be central among "genuine signs" while simpler signs like icons and indices are taken by Peirce to be "degenerate" signs, and unsaturated propositional functions – so-called rhemes – are characterized as "fragmentary" signs (in the "Kaina Stoicheia", 1904, NEM IV).ⁱⁱⁱ The fine-grained varieties of degenerate signs regularly appear as parts or aspects of Dicisigns, but they do not, in themselves, satisfy the basic semiotic task of Dicisigns, namely, to convey information: "... no sign of a thing or kind of thing — the ideas of signs to which concepts belong — can arise except in a proposition; and no logical operation upon a proposition can result in anything but a proposition; so that non-propositional signs can only exist as constituents of propositions." ("An Improvement on the Gamma graphs," 1906, *CP* 4.583).

Thus, Peirce's doctrine of Dicisigns constitutes an original and far-reaching account for the semiotics of propositions – also when compared to the doctrines of Frege, Russell, Wittgenstein and the tradition to which they gave rise. Most importantly, Peirce's semiotic theory of Dicisigns does not tie propositions to human language exclusively, neither in the shape of ordinary language nor special, formalized languages. This more general doctrine of Dicisigns thus has several important merits. First, it allows for the consideration of the role played by Dicisigns in pre-human cognition and communication in biology – and thus to envisage an evolutionary account for the development of propositions from very simple biological versions of proto-propositions and to the much more explicit, articulated, nested, and varied propositions in human cognition and communication.^{iv} Second, it allows for the investigation of the broad range of human Dicisigns which do not involve language – or which only partially involve language. This makes possible the study of how

pictures, diagrams, gestures, movies, etc. may constitute Dicisigns or participate in Dicisigns – highlighting how non-linguistic signs may facilitate reasoning and appear in speech acts taken in a wider sense, including what could be called picture acts. Third, it connects propositions closely to perception, cf. Peirce’s doctrine of “perceptual judgments” as making explicit general aspects of perception. Fourth, Peirce’s functional definition of Dicisigns liberates them from the idea that conscious intention, “propositional stances”, and the like forms an indispensable presupposition for propositions to appear. And fifth, it embeds Dicisigns and their development in a social setting, Peirce taking the steps from proposition to proposition in thought to be dialogical and to presuppose the knowledge of a Universe of Discourse shared among dialogue participants. This further allows for a plasticity of interpretation of Dicisigns, relative to the Universe of Discourse in which they partake. This radical extension of Dicisigns, embracing animal sign use on the one hand and non-linguistic human semiotics, perception, and dialogical reasoning on the other does not come without problems, though. The Dicisigns at stake here may appear more implicit, indirect, and vague as compared to the explicitness of declarative sentences in the indicative, expressed in human language, ordinary or formalized, and thus form a notion of proposition which is, in important respects, deflated.

Peirce’s doctrine of Dicisigns comprehends propositions proper, linguistically represented and objects of fully conscious propositional attitudes - as well as what he himself calls quasi-propositions, Dicisigns which are not necessarily Symbols. This is why I stick to the term “Dicisign” addressing Peirce’s broad notion of propositions – while using “proposition” about the received notion as well as “proposition” as opposed to “quasi-proposition” when these more specific subtypes come up.^v Here my aim is threefold. First, to give an account of Peirce’s notion of Dicisigns as it appears in the mature version of his semiotics in the years after 1900, peaking in his Dicisign doctrine of 1903 presented in the Pragmatism and Lowell lectures and the *Syllabus*, further elaborated in the “Kaina Stoicheia” (1904), the 1905-6 *Monist* papers and the letters to lady Welby 1904-08. Second, to indicate its relation to other central tenets of his theory, particularly that of diagrams and diagrammatical

reasoning. Third, to trace the possible contributions of Peirce's doctrine to actual issues of structured propositions, their meaning, objects, type of existence, etc.

Dicisigns: signs separately indicating their object

A striking peculiarity of Peirce's logic is its emphasis on logic *as semiotics* - and, correspondingly, the status of all logic entities and figures as signs - as he expresses it by a recurring onion metaphor: "A pure idea without metaphor or other significant clothing is an onion without a peel." ("The Basis of Pragmatism", ca. 1906, EPII, 392). At the same time, Peirce holds an idea of propositions in themselves as ideal entities - as types - facilitating the appearance of one and the same proposition in very different semiotic acts. The existence mode of propositions is not that of numerical, *hic et nunc* individual existence, but that of sign types, mere possibilities - which is why they need semiotic machinery to be able to appear and play a role in actual discourse. For that same reason, the character of that machinery comes to play center stage in Peirce's Dicisign doctrine.

True to Peirce's general way of investigating sign types, he describes Dicisigns both compositionally, functionally, and systematically. As Hilpinen (1992) says, Peirce's recurrent and "standard" definition of Dicisigns is given in the following italicized passage from "Kaina stoicheia":

"It is remarkable that while neither a pure icon or a pure index can assert anything, an index which forces something to be an icon, as a weathercock does, or which forces us to regard it as an icon, as the legend under the portrait does, does make an assertion, and forms a proposition. This suggests a true definition of a proposition, which is a question in much dispute at the moment. *A proposition is a sign which separately, or independently, indicates its object.*" (EPII, 307, emphasis Hilpinen's).^{vi}

This definition implicitly posits propositions against predicates without any reference indicated, the so-called “Rhemes” (cf. the Dicisign “The sky is blue” vs the unsaturated Rheme or propositional function “_ is blue”). And it sets Dicisigns apart from simple indices which do nothing but exactly indicating their object (the pointing gesture, the proper name, the pronoun, etc.), thus not performing its indicating *separately* from other aspects of their functioning. Moreover, it is this definition which implies that Dicisigns comprehend more than full-blown general, symbolic propositions and also involve quasi-propositions like Dicient Sinsigns and Dicient Legisigns^{vii} – they qualify for the basic reason that they, too, separately indicate their object. Photographs, for instance, may function as Dicient Sinsigns, just like statements of identity, location or naming may function as Dicient Legisigns. Such Dicisigns, like the pointing of a weathercock, even give the core of the definition: “It is, thus, clear that the vital spark of every proposition, the peculiar propositional element of the proposition, is an indexical proposition, *an index involving an icon.*” (“Kaina Stoicheia”, 1904, EPII, 310, our italics). The weathercock is a Dicisign because its indexical connection with the wind, involving the icon of turning in the wind's direction. Full-fledged linguistic propositions realize this same structure by grammatical means – but this is no special capacity of language as such. Rather, language is adapted to fit Dicisign structure. Thus, this basic definition makes clear the large extension of Peirce’s Dicisign category. This maybe surprising definition of the Dicisign is closely connected, however, to the basic function of the Dicisign, namely to convey information – to relay claims, true or false. Only by separately indicating an object it becomes possible for a sign to convey information about that object, correctly or not:

“... the essential nature of the *Dicisign*, in general, that is, the kind of sign that *conveys* information, in contradistinction to a sign from which information may be derived.

The readiest characteristic test showing whether a sign is a Dicisign or not, is that a Dicisign is either true or false, but does not directly furnish reasons for its being so.”

(Syllabus, 1903, EPII, 276)

Dicisigns are thus signs which may be assigned a truth value – without providing, themselves, reasons for that value. The implicit countercategory here is the Argument, involving more than one Dicisign and explicitly giving reasons for its being true. The distinction between signs conveying information and signs from which information may be derived points to the possibility of deriving information from icons – crucial to diagrammatical reasoning. When such information is actually derived, however, it will be structured as a Dicisign. The most simple example of this is perceptual judgment. I see a certain configuration of crafted wood and derive the information “This is a chair”. linguistically expressed or not. Even if I do not convey this information to anybody else but myself in an act of communication, Peirce insists that individual reasoning also takes the shape of dialogic communication. When concluding “This is a chair”, I communicate this to myself, that is, to a version of myself existing a moment later, thus conveying information to myself in the shape of a Dicisign.

The double function of the Dicisign

The function of expressing truth or falsity are possible only by means of the Dicisign having a particular double structure which Peirce describes in various ways, already in the early nineties:

“Every assertion is an assertion that two different signs have the same object.” (“Short Logic”, 1893, CP 2.437).

An assertion is the speech act of claiming that a proposition is true.^{viii} As a sign, the proposition must involve those two different signs: it must, at the same time, fulfill two functions connecting it in two different ways to the same object, the index and the icon mentioned above. This is the reason why many propositions possess an internal structure composed from two separate parts, each fulfilling its specific function. Oftentimes, Peirce generalizes the classical notions of Subject and Predicate to

account for these two aspects of Dicisigns:

" It must, in order to be understood, be considered as containing two parts. Of these, the one, *which may be called the Subject*, is or represents an Index of a Second existing independently of its being represented, while the other, *which may be called the Predicate*, is or represents an Icon of a Firstness." (*Syllabus*, 1903, EPII, 277; 2.312)

A Dicisign thus may perform its double function by means of having two parts, a subject part referring by means of some version of an index (maybe indirectly by an indexical symbol like a pronoun or a quantifier or an indexical legisign like a proper noun) to the object of the Dicisign, and a Predicate part, describing that object by means of an icon of some quality (maybe indirectly by an iconical symbol like a linguistic predicate). As Hilpinen remarks, this is an Ockhamist idea, William of Ockham defining the possible truth of a proposition by the possibility that the subject and the predicate "supposit for the same thing" (Hilpinen 1992, 475), that is, refer to the same object. So the doubleness of the Dicisign is what enables it to express truth: it is true in case the predicate actually does apply to the subject - which is what the Dicisign claims.

"That is to say, in order to understand the Dicisign, it must be regarded as composed of such two parts whether it be in itself so composed or not. It is difficult to see how this can be, unless it really have two such parts; but perhaps this may be possible." (*Syllabus*, 1903, EPII, 276)

Central examples – for instance, that of a photograph – do indeed indicate that the Dicisign may play those two independent roles without explicitly being articulated in two separately identifiable parts of the sign, as Peirce realizes a bit later in the *Syllabus*. The photograph's indexical connection to its object via focused light rays stemming from that object, influencing a photographic plate, whether chemically or electronically, plays the Subject role of the Dicisign, granting the connection of reference between sign and object; while the shapes, colours and other qualities formed on that plate play the Predicate role –

even if those two roles are not explicitly separated as distinct parts of the photographic sign itself. Still, the two are clearly functionally separate, constituting two aspects of the sign rather than two distinct physical parts of the sign vehicle.

