On Peirce’s diagrammatic models for ten classes of signs

Abstract: The classifications of signs are among the most important topics of Peirce’s theory of signs. The 10 classes of signs were developed from 1903 and represent an important refinement of the fundamental division of signs into icons, indexes, and symbols. In this paper we present two diagrammatic models for 10 classes, proposed by Peirce, and an interpretation of the reasoning behind their development, based on the analysis of preparatory versions of these models.

Keywords: classification of signs, 10 classes of signs, diagrams, C. S. Peirce, 1903 Syllabus, Lady Welby

1 Introduction

Sign-mediated processes show a remarkable variety. In an attempt to advance in the modeling of semiotic processes, Peirce proposed several classifications, with different degrees of refinement and several relationships to one another. In fact, the classifications of signs are among the most important topics of Peirce’s Speculative Grammar. The 10 classes of signs were specially developed from 1903 and represent a major refinement of the best known division of signs into icons, indexes, and symbols. In order to more accurately describe complex semiotic

phenomena, Peirce developed several classifications of signs (10, 28, and 66 classes), based on different trichotomies (see *EP* 2: 289–299 and 478–491). The consequence is an enormous accuracy of the relations observed within semiosis.

An examination of Peirce’s manuscripts, from 1903 to 1908, reveals that he devoted considerable attention to research and development of visual models for the 10 classes of signs, a fact that should not be considered surprising, given his association of diagrammatic reasoning with abductive inference and creativity (see Paavola 2011, Stjernfelt 2007).

In previous works, we argued that there is a common pattern in the arrangement of the diagrams designed by Peirce for 3-trichotomic classes (Farias and Queiroz 2003), and showed that this pattern could serve as a basis for a dynamic diagram for such classes. This has lead to the development of a computer program able to build equivalent diagrams for any n-trichotomic classification of signs (Farias and Queiroz 2004), which serves as a tool for the investigation of C. S. Peirce’s theory of signs. An example of the use of such tool is the visualization of the different kinds of iconic classes that occur within the 66 classes of signs, depending on the ordering of the trichotomies, and their possible relation with the hypoicons described by Peirce (Farias and Queiroz 2006).

Here we present, in more detail than in previous works, the two diagrams designed by Peirce for the 10 classes. One of them refers to the division described for the first time in his *Syllabus*, in 1903 (MS 540: 17, *CP* 2.264, *EP* 2: 296). The other diagram appears in drafts of a letter to Victoria Welby, written in December 1908 (*L* 463: 146, *CP* 8.376, *EP* 2: 491). In addition to the models published in the *Collected Papers* and *The Essential Peirce*, we present a series of sketches for these diagrams, found in several manuscripts, from which we might infer Peirce’s underlying diagrammatic reasoning (in the sense discussed by Stjernfelt 2000) regarding the relations of affinity and hierarchical dependence between the classes of signs.

2 The *Syllabus* diagram

In his 1903 *Syllabus* (*EP* 2: 296), Peirce introduces the 3-trichotomic 10 classes of signs. After describing the classes, he presents a diagram where they appear in 10 squares arranged in a triangular structure (Figure 1), and makes the following comment:

The affinities of the ten classes are exhibited by arranging their designations in the triangular table here shown, which has heavy boundaries between adjacent squares that are appropriated to classes alike in only one respect. All other adjacent squares pertain to classes
Peirce’s models for ten classes of signs

alike in two respects. Squares not adjacent pertain to classes alike in one respect only, except that each of the three squares of the vertices of the triangle pertains to a class differing in all three respects from the classes to which the squares along the opposite side of the triangle are appropriated. The lightly printed designations are superfluous. (CP 2.264)

This diagram, which we will from now on refer to as “the Syllabus diagram,” was reproduced (Figure 2) in the Collected Papers (CP 2.264) and in the second volume of The Essential Peirce (EP 2: 296). The Roman figures were added to the diagram by the editors of the Collected Papers for easy reference to the 10 classes, and were omitted by the editors of The Essential Peirce. In other pages of the manuscript MS 540 (MS 540: 27, 28 and 29, Figures 3, 4, and 5), and also in one of the pages of the manuscript MS 799 (MS 799: 2, Figure 6), we can find drafts for this diagram.