Peirce's analysis of the Predicate part or aspect of the Dicisign is closely connected to the Russian-doll structure of the Rheme-Dicisign-Argument triad, where Dicisigns in a certain sense contain Rhemes and Arguments similarly contain Dicisigns. Rhemes are what is left if one or several Subjects of a Dicisign are erased:

"If parts of a proposition be erased so as to leave blanks in their places, and if these blanks are of such a nature that if each of them be filled by a proper name the result will be a proposition, then the blank form of proposition which was first produced by the erasures is termed a *rheme*. According as the number of blanks in a rheme is 0, 1, 2, 3, etc., it may be termed a *medad* (from μηδέν, nothing), *monad*, *dyad*, *triad*, etc., rheme." (*Syllabus*, 1903, EPII, 299; 2.272)

Thus, rhemes correspond to what is now often called propositional functions with the caveat that they comprehend also a vast range of non-linguistic predicates.^{ix} Peirce, originally a chemist, made this analysis of polyadic predicates modeled upon the notion of chemical valency. For the same reason he saw predicates as unsaturated, calling for saturation by indices in one or more of their blanks. For instance, in the proposition "Peer gives an answer to Svend", one or several of the subjects "Peer", "answer", and "Svend" may be erased to give rhemes like "_ gives an answer to Svend", "Peer gives a _ to _", "_ gives a _ to _", etc. To Peirce, unlike Frege or Russell, the Predicate includes the copula – in "The sky is blue", the predicate rheme will be "_ is blue". This allows for him to include a wide variety of expression types under the rheme category – linguistically, verbs as well as adjectives and common nouns, with the copula added, constitute rhemes. Outside of linguistics, pictures, images, diagrams, gestures, etc. may form rhemes and thus appear as the predicative, propositional-function part of Dicisigns. Common to all predicate rhemes is that they involve an iconic,

descriptive sign. So, the important basis of this double aspect theory of the proposition is that one and the same complex sign – the Dicisign – in some way indicates an object by a direct index or by some more indirect identification procedure for retrieving the object or set of objects referred to (maybe involving a proper name or other symbolic index, a common noun, quantification, etc.) and, at the same time, furnishes a description of that object given in the predicative, Rheme aspect of the Dicisign. These two aspects form the basis of the purely functional definition of propositions:

"Thus, every proposition is a compound of two signs, of which one functions significantly, the other denotatively. The former is intended to create something like a picture in the mind of the interpreter, the latter to point to what he is to think of that picture as being a picture of." (Ms. 284 "Basis of Pragmatism" 1905 p. 43)

So, the basic function of the predicative aspect of the Dicisign is to yield an iconic description of the sign's object. This, however, is not all. By including the copula and the number of blanks involved in the predicate given, the predicative side of the Dicisign includes all that is not immediately indexical:

"The most perfectly thorough analysis throws the whole substance of the Dicisign into the Predicate." (*Syllabus* 1903, EPII, 281; 2.318)

This implies that the Predicate also includes the syntax of the Dicisign, cf. the claim that the Predicate is also "... representing (or being) an Icon of the Dicisign in some respect" (*Syllabus* 1903, EPII 279, 2.316). The Predicate not only depicts certain characters of the object, it also depicts the Dicisign claiming those characters to pertain to the object. The Predicate iconically describes that very aspect of the Dicisign - its syntax. So, the Predicate operates on two levels simultaneously, on the object and metalanguage level, as it were. We shall return to this syntax below.

The fact that Peirce chose the age-old terminology of Subject-Predicate of Aristotelian logic in his structured proposition doctrine of Dicisigns hid, to some degree, the radicality of it and did not help the spread of it. Jean van Heijenoort's influential history of logic (1967) constructed the "Fregean revolution" as leading almost directly from the *Begriffsschrift* to Russell and modern formal logic, thereby sidelining strong role played, also in Peano and Russell, by algebraical logic (Boole, de Morgan, Jevons, Peirce, Schröder etc.), cf. Anellis 1995, 2012.^x Among Heijenoort's major claims was that the latter aimed at a mere calculus for computing, not a representation language for inferencing; that the algebraists did not grasp quantification (even if it was Peirce and his pupil O.H.Mitchell who introduced, in 1883, the first version of its modern notation), and, decisively, that the algebraists stuck to Aristotelian subject-predicate logic and failed to follow Frege's groundbreaking function-argument distinction instead. Peirce's idea of "throwing all" of the analysis of the Dicisign into the predicate exactly parallels Frege's function-argument strategy for carving up propositions - but sticking to the old terminology, Peirce did not immediately signal this radicality of his doctrine. As is already evident, Peirce's logic did not address calculation only and functions as a representative language just as much as the Frege tradition - albeit in a broader sense of "language". The algebraic tradition, moreover, was what allowed Peirce's doctrine to be even more radical than Frege as to the extension of predicates far beyond language. Despite his graphical notation, Frege was interpreted as staying close to the idea of logic as language while Peirce's adherence to the algebraists permitted him to transgress human language as basis for logic and, in fact, more than Frege, to integrate both computational and inferential aspects of logic.

The indexical side of Dicisigns

Peirce's first formalization of logic – in (1883) and the two "Algebra of Logic" papers in the 1880s - formed the first version of standard modern formal logic which later adopted Peirce's ideas via the intermediaries of

Schröder and Peano (Putnam 1982). Thus, the central idea is to separate completely the two aspects of the proposition, quantification of variables on the one hand; predicates and their interrelations on the other – the indexical and iconical parts, as it were. In our day's terminology, the prenex normal form of the proposition, distinguishing the quantifier prefix part of it from its quantifier-free matrix part. Thus the isolation of the indexical part in the shape of a pointing gesture, a proper name, a constant or a variable subject to quantification makes possible the corresponding isolation of the predicate and syntax – the idea of throwing all of the substance of the Dicisign into the Predicate.

In the simplest cases, the index is simply the drawing of attention to the object of the Dicisign – by a pointing gesture, an adverb, pronoun or a proper name identifying the object, or any other way of indicating the object of the proposition:

“Thus the subject of a proposition if not an index is a precept prescribing the conditions under which an index is to be had.” (“Lectures on Pragmatism”, III, 1903, EPII 168)

An index putting the receiver in a direct, immediate, causal contact with the object referred to thus forms the prototypical version of the subject part of a proposition (cf. the simple examples of a weathercock causally connected to the wind) – and all more complicated propositions in principle furnish information about how to retrieve such an index; that is the task of proper names and quantifiers. Proper names are connected to the objects by means of an early version of rigid designation:

“A proper name, when one meets with it for the first time, is existentially connected with some percept or other equivalent individual knowledge of the individual it names. It is *then*, and then only, a genuine Index. The next time one meets with it, one regards it as an Icon of that Index. The habitual acquaintance with it having been acquired, it becomes a Symbol whose Interpretant represents it as an Icon of an Index of the Individual named.” (*Syllabus*, 1903, EPII, 286)

Quantification is now analyzed in dialogic terms. Existential quantification reserves the right to select an appropriate object to the speaker of the Dicsign, while universal quantification hands over the right to the selection of appropriate objects to the receiver of the Dicsign – forming the kernel of Peirce's early version of game–theoretical semantics (cf. Hilpinen, Pietarinen, etc.).

An important, pragmatic difference to the standard theories, however, is that the indexical part of the proposition is subject to interpretation given the context of the utterance. In many cases, there is a tacit understanding (cf. below on "collateral information") which objects are indicated so that the explicit reference to them in the shape of indices may be underdetermined:

“When we express a proposition in words we leave most of its singular subjects unexpressed; for the circumstances of the enunciation sufficiently show what subject is intended and words, owing to their usual generality, are not well-adapted to designating singulars. The pronoun, which may be defined as a part of speech intended to fulfill the function of an index, is never intelligible taken by itself apart from the circumstances of its utterance; and the noun, which may be defined as a part of speech put in place of a pronoun, is always liable to be equivocal.” (“Lectures on Pragmatism”, VI, 1903, EPII, 209; 5.153)

Thus, Peirce's insistence that Dicsigns are indeed signs gives his theory an important flexibility where implicit information agreed upon by the interlocutors and the specific Universe of Discourse they address may form part of the interpretation of Dicsigns. We shall return to this in more detail below.

The iconical side of Dicsigns

As to the Predicate side of the Dicsign, it “... only conveys its signification by exciting in the mind some image or, as it were, a composite photograph of images, like the Firstness meant.” (*Syllabus*

1903, EPII, 281; 2.317). This idea is that a central function of the predicate is to invoke a *general* image of the property signified. This should not be mistaken for psychological imagery subject to the fancy of the individual.^{xi} Rather, the important and controversial idea here is that *general*, schematic images play a central role in logic and cognition. This comes to the fore in Peirce's theory of diagrams and diagrammatical reasoning – diagrams being icon *types* capable of instantiation in different tokens, just like linguistic entities. In the quote given, he uses the metaphor of the photographic technique of the time known as "composite photograph" (cf. Hookway 2002), the practice of subjecting the same photographic plate to subsequent exposures of related objects giving rise to a generalized picture subsuming the individual contributions as instances and blurring individual detail. Sometimes such procedures are still used, e.g. to give an idea of the "woman of the year", superposing images of a series of celebrity fashion models to give a general image of the ideal woman of the moment.

This idea lies behind the enormous variety of predicate signs admitted in Peirce's Dicsign doctrine, one of the most important differences to the standard logical tradition. Photographs, paintings, diagrams, graphs, algebras, gestures, object samples – in short, all possible description devices may enter into Dicsigns to perform the functional task of predicative iconicity in the Dicsign: "All icons, from mirror-images to algebraic formulae, are much alike, committing themselves to nothing at all, yet the source of all our information. They play in knowledge a part iconized by that played in evolution according to the Darwinian theory, by fortuitous variations in reproduction." (Ms. 599, 42) Indices, by contrast, would then play the role of connecting to certain selected icons, granting them existence and thus ensuring their survival over others.

Very often, Peirce mentions as the immediate example of a Dicsign the painting with a legend – such as in the short version of his 1903 list of ten signs given in a letter to lady Welby (12. Oct 1904) where it forms the example of the seventh category of "Dicent Sinsigns" – one-shot proto-propositions, as it were:

"7. Dicient Sinsigns (as a portrait with a legend)" (8.341)

In the *Syllabus*, this idea is elaborated:

“A proposition is, in short, a Dicisign that is a Symbol. But an Index, likewise, may be a Dicisign. A man’s portrait with a man’s name written under it is strictly a proposition, although its syntax is not that of speech, and although the portrait itself not only represents, but is a Hypoicon. But the proper name so nearly approximates to the nature of an Index, that this might suffice to give an idea of an informational Index. A better example is a photograph. The mere print does not, in itself, convey any information. But the fact that it is virtually a section of rays projected from an object *otherwise known*, renders it a *Dicisign*. Every Dicisign, as the system of Existential Graphs fully recognizes, is a further determination of an already known sign of the same object. (...) It will be remarked that this connection of the print, which is the quasi-predicate of the photograph, with the section of the rays, which is the quasi-subject, is the Syntax of the Dicisign; and like the Syntax of the proposition, it is a *fact* concerning the Dicisign considered as a First, that is, in itself, irrespective of its being a sign. Every informational sign thus involves a fact, which is its Syntax.” (*Syllabus*, EPII 282, 2.320)

The idea, of course, is that the portrait painting forms the predicate part of the Dicisign, while the title of the painting provides the subject part, informing about which person it is who is claimed to possess (some of) the visual properties showed by the canvas. The very physical painting is, of course, a sinsign, but it should be mentioned that – especially in an era of easy picture reproduction – similar replicas of the painting may exist in abundance so that the portrait, taken in a generic sense, may be used not only as a sinsign but also as a Dicient Symbol. Without a title or legend, the isolated painting is but an unsaturated predicate - a rheme:

"But a pure picture without a legend only says "something is like this: ""
(Review of Lady Welby, 1903, 8.183)

Thus, a rhematic predicate, in itself, is already implicitly quantified. This may be made explicit, of course, if we add to the pure unsaturated predicate the index "something", supposedly because we take the painter trying to convey some information, that is, some Dicisign, to the observer. In general, the large variety of possible predicate types is supported by the following argument:

"A proposition never prescribes any particular mode of iconization, although the form of expression may suggest some mode. (...) ... it is true (and a significant truth) that every proposition is capable of expression either by means of a photograph, or composite photograph, with or without stereoscopic or cinetoscopic elaborations, together with some sign which shall show the connection of these images with the object of some index or sign or experience forcing the attention, or bringing some information, or indicating some possible source of information; or else by means of some analogous icon appealing to other senses than that of sight, together with analogous forceful indications, and a sign connecting the icons with those indices." (Ms 599 ("Reason's Rules", 1902), 5-7)

It is dubious, however, in what sense the Dicisign expressed by means of a photographic predicate could said to be the *same* as a Dicisign about the same object using, e.g., linguistic or algebraic predicates. It is easy to see that there may be considerable overlap between such predicates and that collateral information may add to the identification of the relevant aspects of the predicates to be picked out, but still the painting of Louis XIV with a legend conveys much more information of his looks than does, e.g., the linguistically expressed Dicisign saying "That day, Louis XIV wore a grey wig" which may communicate only a minor subset of the information rendered by the painting. Here, Peirce's theory of pictorial predicates certainly is in need of further development.

A vast field of predicates is furnished by diagrams. In Peirce's philosophy of mathematics, the access to mathematical objectivities are granted by diagrams in general – but also in everyday reasoning diagrams, in the shape of maps, tables, matrices, graphs, schemas,

scenarios, etc., form a wide variety of simple and complex predicates for use in propositions, sometimes, as in maps, furnishing continuous, complex Dicisigns which may give rise to the inference of an indefinite amount of linguistic propositions.

A very important corollary of the breadth of predicate possibilities for Dicisigns is the much more widespread appearance of propositions and quasi-propositions in human semiotic life than is apparent from the classic linguistics-centered view of propositions. Newspaper articles with photographs, TV news items with film clips and voiceover speak, cartoon frames with images and dialogue, algebraic equations, maps with locations and events indicated, artworks with titles, internet combinations of pictures and text of many sorts will be, on this view, Dicisigns conveying information, true or false.

The syntax of the Dicisign

A classic query pertaining to structured propositions, given the analysis of them into characteristic parts, is what keeps these parts together. The mere sum of the two elements, of course, does not furnish a proposition. To Frege, it seems to have been a composition of senses, resulting in the overall sense of the proposition, in turn picking out its reference (to Frege, a truth value). Russell's solution (1903, before he abandoned propositions and reinterpreted them as multiple relations kept together by judgments, 1910) dispenses with sense or meaning altogether, taking parts of the sentence expressing a proposition to be directly connected to reality counterparts: the proposition consists of objects and relations. The sentence expressing it is composed from "terms" of which there are essentially proper names and verbs. Verbs are, by nature, unsaturated and thus the composition of the proposition is prompted by their saturation. Russell's account, of course, is restricted to languages, and he does not solve the deeper issue of the unity of the proposition by relying upon the linguistic example of word class categories. Wittgenstein famously took the logical form of propositions to be ineffable.

Peirce addresses this issue in some of his most convoluted developments of the Dicisign doctrine, especially in the *Syllabus* and "Kaina Stoicheia".^{xii} As is already evident, Peirce does not – against tradition – accord any special place to the copula as a third constituent of the proposition. The assertion sometimes attributed to the copula or the predicate is relegated to the speech act use of propositions, external to their inner structure. The verbal aspect of the proposition is taken to be part of the predicate, and so the syntax of the proposition is inherent in the structure of the predicate. Not any old combination of an Index and an Icon necessarily constitutes a Dicisign – the two should be represented as involving the same object by means of some syntactic connection between the two aspects of the Dicisign:

“Finally, our conclusions require that the proposition should have an actual *Syntax*, which is represented to be the Index of those elements of the fact represented that corresponds to the Subject and Predicate.”
(*Syllabus*, 1903, EPII 282)

Thus, the syntax claims that the Dicisign is really indexically connected to the real fact to which the Subject and Predicate correspond. What is often taken to be the function of the copula, Peirce instead analyzes as an index connecting the tokens of the Subject and the Predicate, respectively, in the sign: "It may be asked what is the nature of the sign which joins "Socrates" to "_is wise," so as to make the proposition "Socrates is wise." I reply that it is an index. But, it may be objected, an index has for its object a thing *hic et nunc*, while a sign is not such a thing. This is true, if under "thing" we include singular events, which are the only things that are strictly *hic et nunc*. But it is not the two signs "Socrates" and "wise" that are connected, but the replicas of them used in the sentence. [...] No other kind of sign would answer this purpose; no general verb "is" can express it." ("Kaina Stoicheia", EPII, 310)

So the very combination, in the actual, expressed proposition token, joining the token of the Predicate icon and the token of the Subject index is taken to be, in itself, indexical. This index – as always in a proposition

– involves an icon which is, in turn, the very *juxtaposition* of the two sign tokens: "... it is the juxtaposition which connects words. Otherwise they might be left in their places in the dictionary." (ibid.) The very filling-in of the predicate token blanks by means of token subjects is, in itself, the iconical device showing their indexical connection claimed by the Dicisign. This, of course, places a special emphasis on the notion of "juxtaposition" of which grammatical connection is only one possibility.

Other examples include an object used as a sample, endowed with a label naming it (like a stuffed animal specimen with a caption indicating the species):

"It is sometimes written upon the object to show the nature of that object; but in such case, the appearance of that object is an index of that object; and the two taken together form a proposition." ("Kaina Stoicheia", EPII 310)

So, in general, co-localization seems to form a primitive, pre-linguistic syntax sufficient to connecting the subject and predicate tokens as a sign of the combination of the subject and predicates themselves in a proposition. In human languages, such co-localization has developed into detailed conventions of grammar, word order, inflections and other grammatical devices to govern the composition of linguistic propositions. Already in pre-linguistic or mixed-media Dicisigns, however, simple co-localization may give rise to conventionalizations, such as the two different types of co-localizations using proper names in Western painting (here, "symbol" is referring to propositions):

"So, if a symbol is to signify anything, and not be mere verbiage, or an empty logical form, it must ultimately appeal to icons to monstrate the elementary characters, both of sense and of conception. One of the simplest examples of a symbol that can readily be found is, say, the portrait of a man having printed under it ANDREAS ACHENBACH. This form of conjunction of an icon and an index is a symbol telling me that the celebrated artist looked like that. It has that signification,

because of the rule that names so prominently printed under portraits are those of the subjects of the portraits. Were the same name to be found written small upon the portrait in one of the lower corners, something altogether different, and not so simple, would be conveyed." (Ms. 1147, the largest of several drafts of the article "Exact Logic" for the Baldwin dictionary, p. 12).

Two different locations relative to the painting indicate different grammatical roles of the proper names given there: that of the subject of the proposition, on the frame, and that of the maker or utterer of the picture sign, in the corner (sometimes elsewhere on the painting surface or on its back side).

The syntax of the proposition is also the starting-point of the investigation of its interpretant in *Syllabus*. The object of the Dicsign, of course, is the entity referred to by the subject. The interpretant is not merely the predicate, but the claim, made possible by the syntax, that the predicate actually holds about an existing object:

"... the Interpretant represents a real existential relation, or genuine Secondness, as subsisting between the Dicsign and the Dicsign's real object." (*Syllabus*, 1903, EPII, 276; 2.310)

This leads Peirce to the surprising conclusion that – since the object of the interpretant is the same as that of the sign itself - this existential relation between Dicsign and object forms, in itself, part of the object of the Dicsign. Consequently, the Dicsign has two objects, one, primary, is the object referred to – another, secondary, is the very reference relation of the Dicsign to that object:

"Hence this same existential relation [between Sign and Object] must be an Object of the Dicsign, if the latter have any real Object. This represented existential relation, in being an Object of the Dicsign, makes that real Object, which is correlate of this relation, also an Object of the Dicsign. This latter Object may be distinguished as the **Primary Object**, the other being termed the **Secondary Object**." (*Syllabus*, 1903,

EPII 276; 2.310)

Correspondingly, the predicative part describes some character of the Primary Object - at the same time as it depicts the indexical relation which the Dicisign claims to hold between itself and its object. This is, in short, the truth claim - which can be analyzed as The Dicisign saying there exists indeed an indexical relation between itself and its object. This is why the Dicisign, in its interpretant, is represented as having two parts, one referring to the object, and the other – the predicate – referring to the relation between the sign itself and the object. And, in turn, this is why

"... in order to understand the Dicisign, it must be regarded as composed of two such parts whether it be in itself so composed or not." (ibid.)

Hence, the Dicisign must, at the same time, present, iconically, the connection between those two parts:

"... the Dicisign must exhibit a connection between these parts of itself, and must represent this connection to correspond to a connection in the Object between the Secundal Primary Object and Firstness indicated by the part corresponding to the Dicisign." (ibid., 277)

This implies Peirce's second conclusion. The co-localization of predicate and subject tokens not only functions as a picture of their co-presence in the object - it also functions as a representation of the indexical relation between the sign itself and the object:

"Second: These two parts must be represented as connected; and that in such a way that if the Dicisign has any Object, it [the Dicisign] must be an Index of a Secondness subsisting between the Real Object represented in one represented part of the Dicisign to be indicated and a Firstness represented in the other represented part of the Dicisign to be Iconized." (*Syllabus* 1903, EPII 277; 2.312)

So, the syntax of the Dicisign connecting its two parts mirrors 1) that of the combination of its real object and its alleged property into a fact, as well as 2) the indexical relation which the Dicisign claims to exist between itself and the object.^{xiii} This also explains what lay in Peirce's idea of "throwing all" of the analysis of the Dicisign into the predicate. It is not only an unsaturated Predicate icon describing some relational property in the object– it also involves the truth claim part of the proposition, picturing the claimed connections between this property and some object(s) to be specified by subject(s) in its blanks.

We may sum up this complicated analysis as follows:

Dicisign:

<p>Index Tokens – co-localized in the sign with an – (of the Subject Indices)</p> <p>referring to:</p> <p>1) Primary Objects – co-localized in reality with the –</p> <p>2) Secondary Object – claimed by the – The Indexical Connection Dicisign-Object</p>	<p>Icon Token (of the Predicate Icon)</p> <p>describing:</p> <p>Depicted Relation</p> <p>Depiction of The Connection Dicisign-Object (by co-localization of index tokens within the icon token)</p>
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In the simplest Dicisigns - Peirce's recurring examples being Dicent Sinsigns like the weathercock and the painting with a legend - these syntactic relations appear in a causal and purposive variant, respectively. The weathercock causally forces an icon of the direction of the wind to appear - so here the primary object is the wind, and the depicted character its direction. The secondary object is the causal relation

between the two, granted by the mechanical structure of the weathercock, giving, the iconical co-appearance of the wind and its represented direction. In the painting, the connection between the icon and index is purposive: the primary object is Louis XIV and the depicted characters the shapes and colors which the painting represents him to possess. The addition of a subject index on a blank part of the predicate (the frame) provides the iconic co-localization which is taken as a sign of the secondary object: the real, indexical relation between the legend and the picture.

This is how we should understand the difficult doctrine of the double object of Peircean Dicisigns - which paves the way for the relation between Dicisigns and facts.

Facts as truthmakers of Dicisigns

"What we call a "fact" is something having the structure of a proposition, but supposed to be an element of the very universe itself." ("Kaina Stoicheia", 1904, EPII 304), Peirce claims, and this fact theory is what explains the possibility of proposition to depict facts. Facts are the truthmakers of Dicisigns – if a Dicisign is true, the corresponding fact is the case.