In the drafts found in manuscript MS 540 (Figures 3, 4, and 5), we observe Peirce’s effort to visually organize the classes in a way that would reflect the relations of similarity among their internal structures, expressed through trichotomic modalities (e.g., iconic classes, or classes of sinsigns). The sketches are clear attempts to get to the final arrangement shown in the Syllabus diagram, where
Peirce finally seems to be satisfied with the relative position of the classes, as he states in the passage quoted above (*CP* 2.264). The diagram found in *MS* 540: 29 (Figure 5) is the first of this series. There are four tentative models in this page. The most complete arrangement is one shown in the lower left corner of figure 5, where the class of qualisigns (111) is placed in the apex of a triangle supported on one side. Figure 7 shows the same structure, with the classes expressed in Arabic and Roman numerals, following the same convention adopted by the editors of the *Collected Papers* for the *Syllabus* diagram.

In manuscript *MS* 540: 28 (Figure 4) we can find, in the upper right corner, a list of pairs of trichotomic aspects of the classes (e.g., “rhematic iconic,” “rhe-matic legisign”) followed by Arabic and Roman figures (used only for the number 10, represented as X), indicating the classes that have such aspects. The convention adopted for this notation is identical to the one adopted by the editors of the *Collected Papers*: numbering follows the order of presentation of the classes in the *Syllabus*. The only difference is the adoption of Arabic instead of Roman figures.

On the left, and below this list, we find two triangular arrangements for the classes. The arrangement on the left seems to have been based in the numerical order of the classes. The largest arrangement, below, seems to be yet another

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Fig. 2: A diagram for 10 classes reproduced in accordance to the *Syllabus* model as seen on *CP* 2.264. The reproduction found in the second volume of the *The Essential Peirce* (*EP* 2: 296) omits the Roman numerals.
Peirce’s models for ten classes of signs

attempt to organize the classes according to their internal composition. It should be noted that, in the latter, the position of classes I, II, III, and V is identical to the one that appears in the sketch in the following page (MS 540: 28, Figures 5 and 7). The relative position of classes is also similar to the one found in the Syllabus diagram, except for the position of classes VI (321) and X (333), which is reversed (in order to compare them, just rotate the Syllabus diagram counterclockwise, positioning class 111 in the upper vertex).

The sketches found in MS 540: 27 (figure 3) and MS 799: 2 (Figure 6) seem to be the last in the series that leads to the Syllabus diagram. In both, the positions of the classes are marked by squares. In both cases, the relative position of classes IV (222) and VI (321) is inverted, revealing the difficulty of positioning class VI, the only one that combines aspects of thirdness, secondness, and firstness, among the others. Indeed, this is the only difference with respect to the position of the classes, between the Syllabus diagram, where it is placed in the

Fig. 3: A draft for the Syllabus diagram found in manuscript MS 540: 27.
center of the triangular diagram, and the draft found in manuscript MS 799: 2 (figure 6), where it is placed at the bottom. The diagram in manuscript 540 MS: 27 (Figure 3), by contrast, must be rotated 180 degrees and mirrored so that the position of classes coincides with those found in the Syllabus diagram.

Some adjustments, made by Peirce, to the final version of the Syllabus diagram include the differentiation in the thickness of the lines between the classes and the weight of the letters used to write their names. In the final version (MS 540: 17, figure 1), the lines dividing the cells for classes II and VI, IX and VI, and VII and III, are thicker, indicating that, unlike other “bordering” classes, they have only one aspect in common (II and VI, for example, are rhemes). The variation in the weight of the letters used in the description of the classes seems to have aimed to the simplification of their names – terms that are not necessary for describing and differentiating the classes, and therefore can be omitted, are lighter.
The number above to the left describes the Object of the Sign. That above to the right describes its Interpretant. That below describes the Sign itself.
1 signifies the Possible Modality, that of an Idea.
2 signifies the Actual Modality, that of an Occurrence.
3 signifies the Necessary Modality, that of a Habit.
(L 463: 146; EP 2: 491)

This diagram, which we will refer to as the Welby diagram (Figure 9), was reproduced in the Collected Papers (CP 8.376) and in the second volume of The Essential Peirce (EP 2: 491).
There are other versions of the Welby diagram among Peirce’s manuscripts. Some of them, found in a manuscript dated 27 December 1908 (MS 399D: 627, Figure 10), appear to be preparatory notes for this diagram, which was finally
Peirce’s models for ten classes of signs

Fig. 8: A diagram for 10 classes drawn by Peirce in the draft of a letter to Lady Welby dated 24–28 December 1908 (L 463: 146).

Fig. 9: The Welby diagram (L 463: 146, figure 8), as reproduced in the Collected Papers and in the second volume of The Essential Peirce (CP 8376, EP 2: 491).

rendered, most probably, with the help of a ruler or a similar instrument (Figure 8). What is more crucial here is the position of the numbers that identify each class. In the sketch found in the lower part of the paper, the position of the classes and the figures used to identify them are identical to those found in the Welby diagram.
A drawing very similar to the *Welby* diagram appears in manuscript *L* 463: 155 (Figure 11).2 This drawing seems to have been done by overlaying the diagram

2 This one seems to be another of the many drafts to the letter that was finally posted. The latter is, most possibly, the one dated 23 December 1908, and contains no diagram (Hardwick 1977 80–85; *EP* 2: 478–481).