Thus, the fact depicted by the Dicisign is different from the object reference of the Dicisign. As Hilpinen noticed (1992), this distinction allows for an obvious way of explaining the existence of false Dicisigns – something which may sometimes be a challenge for picture-oriented theories of propositions (cf. G.E. Moore, early Russell). The Syntax keeping together the Dicisign in itself functions as an Index of the two aspects of the Fact corresponding to the two aspects of the Dicisign: "Every informational sign thus involves a Fact, which is its Syntax." ("Syllabus", 1903, CP 2.321). Peirce thus maintains a theory of facts or state-of-things to account for what was later called the truthmakers of Dicisigns. Thus, he distinguishes the object or referent of the Dicisign – given by its indexical subject part, on the one hand – and the truthmaker making true the Dicisign as a truthbearer – given by the fact structured in

the same way as the syntax of the proposition. This plastic theory permits Peirce's account to escape problems encountered by proposition theories taking states-of-affairs or facts to be not only the truthmakers of propositions but also their referents. Such simpler doctrines immediately, of course, run into trouble because of their difficulty in accounting for false propositions.

But even theories admitting false propositions may encounter problems. False propositions refer to non-existing facts, but the same thing is achieved by meaningless propositions. The difference between propositions like "Barack Obama is the president of China" and "The present king of France is bald" tend to evaporate in such a theory. Russell, as is well known, concluded that the latter, just like the former, must also be counted as false. In Peirce's account, we should rather take the former proposition as a false claim about an existing person and the latter as a meaningless claim about a non-existing person because it fails to point out an object for the proposition in the Universe of Discourse – even if both have non-existing truthmakers.

Facts, in Peirce's doctrine, are certain simple states of things:

"A *state of things* is an abstract constituent part of reality, of such a nature that a proposition is needed to represent it. There is but one *individual*, or completely determinate, state of things, namely, the all of reality. A *fact* is so highly a prescissively abstract state of things, that it can be wholly represented in a simple proposition, and the term "simple," here, has no absolute meaning, but is merely a comparative expression."

("The Basis of Pragmaticism in the Normative Sciences", EP2, 378, CP 5.549-50)

Thus, simplicity here pertains to the relevant level of observation – not to any supposedly basic level of reality, such as was the case in Wittgenstein's in several respects similar picture theory of language which famously lead him to found his whole theory upon logical atoms without being able to point out a single example of one. Even if Peirce's theory of Dicisigns may, even in a very strong sense, be called a picture

theory of propositions, it does not follow that the objects and properties singled out by a proposition be simple in any absolute sense. This is because States-of-Things or Facts in Peirce's account are *structures* of reality, distinct from simple subsets of reality:

"... I must first point out the distinction between a Fact and what in other connexions, is often called an Event* (Foot note* Or at least the temporal element of it is not the whole of it since [the] thing to which the event happens [is] an element of the event.), but which, owing to that word being used in the Doctrine of Chances in its stricter sense of the way in which a doubt about what will happen is ultimately resolved, must be here called an Occurrence. If from the Universe of the Actual we cut out in thought all that, between two instances of time, influences or involves in any considerable degree certain Existent Persons and Things, this Actual fragment of what exists and actually happens, so cut out, I call an Actual Occurrence which Thought analyzes into Things and Happenings. It is necessarily Real; but it can never be known or even imagined in all its infinite detail. A Fact, on the other hand is so much of the Real Universe as can be represented in a Proposition, and instead of being, like an Occurrence, a slice of the Universe, it is rather to be compared to a chemical principle extracted therefrom by the power of Thought; and though it is, or may be, Real, yet, in its Real Existence, it is inseparably combined with an infinite swarm of circumstances, which make no part of the Fact itself." " (Ms. 647 "Definition", 5th draught 16-18 Feb. 1910, p. 8-11, discussing Laplace)

Thus, states-of-things are "principles", structures extracted from reality – explaining their Janus-headed doubleness, consisting at the same time of particular objects (secondnesses, referred to by the indices of the proposition) and general properties (firstnesses, described by the icons of the proposition). Scientifically traceable causal relations hold between facts, *not* between occurrences.^{xiv} Thus, Peirce's version of scientific realism (and scholastic realism, assuming the reality of some predicates) is dependent upon this ability of Dicsigns to depict extracted, structured aspects of reality. Here, the ability of Dicsigns to involve the large array

of iconic predicate possibilities of maps, diagrams, graphs, etc., becomes central to his notion of diagrammatical reasoning in the sciences. The important claim above, that the simplicity of facts is relative only, gives an easy way of understanding why simple Dicisigns may express facts stemming from very different levels of ontology (from "2+2=4" to "There are two classes of elementary particles", "This chair is white" to "The Movement of Enlightenment took place in the 17th and 18th centuries") where the objects involved have highly different ontology and complexity. The simplicity pertains to the fact structure, not to the objects and events co-constituting those facts.

The relation of Dicisigns to Rhemes and Arguments

The systematic characterization of the Dicisign as compared to Rhemes and Arguments is a task to which Peirce returns over and over, with changing (but not necessarily contradictory) results in his deliberations concerning his sign taxonomies in the decade after the turn of the century. One takes the idea of the Dicisign as the sign separately indicating its object as paradigm. Measured on this property, Rhemes are signs which lack such separate parts, while Arguments, on the other hand, are signs which add a further separate function, namely that of separately expressing its interpretant – the conclusion of the Argument, of course, fulfilling that function:

"A representamen is either a *rhema*, a *proposition*, or an *argument*. An *argument* is a representamen which separately shows what interpretant it is intended to determine. A *proposition* is a representamen which is not an argument, but which separately indicates what object it is intended to represent. A *rhema* is a simple representation without such separate parts." ("The three normative sciences" "Lectures on Pragmatism", IV, 1903, EPII 204)

This idea may be expressed more simply in the beautiful (but maybe, for a first glance, more bewildering) definition:

“The second trichotomy of representamens is [divided] into: first, simple signs, substitutive signs, or *Sumisigns*; second, double signs, informational signs, quasi-propositions, or *Dicisigns*; third, triple signs, rationally persuasive signs, *arguments*, or *Suadisigns*.” (*Syllabus* 1903, EPII, 275; 2.309)

Rhemes-Dicisigns-Arguments as simple-double-triple signs, respectively. Peirce here introduces a different terminology, that of Sumisigns-Dicisigns-Suadisigns (on other occasions, he experiments with Seme-Pheme-Delome). These terminological neologisms are all intended to indicate the generalization of the concepts involved from the standard, linguistic-logic acceptance to the broader, semiotic interpretation indicating the intended exhaustive tripartition of *all* signs. The triple structure of the Argument refers to the idea that it not only is a sign for its object by means of the Rheme and the Dicisign presented in the premiss, but also involves the same object a third time, now appearing as that to which the conclusion pertains.^{xv} This is obvious from yet another description of the same triad:

“Or we may say that a Rheme is a sign which is understood to represent its Object in its characters merely; that a Dicisign is a sign which is understood to represent its Object in respect to actual existence; and that an Argument is a sign which is understood to represent its Object in its character as sign.” (*Syllabus* 1903, EPII, 292; 2.252)

Rhemes potentially refer to any object (or n-tuple of objects in case of polyadic rhemes) displaying the character iconically presented in the rheme; in addition to that, Dicisigns indexically point out their object, and, again in addition to that, Arguments represent their object as signifying the conclusion.^{xvi} This may easily give the idea, close to the received notion, that the relation between the three is compositional, so that Dicisigns are constructed from Rhemes and Subject indices, while Arguments are constructed from Dicisigns. Peirce's redefinition, however, goes against such simple compositionality:

"It is only the terminology, and the extension of the division to all signs, (with the consequent necessary modifications,) that is not to be found in every treatise on Logic. Every such book tells about the triplet, Term, Proposition, Argument; but not every book makes it quite clear what it is that there is a division of. If we are to say that it is a division of all signs, we shall have to change the definitions of the three classes, not to their very bottom, but superficially, and so much that precision demands that new terms should be substituted for 'term', 'proposition', and 'argument'. (...) Now until I constructed the System of Existential Graphs, and for longer after than it would be agreeable to me to confess, I never so much as dreamed of there being any fault to be found with the doctrine of the books which goes back to the time of Abelard, and without doubt much earlier, that a Syllogism is composed of three Propositions, and a Proposition of two Terms. But after this system had been constructed, and after I had found by experience that its teachings are trustworthy, it one day attracted my notice that this system represents the relations of Terms, Propositions, and Arguments quite differently. The exposition of this can wait until the Reader is in possession of the system. I will now only say that, while this system does present Semes, yet it would not be incorrect to say that everything scribed according to this system, down to its smallest parts, is a PHEME, and is not only a PHEME, but is a Proposition. Delomes (dee'loamz) also are brought to view. Yet no Delome (dee'loam) is ever on the diagram, A Graph in this system is a type which expresses a single proposition. Without just now troubling you with an adequate description of the Delome (dee'loam), I may point out that it represents no statical determination of thought but a process of change from one state of belief to another." (Ms. 295, 1906, alternate version 26ff)

Peirce here uses Seme-PHEME-Delome for Rheme-Dicisign-Argument. His argument is built on how Existential Graphs represent logic, but it has a broader scope. The upshot is that everything in the formalism, from the smallest to the largest graph, is a Dicisign, simple or complex, and in a certain sense any part of a Dicisign is already a Dicisign. Such a claim

may appear strange, as linguistically expressed Dicisigns may not have parts in the sense mentioned; it is easier to apply to Dicisigns with continuously articulated Predicates such as pictures or diagrams - any part of such a predicate is still a predicate (up to coarsegraining), and a Dicisign using such a Predicate consequently admits for Dicisign parts: a part of a map is also a map. Arguments, by contrast, are movements from one Dicisign to another, cf. the central idea of reasoning as experimenting and manipulating with diagrams. Such experimenting, of course, may be charted in a higher-level diagram along another dimension, but not on the same level of Dicisign representation. Thus, Dicisigns are not built from Rhemes, and Arguments not from Dicisigns - even if they contain them. Their relation should rather be described by continuity, cf. the metaphor from kinematics:

"But in the last sense, which alone is the essential one, an Argument is no more built up of Propositions than a motion is built up of positions. So to regard it is to neglect the very essence of it. (...) ... Positions are either vaguely described states of motion of small range, or else (what is the better view,) are entia rationis (i.e. fictions recognized to be fictions, and thus no longer fictions) invented for the purposes of clear descriptions of states of motion; so likewise, Thought (I am not talking Psychology, but Logic, or the essence of Semiotics) cannot, from the nature of it, be at rest, or be anything but inferential process; and propositions are either roughly described states of thought-motion, or are artificial creations intended to render the description of thought-motion possible; and Names are creations of a second order in service to render the representation of propositions possible. An Argument may be defined as a Sign which intends itself to be understood as fulfilling its function" (Ms. 295, 102)

Thus, the reasoning process as such is taken as primitive in the sense that arguments forms the basis and frame for the description of the machinery that makes it possible. Dicisigns, then, are tools for the description of phases of reasoning - we may add: tools for making explicit propositions with the aim of conducting arguments.^{xvii}

"Collateral Information" and the interpretability of the S-P distinction

Sometimes, Peirce takes the reference frame of propositions to be simply all of reality – not unlike the Frege-Russell tradition – but at other times he takes care to underline that propositions may refer to selected subsets of that reality only, agreed upon by the communication partners – or even to fictitious universes (which could be said also to exist, in another sense, as peculiar subsets of reality). This relation of propositions to a selected Universe of Discourse is important for several reasons. One is the relativity of indexical reference to such universes, making much sign use dependent upon the implicit knowledge about the objects indicated by the proposition – the issue of what Peirce calls "collateral information". Another is that the exact borderline between reference and description in a proposition is also open to interpretation and may, with the same proposition, vary from one use to the next. Finally, a consequence underlined by Jaakko Hintikka is that the truth of the proposition becomes relative to the Universe of Discourse discussed – which makes possible a plurality of representations of the same objects and, consequently, avoids the ineffability of truth which is often the implication of accepting a one-to-one reference of logic to one universe only.

We already touched upon the role of collateral knowledge discussing the indexical half of the proposition. The issue is not, however, marginal in Peirce's doctrine. Quite on the contrary, no subject of a Dicisign is identifiable at all without some collateral information about the relevant object referred to:

"I think by this time you must understand what I mean when I say that no sign can be understood -- or at least that no *proposition* can be understood -- unless the interpreter has "collateral acquaintance" with every Object of it." (Draft of a Letter to William James, February 26th , (1909), EPII 496, 8.183)

The idea is that propositions never occur as isolated entities but form

part of ongoing processes of inference, and in order to take their place in such processes, they must refer to objects already introduced earlier in the reasoning process:

"At this point it must be noticed that the simplest assertion uses two signs. This is true even of so simple a proposition as "pluit", where one of the signs is the totality of the circumstances of the interview between the interlocutors, which makes the auditor think that what is happening out of doors is referred to. This is evident, since if he simply heard the word "pluit" pronounced, though he might be ever so determined to believe what was meant, yet if he knew not at all whence the sound came, whether from somebody recounting a dream or telling a story or from a planet of a distant star, and did not know at what time the word was uttered, he could not in the least guess what he was expected to believe. Nor could any mere words tell him, unless they referred to something in his immediate experience, as a sign (and if he were, for example, told that the rain was "fifty miles north of where you are standing.") It must be something common to the experience of both interlocutors." (Ms. 284 Basis of Pragmatism 1905 42-3)

The very role of the index part of the proposition is not only to point out an object – but this involves connecting it to existent objects and reference frames. This does not mean, of course, that no new objects may ever appear – only that their appearance is possible only with reference to the framework of already known objects. This comes from Peirce's unvarying, Kantian insistence that existence is no predicate; that is, no amount of descriptive machinery will ever be sufficient uniquely to indicate an existing object or event:

“... every correlate of an existential relation is a single object which may be indefinite, or may be distributed;†1 that is, may be chosen from a class by the interpreter of the assertion of which the relation or relationship is the predicate, or may be designated by a proper name, but in itself, though in some guise or under some mask, it can always be perceived, yet never can it be unmistakably identified by any sign

whatever, without collateral observation. Far less can it be defined. It is *existent*, in that its being does not consist in any *qualities*, but in its effects -- in its actually acting and being acted on, so long as this action and suffering endures. Those who experience its effects perceive and know it in that action; and just that constitutes its very being. It is not in perceiving its qualities that they know it, but in hefting its insistency then and there, which Duns called its *haecceitas* -- or, if he didn't, it was this that he was groping after." ("Some Amazing Mazes, Fourth Curiosity" (c. 1909), CP 6.318)

A recurrent example taken by Peirce is the assertion of the proposition that a house is burning. If a person hears this claim, he will not scrutinize world history and the geography of the globe in order to sum up all examples of burning houses to find the right one; he will, as the first thing, look around in order to discover the burning house in the immediate vicinity of the here-and-now of the communication partners. Acting thus is, of course, following elementary communication maxims later charted by Grice recommending information given to be relevant. But Peirce's idea is even more basic: if no possibility of locating the reference of the index part of the Dicsign is at hand, it simply does not convey any information as such:

"All that part of the understanding of the Sign which the Interpreting Mind has needed collateral observation for is outside the Interpretant. I do not mean by "collateral observation" acquaintance with the system of signs. What is so gathered is *not* COLLATERAL. It is on the contrary the prerequisite for getting any idea signified by the sign. But by collateral observation, I mean previous acquaintance with what the sign denotes." (Review of Lady Welby, 1903 8.179)

On the other hand, given the presence of collateral information, even subtle aspects of the predicative part of the proposition may perform the indexical function to a sufficient degree for information to be conveyed. This is why a simple photograph may function as a full-fledged proposition, given the right amount of collateral information. If I see a

photo of president Obama as a young man, easily recognizable by the features of his face, smoking a cigarette, I am in a position to retrieve the propositional information that Obama has been smoking. I might not be able to see what he smoked (or whether he inhaled) – if I do not possess the collateral information making me able to identify the brand of cigarettes. Thus, much visual communication is able – as against often-heard claims that pictures are not able to make statements – to state propositions, provided the right collateral information is accessible to the receiver. And to Peirce's Dicisign doctrine, this is no special feature for images or anything of the kind, because even the most formalized, scientific proposition is only understandable given a relevant amount of collateral information - which is part of the reason why mathematical formulae need accompanying information in ordinary language. This aspect of the Dicisign doctrine is connected, of course, to Peirce's ontology of epistemology: his view of the reasoning process as a continuous whole, having begun long before man and continuing into an indefinite future: the single proposition is only really understandable in its context of this ongoing process (see below). Thus, it is possible to communicate surprising Dicisigns by means of pictures alone. Take an example: you find in your mailbox an envelope containing nothing but a photograph of yourself, easily recognizable, in an embarrassing, sexual situation. This is sufficient to convey the propositional information that somebody has caught you in that situation, is able to prove it, and intends you to share that knowledge – most probably wishing to blackmail you and pressure you to subject to some demands not expressed in the sign (like all Dicisigns, this sign may of course, be false and rely upon photo manipulation). So the proposition "X took part in such-and-such erotic scenes" forms the core of the speech act of a threat (or should we call it a picture act, no language being involved at all as yet). Maybe you even faintly suspect who the sender may be and what the intended quid pro quo might amount to. An empirical example of such a sign has recently appeared in the context of the so-called Ergenekon scandal where the Turkish islamist government allegedly tried to compromise some of its secularist opponents by the use of videotaped pictures.

You may say such collateral information belongs to the pragmatics

of proposition utterances rather than to the study of propositions themselves. In Peirce's Dicsign doctrine, however, no such distinction prevails because of the close connection between the index part of any proposition and the relevant collateral knowledge. The index part is simply there in order to activate that knowledge – if it does not succeed, the sign will not be able to function as a Dicsign at all.

The possibility of Dicsigns with no explicit articulation of parts responsible for each of its two basic semiotic functions – like in the photograph case – , has the corollary that the distinction between these two functions may vary with context, even pertaining to exactly the same Dicsign. If the same photograph as just discussed was sent to another identifiable participant in the orgy, it would function, in the same way, as a threat – but now based on the singling out the depiction of this other person as the relevant index in the photography instead of yourself. And, again, if the very same photograph was sent to a third party, e.g. an expert on pornography, he might take as the relevant object the present occurrence of rare erotic practices there displayed while the identity of the participants may lose relevance. But reinterpretability not only pertains to the primary object of the sign - also on secondary or immediate object of the sign. Take again the Louis XIV painting - to some observers, the special smile may be that piece of collateral knowledge enabling to abductively identify the subject as that French king; to other observers it may be the special wig playing the role of immediate object identifying the subject; both of them features which may, in other cases be taken as part of the predicative, descriptive side of the Dicsign. This relativity or indeterminacy in the precise delimitation of the Subject resp. Predicate aspects of the Dicsign is remarked upon by Hilpinen (476), observing the crucial fact that this idea takes Peirce's analysis far away from the logical atomism of Russell or Wittgenstein, claiming that only one correct parsing of a proposition exists. Even if the distinction between S and P is indispensable for the Dicsign and thus must be drawn somewhere in each single usage, the context may decide where the exact dividing line goes in each single case^{xviii}:

”The interpretant of a proposition is its predicate; its object is the things

denoted by its subject or subjects (including its grammatical objects, direct and indirect, etc.). Its predicate might be regarded as all that is expressed, or as "has either not been burned or shuns fire", or "has not been burned", or "shuns fire", or "shuns", or "is true"; nor is this enumeration exhaustive. But where shall the line be most truly drawn? I reply that the purpose of this sentence being understood to be to communicate information, anything belongs to the interpretant that describes the quality or character of the fact, anything to the object that, without doing that, distinguishes the fact from others like it; ..." (MS 318, "Pragmatism", 5.473)

Both these issues – the need for collateral information and the reinterpretability of the S-P distinction – are connected to the central issue in Peircean logic that the reference of a Dicisign is taken to be relative to a selected universe of discourse - a model - , consisting of a delimited set of objects and a delimited set of predicates, agreed upon by the reasoners or communicating parties, often only implicitly so.^{xix}

Types of Dicisigns

Not only is the span of predicate types extremely wide in Peircean Dicisigns, they also come in widely differing degrees of generality. In Peirce's 1903 ten-sign classification (combining his first three trichotomies), no less than three types are Dicisigns,^{xx} Let us quote his three descriptions of those signs.

"Fourth: A Dicent Sinsign [*e.g.*, a weathercock] is any object of direct experience, in so far as it is a sign, and, as such, affords information concerning its Object. This it can only do by being really affected by its Object; so that it is necessarily an Index. The only information it can afford is of actual fact. Such a Sign must involve an Iconic Sinsign to embody the information and a Rhematic Indexical Sinsign to indicate the Object to which the information refers. But the mode of combination, or *Syntax*, of these two must also be significant." (*Syllabus*, EP II, 294; 2.257)

"Seventh: A Dicent Indexical Legisign [*e.g.*, a street cry] is any general type or law, however established, which requires each instance of it to be really affected by its Object in such a manner as to furnish definite information concerning that Object. It must involve an Iconic Legisign to signify the information and a Rhematic Indexical Legisign to denote the subject of that information. Each Replica of it will be a Dicent Sinsign of a peculiar kind." ("Syllabus", EP II, 294, CP 2.260)

"Ninth: A Dicent Symbol, or ordinary Proposition, is a sign connected with its object by an association of general ideas, and acting like a Rhematic Symbol, except that its intended interpretant represents the Dicent Symbol as being, in respect to what it signifies, really affected by its Object, so that the existence or law which it calls to mind must be actually connected with the indicated Object. Thus, the intended Interpretant looks upon the Dicent Symbol as a Dicent Indexical Legisign; and if it be true, it does partake of this nature, although this does not represent its whole nature. Like the Rhematic Symbol, it is necessarily a Legisign. Like the Dicent Sinsign it is composite inasmuch as it necessarily involves a Rhematic Symbol (and thus is for its Interpretant an Iconic Legisign) to express its information and a Rhematic Indexical Legisign to indicate the subject of that information. But its Syntax of these is significant. The Replica of the Dicent Symbol is a Dicent Sinsign of a peculiar kind. This is easily seen to be true when the information the Dicent Symbol conveys is of actual fact. When that information is of a real law, it is not true in the same fullness. For a Dicent Sinsign cannot convey information of law. It is, therefore, true of the Replica of such a Dicent Symbol only in so far as the law has its being in instances." ("Syllabus", EP II, 295, CP.2.262)