Fig. 10: Preparatory notes for the *Welby* diagram found in a manuscript dated 27 December 1908 (*MS* 399D: 627).
Peirce's models for ten classes of signs

found in manuscript L 463: 146 (Figure 8) with a new sheet of paper, and copying parts of it. It consists of 10 triangles, which contain 10 classes, and has no “empty” cells, as the ones in the Welby diagram. Peirce makes the following comments on this diagram:

... the three divisions according to the Modality of Being of the Sign itself, of its Object, and of its Interpretant cannot make 27 classes of Signs but only Ten; namely, appropriating a little triangular space with a vertex down ∇ to the description of each class, and denoting by
1. Possible
2. Actual
3. Necessitant
Modality,
I write one of these numbers in each of the three corners of the triangular space.
The lower corner to characterize the Mode of Being of the Sign Itself.
The left hand upper corner to characterize the Mode of Being of its Object.
The right hand upper corner to characterize the Mode of Being of its Interpretant.
Then the Ten resulting classes of signs will be those shown in the Scheme below. (L 463: 155)

On the side of the diagram, Peirce includes the following comment: “An Abstractive can only be Descriptive not Designative nor Copulative while a Copulative can only be Collective, not Abstractive nor Concretive” (L 463: 155).

The terms used by Peirce in this excerpt refer to the trichotomic modalities of $Od$ ([nature of the] dynamic object) and $Oi$ ([nature of the] immediate object). The statement is peculiar, since these trichotomies only become part of the classifications of signs once Peirce describes the division into 28 classes. Furthermore,
although these diagrams are structurally very similar to the *Syllabus* diagram, there are important differences relatively to the classes represented in their cells. If we consider that the reading sequence of the figures that represent the classes in the *Welby* diagram is (i) top left, (ii) bottom, and (iii) upper right corner, this would correspond, in terms of order of determination, to say that the *Object* determines the *Sign*, which determines the *Interpretant*. This seems to contradict what we observe in the *Syllabus* diagram, where the *Sign* determines its relation to the *Object*, which determines its relation to the *Interpretant*.

However, we must remember that, in the *Welby* diagram, what we are calling *Object* is described as “the mode of being of [the Sign's] Object” (and not the relationship of the Sign with its Object), and, similarly, that what we are calling *Interpretant* is described as “the mode of being of [the Sign's] Interpretant.” The implication of this is that Peirce seems to be showing us here, with this diagram, is that the mode of being of the Sign’s Object (immediate or dynamic) determines the mode of being of the Sign, which determines the the mode of being of its Interpretant (immediate, dynamic or final). This is not the order of determination that generates the 10 classes of signs described in the *Syllabus*, but is also not in contradiction with it. This is the basic structure of the order of determination which gives rise to another classification, the 28 classes of signs. This is, in fact, the number of triangular cells with vertex down in the *Welby* diagram, although only ten of them are occupied by classes, expressed in Arabic numbers.

## 4 Conclusion

Peirce devoted great attention to the development of models for visually representing ten classes of signs. The diagrams are important because they graphically express relations of affinity and of hierarchical dependence between the classes. We presented here the intermediate steps taken by Peirce to obtain diagrammatic models for ten classes of signs. The development of the ten classes described in the *Syllabus* was carefully investigated by several authors (e.g., Houser 1991; Freadman 1996, 2001, 2004), but Peirce’s diagrammatic experiments related to this classification were never considered.

The 10 classes of signs form a system of cross-relations (see Freadman 1996: 150) designed by a precise arrangement of 3-trichotomic divisions. The main problem presented in any attempt to diagrammatically render this system is related to the development of a model whose structure of regular intervals would reflect the structural regularity that distinguishes the classes.

However, although the structure of the *Welby* and the *Syllabus* diagrams are very similar, and although both are diagrams for 10 classes, and share similar
structures, the classes shown in the two models are clearly not the same. While
the *Syllabus* diagram shows us the ten 3-trichotomic classes described in Peirce’s
course outline in 1903, the *Welby* diagram, developed in December 1908 shows
us a subset of the division of signs into 28 classes, represented by 3 of their
6-trichotomic aspects. Despite such differences, experiments with visual models
have undoubtedly been at the core of Peirce’s musings about the classification
of signs, indicating the importance of the manipulation of external diagram-
matic resources to the exploration of new ideas in the domain of Speculative
Grammar.

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