The Dicent symbol, of course, is Peirce's version of ordinary propositions involving predicates expressing general ideas, such as linguistic adjectives, verbs, common nouns, etc. But language is not the only source of such predicates. A wider array of icons may have general qualities, most conspicuously in their function as diagrams. Thus, a

diagram with a label – say, a geometrical figure with legend – may express a Dicent symbol – a full-fledged proposition, and the manipulation of that diagram, in turn, may express an Argument. The same goes for many types of maps, scientific diagrams and illustrations, tables, graphs. The obvious contrast category here, of course, is that of Dicent Sinsigns, not involving any general idea but rather actual fact only. It is interesting here to compare Peirce's examples of such signs. It involves the recurring weathercock, the painting with a legend, but also perfectly naturally occurring shapes such as footprints.^{xxi} So the simplest Dicent Sinsign is a natural process functioning as a sign for some interpreter by indexically producing an icon of the object. The object must be a singular, individual object. That does not imply the sign immediately facilitates the recognition of that object. Peirce's own example of Robinson seeing for the first time Friday's footprint is an example. He realizes this stems from an existing person – but he has as yet no idea which person. So this sign is indefinite, implicitly having an existential quantifier "Some person made this footprint". The weathercock is a simple example of a measurement device, constructed so as to select, isolate, magnify, render clear some iconic information through an indexical process. Individual measurements made with such tools then qualify as Dicent Sinsigns.^{xxii} The painting with a legend, however, is more complicated. Not only does it have an explicit syntax which we discussed above – it is also not as evident that the predicate is without general qualities. Very often, painters idealize the person portrayed, not only in the sense that they beautify him but also in the sense that they seek to capture typical expressions, looks, postures, etc. In that sense, paintings may contain different degrees of generalities, in some sense on a continuous gradient from pure images to diagrams. Photographs may also display such generality, not by means of the photographic process alone, and not only by means of techniques like the "composite photographs" discussed, but also aided by the very selection process of the "best" photo among many available. This may be seen, e.g., in more or less scientific illustrations, such as those in an atlas of mushrooms. The watercolor painting of a mushroom in such a book should depict all of the *typical* visual properties of the species in order to

aid identification – resulting in a painting which may be *more* typical than any particular, existing specimen of the species in reality. Also photographs used in such books must be selected so as to display all typical appearances of the mushroom species in question, thus embodying general qualities, even if actually depicting individual organisms. Retouching, photoshop and related processing of photographs, of course, may aid in the production of photographs serving as more general predicates. Thus, there seems to be a continuous gradient from completely singular Dicent Sinsigns in the one end to fully Dicent Symbols with general predicates, be they linguistic or diagrammatic or otherwise, in the other end.

This leaves us with the seemingly intermediary category of Dicent Indexical Legisigns. At a first glance, it may appear as an artifice of Peirce's system of combining the three trichotomies. His examples of this category, in any case, seem strangely wanting and peripheral. One is a the type of a "street cry", supposedly a ritualized shout, as that of a street vendour, facilitating the recognition of the individual uttering it; the other is the answer to the question "Whose statue is this?" – "It is Farragut". The reason it is not, like the full proposition, a symbol is that it has, like the sinsign, no general predicate while, on the other side, the sign *itself*, qua legisign, is taken to be general. The predicate should be typical as a sign, but not general as to its contents – this is why individuals, proper names (or, supposedly, pronouns) are involved in the examples given.

There is some strange discrepancies here, though. "It must involve an Iconic Legisign to signify the information and a Rhematic Indexical Legisign to denote the subject of that information", Peirce said in the definition of this category of Dicisigns, and the latter category is identified simply with proper nouns while the former can be exemplified in diagram types, apart from their individual appearance in tokens (sinsigns). But in the examples given, the Proper name does not appear as the subject but as the *predicate* slot of the proposition. What would a sign look like actually fitting the description quoted? It would have a proper noun (or pronoun) as a subject, and a diagram type as the predicate. It might be a map with a legend – such as a map of Rome (the diagram Predicate part) with the name "Rome" and other geographical

names indicated in the map (the proper name Subject part). But why would this not simply be a Dicent Symbol? – every map is, to some degree, general and provides information not only about the geographical layout of an area at a particular point of time like a photo snapshot would do.

The examples which Peirce himself gives are thus quite different from this analysis. They pertain to information about object names – identification statements (the street cry identifying the person yelling it; "It is Farragut", identifying the individual depicted). They give the idea that the category of Dicent Indexical Legisigns should rather be categorized as Dicisigns in which names or indices occupy the predicate slot, supposedly including also naming speech acts ("This is called a Z" "I refer to this as an X", "I baptize thou Y", "Let me present you to Mr. W", "This is called a "tree"). If we take that to be the case, the otherwise hazy category of Dicent Indexical Legisigns would occupy an important role. On a gradient between this category and full-fledged propositions would then appear signs which not only name or identify individual objects, but classes or continua of such objects ("I define a line as that which has length and no breadth", "Element nr. 92 is Uranium"), that is definitions, claims about class-names, etc.

Meanings and objects of Dicisigns

Dicisigns being the central type of *efficient* signs, the establishing of their meaning must be very important to a pragmatist semiotics like Peirce's. The relation between sign and meaning in Peirce generally being one of inference, the meaning of a Dicisign is described in terms of which inferences it is possible to draw from it. Thus, in the Lectures on Pragmatism, Peirce simply says:

“... what we call the *meaning* of a proposition embraces every obvious necessary deduction from it.”

("The nature of meaning", Lectures on Pragmatism 1903, EPII, 214, 5.165)

So, assessing the meaning of a sign is, effectively, conducting an inference. The important constraint here is to *obvious* deductions from the Dicisign, ruling out less obvious, maybe yet never performed deductions, e.g. theorematic deductions from the Dicisign meaning. In the same lecture, we find a bit different definition of Dicisign meaning:

“On the whole, then, if by the *meaning*, of a term, proposition, or argument, we understand the entire general intended interpretant, then the meaning of an argument is explicit. It is its conclusion, while the meaning of a proposition is all that that proposition or term could contribute to the conclusion of a demonstrative argument.” (“The nature of meaning”, 1903, EPII, 220)

Here, the "obvious" criterion has vanished, and the meaning instead is defined as the sum of possible contributions of that Dicisign to the conclusion of an argument - not ruling out, e.g. non-obvious, theorematic deductions from it, requiring construction, experiment and proof. This vacillation or ambiguity probably lies behind the development, in the mature Peirce, of the doctrine of *two* objects and *three* meanings (or interpretants) of signs. We already saw how an early version (primary/secondary object) was developed in the *Syllabus* Dicisign doctrine. It evolves into Peirce's general distinction between immediate and dynamical objects of a sign:

"As to the Object, that may mean the Object as cognized in the Sign and therefore an Idea, or it may be the Object as it is regardless of any particular aspect of it, the Object in such relations as unlimited and final study would show it to be. The former I call the ***Immediate*** Object, the latter the ***Dynamical*** Object. For the latter is the Object that Dynamical Science (or what at this day would be called "Objective" science,) can investigate." (Review of Lady Welby, 1903, 8.183)

The Dynamical Object, hence, is the object including all of its aspects, such as potentially revealed by scientific investigation in the limit. This,

of course, pace Peirce's realism, is, at the same time, the object in itself, as it exists independently of perception or participation in any semiotic investigation processes. The Immediate Object has posed more problems to many interpreters. In what follows after the quote, he explains what is the Immediate Object "as cognized in the Sign" in terms of "the occasion of sundry sensations". At other occasions, Peirce has described the Immediate Object as "... the object as the sign itself represents it".^{xxiii} This has led some interpreters to surmise the Immediate Object should be the object as it is depicted, described, imagined, or signified in the sign. But in that case, it would no longer be an object category, but a meaning category. And as there is already three interpretant categories, cf. below, it would seem to be to overpopulate the field of interpretants if the Immediate Object should also count as part of the sign's meaning.

But the fact that the Dicisign's subject is claimed to be indexically connected to its referent object provides the relevant interpretation of what is the Immediate Object. Thus, the Immediate Object has nothing to do with describing the characters of the object, rather, the Immediate Object *is* the indexical connection of the sign with its object. This becomes obvious from the following reflection where Peirce imagines his wife asking him about the weather: "I reply, let us suppose: "It is a stormy day." Here is another sign. Its ***Immediate Object is the notion of the present weather so far as this is*** common to her mind and mine -- not the ***character of it, but the identity of it. The Dynamical Object is the identity of the actual or Real meteorological conditions at the moment.***" (Letter to James, March 14, 1909, 8.314). Neither the IO nor the DO is concerned with descriptive characters - this is left to the meaning categories. Both deal with the *identity* of the reference. So the IO is rather those parts of aspects of the Dynamical Object with which the sign stands in indexical connection. Thus, the light rays informing the eye about the visual structure of an object is the Immediate Object of that visual sign - or, to be more precise, the aspects of those light rays which are indexically influenced by the object. In our interaction with objects, we rarely if ever interact distinctively with the whole of the object, with all of its parts and aspects, simultaneously. Rather, we stand in different causal relations with the object, and it is the specific

selection of those aspects and parts which forms the Immediate Object of the Dicsign. In that sense, the Immediate Object is a part of the Dynamical Object - the part standing in indexical relation to the sign. And for both of them "... acquaintance cannot be given by a Picture or a Description ..." (ibid), but only by indexical connection to the object. Unlike Russell's distinction between knowledge by Acquaintance and by Description, Peirce's version claims *both* must be present in any true Dicsign, because indexical Acquaintance is stripped of all descriptive capacity which is reserved for the Predicate aspect of the Dicsign:

"It is usual and proper to distinguish two Objects of a Sign, the Mediate without, and the **Immediate** within the Sign. Its Interpretant is all that the Sign conveys: acquaintance with its Object must be gained by collateral experience. The Mediate Object is the Object outside of the Sign; I call it the *Dynamoid* Object. The Sign must indicate it by a hint; and this hint, or its substance, is the *Immediate* Object. Each of these two Objects may be said to be capable of either of the three Modalities, though in the case of the Immediate Object, this is not quite literally true." (A Letter to Lady Welby, SS 83, 1908)

This implies, of course, that the Immediate Object must leave certain aspects of the Dynamical Object unspecified. In his trichotomy of signs according to their immediate object, Peirce distinguishes between indefinite, singular, and distributive (elsewhere, vague, singular, and general) signs; the former and the latter both characterized by leaving parts of the Dynamic Object not directly referred to. In indefinite signs, "... the immediate object is only a possible presentment of a dynamic object, a fragment of it, the rest being held in reserve, so that there is nothing in the immediate object to prevent contradictory attributes being separately possible of it. Thus "A certain man" may turn out to be rich. He may turn out to be poor." (Ms. 339, "Logic Notebook", p. 256r 1905 Oct 10). Conversely, in distributive or general signs, the Immediate Object may be substituted for any Dynamic Object fitting the Immediate Object - as in "Any man". The Immediate Object, in both cases, is a fragment of the Dynamical Object and is hence necessarily incomplete

and contains some degree of vagueness or generality. Even in the case of singular signs, where the sign precisely denotes its object (a limit case only, according to Peirce), the Immediate Object is but the end of a singular indexical connection terminating in the Dynamic Object. For this reason, Hilpinen has rightly compared the Immediate Object to Meinong's "incomplete objects" whose function is as auxiliary objects (*Hilfsobjekte*) in connecting to the full, complex objects which are impossible to intend every aspect of (Hilpinen, this volume).

This division of the Dicsign's object throws light upon the triadic differentiation of its meanings. The "obvious" deductions from a Dicsign now correspond, as meaning category, to the Immediate Object in the sense that they also remain incomplete, as a subset of all possible deductions from the Dicsign. That ideal set of all such deductions, then, corresponds to what Peirce calls the "final" interpretant - all meaning of the Dicsign which investigation would reach in the limit only. The "Dynamic" interpretant, then, is the meaning such as it is actualized in any particular, concrete use of the Dicsign, always only a subset of the Final Interpretant (plus erroneous, actual inferences as well). So, the Dynamic Object and the Dynamic Interpretant do not correspond to each other, confusingly, and the terminological confusion stemming from their terminological similarity has the reason that "dynamic" used about objects is taken to mean "at the end of dynamic scientific investigation" while "dynamic" used about interpretants is taken to mean "in actual, existent dynamic sign exchange".

In the continuation of the quote where Peirce informs his wife about the stormy weather, the three interpretants of that Dicsign are presented as follows: "The *Immediate Interpretant is the schema in her imagination, i.e. the* vague Image or what there is in common to the different Images of a stormy day. The *Dynamical Interpretant is the disappointment or whatever actual effect it at once has* upon her. The *Final Interpretant is the sum of the Lessons of the reply, Moral, Scientific, etc.*" (CP 8.314) The three meaning categories are taken to be 1) the immediate schema presenting the general picture of a stormy day, - adding, in the blank of that predicate, the reference to the particular occasion of utterance, it should be noted (the meaning of a Dicsign is

not only its iconic-predicative part but what can be inferred from the application of that part to a given subject) - the "obvious" inferences from it; 2) the actual interpretation made by a sign interpreter in the situation of communication - in this case, the wife's change in emotion and action upon learning the fact reported by the Dicsign, deciding to stay inside and light the fireplaces etc.; 3) the Final - in other cases, the Normal - Interpretant of the Dicsign is all which may be inferred from it, by all means of investigation in the limit, from it. The three meaning categories thus may be compared as follows: 1) lies close to dictionary meaning in a broad sense (but comprising also other signs, of course, than linguistic signs), close to the normal use of the word "meaning"; 2) equals pragmatic meaning relative to a situation of communication, determined by the dialogic string preceding it and the collateral knowledge about the situation; 3) corresponds to the ideal limit of all possible knowledge to which the Dicsign in question may, in the future, contribute.

Conclusion

Peirce's doctrine of Dicsigns, when pieced together from his different writings around 1900, constitutes an early and fairly elaborated doctrine of propositions. My claim, however, is that it is not only of historical interest. Recent philosophical discussion has focused upon issues such as: are propositions structured - or are they some sort of primitives? Do they exist in any sense at all - already Russell famously found it burdensome to accept the commitment to any kind of existence of all false propositions, this prompting him to give up the idea of propositions. Does their existence depend upon the existence of human language and its syntactical and semantic devices?

Peirce's doctrine articulates a strong claim for what nowadays are called "structured propositions". His analysis of what keeps propositional structure together forms a sophisticated doctrine not far from some present positions (such as King 2007): the syntactical connection between predicate and subjects in a proposition functions as an icon of the actual, indexical connection between their correlates in terms of

objects and relations. It is a picture theory of Dicisigns - but it lacks the insistence of Wittgensteinian picture theories on a foundational level of logical atomism, taking instead the facts referred to by true propositions to be structural aspects of reality on any given level of description. The functional definition of Dicisigns - signs performing two simultaneous, different functions relating to the same objects, those of reference and description, transgresses the idea that propositions should depend upon the syntax of human language exclusively, opening the investigation of other syntactical combination strategies fulfilling the function to be charted in non-linguistic signs in human and non-human semiotics. As to the mode of existence of propositions, Peirce's doctrine is not completely clear - I think, however, its lack of clarity may be easily sanitized. As Short (2007, 231ff, 242ff) points out, two different ideas seem to compete in Peirce's doctrine. One claims propositions are signs - which may enter into more compound signs when those signs are asserted, assented to, or subjected to other speech acts.^{xxiv} Another claims propositions are ideal entities existing outside of space-time as mere possibilities. How could these two doctrines be reconciled? Short thinks the problem is "easily rectified" by preferring the ideal interpretation so that propositions are what may be abstracted from various types of Dicent Symbols - but not themselves being signs (245).^{xxv} But do we have to make this choice? The idea of Dicisigns as signs is the source of much of the strength of Peirce's doctrine, so we would hesitate to give up that idea. In the ten-sign typology of the *Syllabus* combining the three basic trichotomies, the six most complicated signs are all Legisigns, that is, types, none of them are actually existing signs but general sign types which appear in actuality only as instantiated in tokens, of which three types of Sinsigns exist. The four sign types involving Dicisigns - Arguments, Dicent Symbols, Dicent Indexical Legisigns, and Dicent Sinsigns - thus only have certain subtypes of Dicent Sinsigns as their instantiating "outlet" to actual discourse, so to speak. Any actual use - such as an assertion - of a Dicisign requires its tokening in a Sinsign. But that implies that Dicisigns, apart from the special case of Dicent Sinsigns, do possess the ideality of types, of Legisigns. So the idea that Dicisigns are indeed signs, need not be as remote from their ideality as

Short presupposes. Short seems here to identify signs with tokens only. Here Peirce's argument for their ideality: "A sentence, in the sense here used, is a single object. Every time it is copied or pronounced, a new sentence is made. But a proposition is not a single thing and cannot properly be said to have any existence. Its mode of being consists in its possibility. A proposition which might be expressed has all the being that belongs to propositions although nobody ever expresses it or thinks it. It is the same proposition every time it is thought, spoken or written, whether in English, German, Spanish, Tagalog, or how. A proposition consists in a meaning, whether adopted or not, and however expressed. That meaning is the meaning of any sign which should signify that a certain iconic representation, or image (or any equivalent of it) is a sign of something indicated by a certain indexical sign, or any equivalent thereof." (Ms. 599 "RR" 1902 – Page 5-7)

The token sinsigns - sentences or other instantiations by means of gesture, picture, diagram tokens - are actual, existent entities, but the Dicisigns they instantiate are not. They are mere possibilities. But still they are structured possibilities - possessing the structured syntax of Peirce's doctrine: the syntactical coupling of the two functional constituent signs. That propositions, in that sense, are ideal signs, is made possible by the Legisign-Sinsign (Type-Token) distinction. Should it confuse us and give us Ockhamist headaches that this commits us to accept an infinity of possible propositions, combining merely possible subjects with merely possible predicates, including lots of meaningless and false such combinations? Not more, I think, than we should take it as a heavy ontological burden to accept the infinitely recursive composition possibilities of human language or the indefinite, not yet realized compound possibilities of organic chemistry.

All in all, much can be learnt from Peirce's Dicisign doctrine, not only pertaining to the history of logic. The liberation of propositions from the iron cage of human language in the Frege-Russell tradition allows us to begin to grasp the logic and cognitive abilities of other animals as well as those of human beings freely mixing language with images, pictures, gesture, diagrams in order to express Dicisigns.

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ⁱ Major contributions include Tom Short's 1984 paper "Some Problems Concerning Peirce's Conceptions of Concepts and Propositions" (*Transactions XX*, No. 1 Winter 1984) which leads up to his treatment of the issue in his *Peirce's Theory of Signs* (2008), as well as and the two related 1992 papers of Risto Hilpinen, "On Peirce's Philosophical Logic: Propositions and Their Objects" (*Transactions XXVIII*, no. 3, Summer 1992, 467-488) and Nathan Houser, "On Peirce's Theory of Propositions: A Response to Hilpinen" (*ibid.* 489-504).

ⁱⁱ It can not be excluded that Peirce knew about the *Begriffsschrift* but did not care to read it due to the many unfavorable reviews of it at the time; his student Christine Ladd-Franklin mentions it in the 1883 *Studies in Logic* by Peirce and his students (cf. Anellis 2012). Frege probably learned Peirce's name from Schröders (disparaging) 1880 review, but neither of the two explicitly faced the other's ideas nor referred to them.

ⁱⁱⁱ Peirce's initial argument here is that symbols are genuine signs in contradistinctions to the degenerate sign types of icons and indices. The notion of "degeneracy" comes from the geometry of conic sections where certain sections (the point, the crossing lines, the circle, the parabola) only obtain with particular, non-generic values of the variables, simplifying the equations, as opposed to the generic sections giving ellipses and hyperbolas. Degenerate cases are thus limit phenomena only. From this observation Peirce moves to the special type of symbols which is propositions, the central issue of "Kaina Stoicheia", able to express facts: "What we call a "fact" is something having the structure of a proposition, but supposed to be an element of the very universe itself. The purpose of every sign is to express "fact," and by being joined with other signs, to approach as nearly as possible to determining an interpretant which would be the *perfect Truth* (...)" (p. 304). Not all Dicisigns, however, are symbols, cf. below.

^{iv} Thus, most if not all animal sign use displays the characteristic double structure of Dicisigns, e.g. firefly signaling (El-Hani, Queiroz, Stjernfelt 2012).

^v It should be added that Peirce's terminology referring to Dicisigns varies, to say the least. Taking his departure in the classic logical trichotomy of Terms, Propositions, Arguments, he invents new terminology in order to indicate his own generalization of that trichotomy to cover all signs. That gives terminological results like "Rhemes, Dicisigns, Arguments", "Semes, Phemes, Delomes", or "Sumisigns, Dicisigns, Suadisigns", just like the parallel version of "Dicent Signs" to "Dicisigns". Here, we shall generally stick to the "Rhemes, Dicisigns, Arguments" version.

^{vi} This idea is present already in “On a New List of Categories” (1868) where Peirce outlines the classic distinction term-proposition-argument and defines propositions as follows: “Symbols which also [in addition to determining imputed qualities, FS] independently determine their *objects* by means of other term or terms, and thus, expressing their own objective validity, become capable of truth and falsehood, that is, are *propositions*.” (EP I, 8)

^{vii} In the ten-sign taxonomy of the *Syllabus*, 1903 (EPII, 296).

^{viii} As Short also observes, Peirce does in fact - despite Austin’s famous claim to the contrary - distinguish between a proposition, the tokens representing it (e.g. sentences), the belief of a proposition (the assent to it), and the public claim of a proposition (the assertion of it), cf. below.

^{ix} Later in the *Syllabus*, Peirce realizes that Subject terms of propositions must *also* be classified as Rhemes (in the ten-sign combinatory, e.g., proper names are classified as Rhematic Indexical Legisigns). This seems to imply that they, too, must be considered as unsaturated. Thus, Peirce's theory differ from both Frege's and Russell's in not assuming Arguments/Subjects to be saturated. Saturation, like covalent chemical bonds, are taken to require unsaturatedness in all substances involved in the compound.

^x Cf. also Shin 2013.

^{xi} Peirce was just as much opposed to psychologism as was Frege, and even antedated him on this issue in his 1860s papers (cf. Stjernfelt 2013).

^{xii} The long argument in the *Syllabus* (EPII 275-277) has the shape of a deduction taking its premiss in the Dicisign's truth claim. This is analyzed as a claim that the sign is in actual, indexical connection to its object, and this, in turn, is analyzed as necessitating the Dicisign's two-part structure. The turning point of the argument is that in order to claim an indexical connection to the object, this connection must, in itself, be depicted in part of the sign. This part of the sign is the Predicate whose first function, then, surprisingly, is to depict the sign itself in its relation to the object. In the Predicate's picture of the Dicisign itself, then, what we normally would call the Predicate is involved as a part. Should we paraphrase the result of the argument, we could say that if the Dicisign, for a first glance, says: "Here are some Objects O, and they are characterized by the relational property P", what it really says on the *Syllabus* analysis is "Here are some Objects O, and they are really connected to this sign which is why this sign is able to describe them as having the relational property P". The *Syllabus* deduction is the object of a detailed analysis in Bellucci (in prep.).

^{xiii} This is how we should understand the claim that "It is, thus, clear that the vital spark of every proposition, the peculiar propositional element of the proposition, is an indexical proposition; an index involving an icon." ("Kaina Stoikheia", EPII, 310) - the icon of co-localizing S and P is interpreted as the icon involved by the index connecting S and P in reality. In that way every proposition professes to be like a weathercock.

^{xiv} Peirce continues: "It is impossible to thread our way through the Logical intricacies of Being unless we keep these two things, the Occurrence, and the Real Fact, separate in our Thoughts. John Stuart Mill did not do so; since he argues as if an Occurrence could have a Cause. In truth, both the Cause and its Effect are Facts, and no man will ever understand the subject of causation rightly until he sees that they are so. It is not, for example, the Motion of the Earth, as an Occurrence, that is caused by its momentum and by the gravitational attractions of the Sun and of the other bodies of the Solar System considered as Occurrences; for none of these things are Occurrences. It is the Fact of the motion of the Earth's centre of gravity of which one component is due to the Fact that it has not ceased to move with a certain velocity in a certain direction,

while other components are due to the Facts that the various other bodies, by virtue of their several masses and the gravitating power that resides in every unit of mass, continually communicating, at the distances which they severally are from the Earth's center of gravity, several component accelerations, to its motion. Mill's not making the needful distinction between Facts and Occurrences drives him to the declaration that the complete cause of any happening is the aggregate of all its antecedents, a principle which, though it is a necessary result of his views, he utterly ignores from the moment of enunciating it; for the excellent reason that its recognition would eviscerate the conception of Cause of all utility." (ibid.)

^{xv} Correlatively, Arguments add to the syntax of Dicisigns the higher-level syntax of deriving one Dicisign from the other in a way so that deriving is represented as lawful and general.

^{xvi} Peirce sometimes speaks as if all Dicisigns refer to actual existence. Such simple Dicisigns form the core of his doctrine, and from this center Dicisigns more remote from actual existence may be defined, such as ordinary universal propositions not involving existence ("All Englishmen are gentlemen"), propositions referring to fictional universes ("Donald Duck wears a sailor's sweater"), modal propositions, imperatives, interrogatives, requiring each their set of logical rules.

^{xvii} Taking the chain of reasoning as primitive may give as a new idea of biological sign evolution. Instead of assuming simple organisms use very simple signs which then compose to more complex sign during evolution, we can assume that simple organisms use unarticulated, implicit arguments so that semiotic sophistication during evolution rather has the character of the ongoing articulating and making explicit the semiotic machinery, such as the two functions of Dicisigns, cf. Stjernfelt 2012a; Hoffmeyer and Stjernfelt (in press).

^{xviii} This plasticity is what allows Peirce to experiment with the opposite of his privileging of the Predicate - throwing as much as possible of the Dicisign into the Subject. This can be done by means of converting predicate content into hypostatic abstractions - saying, instead of "Cain killed Abel", "Cain stood in the relation of killing to Abel", substituting a 3-place for a 2-place Predicate. Doing so, "killing" may now be taken as an unanalyzed Subject, part of the whole "Subject System" of the Dicisign such constructed, along with Cain and Abel. (Ms. 611, 1908; Murphey 317-318; Letter to Lady Welby Dec. 14 1908; Peirce 1966, 396-97). All such Predicate content abstracted away, what is left is the pure, relational structure of the Predicate, the "continuous predicate", which Peirce takes to be the realist relational core of Dicisign predication.

^{xix} Reinterpretability and plasticity of the Universe of Discourse is central in Hintikka's generalization of the distinction between the algebraists' logic as a reinterpretable calculus and the Fregeans' logic as a universal medium. This distinction, Hintikka sees as constitutive to 20 C philosophy as such. In logic, it may be found the algebraic tradition from Boole through Peirce to Schröder to Löwenheim, to Carnap and model theory (and to himself) versus the more well-known Frege-Peano-Russell-Wittgenstein tradition. More generally, in philosophy, the calculus tradition will be found in figures like Husserl or Cassirer focusing upon the plurality of phenomenological and semiotic means to express the same propositions - while the universal medium tradition will unite Russell, early Wittgenstein and Quine with continental philosophers like Heidegger and Derrida, all agreeing upon the ineffability of truth and impossibility of translation. In Peirce's doctrine of Dicisigns, the plurality of representations is evident in the fact that the same objects may be addressed using different semiotic tools, highlighting different aspects of them. To Hintikka, these virtues of the calculus tradition also implies that the

ineffability of truth of the universal-medium tradition evaporates. If you accept only one language, the question of the relation of this language to its object cannot be posed outside of this language – and truth becomes ineffable. If several different, parallel approaches to the same object are possible, you can discuss the properties of one language in another, and you may use the results of one semiotic tool to criticize or complement those of another. Even taking logic itself as the object, Peirce famously did this, developing several different logic formalisms (most notably the Algebra of Logic and the Existential Graphs), unproblematically discussing the pro and cons of these different representation systems. Such pluralism is compatible with a Peircean "extreme" realism.

^{xx} Peirce gave two different versions of this list. The standard list, resulting from the argumentation for how to combine the three basic trichotomies, occurs in the *Syllabus* 1903 (EPII, 294-5)

1. Qualisign
2. Iconic Sinsign
3. Rhematic Indexical Sinsign
4. Dicent Sinsign
5. Iconic Legisign
6. Rhematic Indexical Legisign
7. Dicent Indexical Legisign
8. Rhematic Symbol - Symbolic Rheme
9. Dicent Symbol - Proposition
10. Argument

Another version appears in the letter to Lady Welby Oct 12 1904 (8.341):

1. Qualisigns
2. Iconic Sinsigns
3. Iconic Legisigns
4. *Vestiges*, or Rhematic Indexical Sinsigns
5. *Proper Names*, or Rhematic Indexical Legisigns
6. Rhematic Symbols
7. Dicent Sinsigns (as a portrait with a legend)
8. Dicent Indexical Legisigns
9. *Propositions*, or Dicent Symbols
10. Arguments. †14

The sequence 3 to 8 has been changed. In 1903, the list takes the quali-sin-legisign sequence as fundamental, so that the priority of the three trichotomies is 1-2-3; in 1904 the overall structure follows the rheme-dicisign-argument sequence, so the priority is rather 3-2-1. No argument is given for the change, but the implicit reason must be taken to be that the function of signs in reasoning (given by rheme-dicisign-argument) is decisive. This naturally groups dicisigns together (7-10) while the no less than six rhemes - fragmentary, unsaturated signs - make up the first six types of the list. The 1904 list also has the merit that legisigns are preceded by their sinsign replicas pairwise (2-3, 4-5, 7-8). It is remarkable that none of the two lists chooses the

most well-known, second trichotomy of icon-index-symbol as its organizing principle. The 1908 version of the triangle depicting the ten combined signs (from the Dec 24 letter to Lady Welby, EPII, 491) is a mirror version of that of the *Syllabus*, now with arguments in the upper left corner, maybe indicating that the corresponding list should now begin with the *most* complicated (or complete) sign type, that of the argument, effectively inverting one of the lists given.

^{xxi} "Dicisigns are either symbols, when they become genuine propositions, or they are informational indices. Almost all indices are either informational or are elements of informational indices. Thus, when Robinson Crusoe found the footprint generally spoien of as Friday's, we may suppose that his attention was first attracted to an indentation of the sand. So far it was a mere substitutive index, a mere something apparently a sign of something else. But on examination he found that "there was the print of toes, heel, and every part of a foot", in short, an icon converted into an index; and the connection of this with its presence on the shore, could only be interpreted as an index of a corresponding presence of a man. We thus see clearly that a dicisign, or information-bearing sign, is a sign that indicates a Secondness in its object by a corresponding secondness in its own composition. (Ms. 478, 46-47, alt. version of *Syllabus*, 1903)

^{xxii} The most thorough analysis of the weathercock is found in Ms. 7 ("On the Foundations of Mathematics", ca. 1903): "The reference of a sign to its object is brought into special prominence in a kind of sign whose fitness to be a sign is due to its being in a real reactive relation,—generally, a physical and dynamical relation,—with the object. Such a sign I term an index. As an example, take a weather-cock. This is a sign of the wind because the wind actively moves it. It faces in the very direction from which the wind blows. In so far as it does that, it involves an icon. The wind forces it to be an icon. A photograph which is compelled by optical laws to be an icon of its object which is before the camera is another example. It is in this way that these indices convey information. They are propositions. That is they separately indicate their objects; the weather-cock because it turns with the wind and is known by its interpretant to do so; the photograph for a like reason. If the weathercock sticks and fails to turn, or if the camera lens is bad, the one or the other will be false. But if this is known to be the case, they sink at once to mere icons, at best. It is not essential to an index that it should thus involve an icon. Only, if it does not, it will convey no information."

^{xxiii} The full quote is interesting in itself: " But it remains to point out that there are usually two Objects, and more than two Interpretants. Namely, we have to distinguish the Immediate Object, which is the Object as the Sign itself represents it, and whose Being is thus dependent upon the Representation of it in the Sign, from the Dynamical Object, which is the Reality which by some means contrives to determine the Sign to its Representation. In regard to the Interpretant we have equally to distinguish, in the first place, the Immediate Interpretant, which is the interpretant as it is revealed in the right understanding of the Sign itself, and is ordinarily called the *meaning of the sign*; while in the second place, we have to take note of the Dynamical Interpretant which is the actual effect which the Sign, as a Sign, really determines. Finally there is what I provisionally term the Final Interpretant, which refers to the manner in which the Sign tends to represent itself to be related to its Object. I confess that my own conception of this third interpretant is not yet quite free from mist." (Prol. to an Apology for Pragmaticism, 1906, CP 4.533)

Here, the Immediate Object is not only defined in terms of "Representation" but also as something whose being is dependent upon the sign. These ways of arguing may easily be

mistaken for staying the sign creates a description of the object which is the IO. But "representation" in Peirce generally means denotation rather than signification, and the dependence of the IO on the sign does not exclude its dependence upon the DO - but must be taken to mean that the cutting out or selection of IO from the DO is due to the activity of the sign - rather than taking the IO as being a meaning created by the sign.

^{xxiv} Space does not allow us to discuss here Peirce's embryonic speech act theory according to which propositions are signs fit to be asserted - or to be the objects of assent, interrogatives, imperatives, etc. see Brock 1981

^{xxv} It even leads Short into attempting a distinction between the Rheme/Dicisign/Argument trichotomy and the Seme/Pheme/Delome trichotomy (which are synonymous in Peirce).