On humanities, logic and Eco's *Il nome della rosa*

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(an article from *ICS Newsletter* 1996, slightly edited and with one of the examples, which contained a mistake in the original, corrected)

A few weeks ago I was careless enough in a discussion to claim that Umberto Eco's novel *Il nome della rosa* really is a book about the method of humanities, since it (in the guise of a detective story) deals with the same things that humanities deal with: making sense of dispersed and confusing facts, forming hypotheses and searching for causes and explanations. I also said that I felt that Eco on this point was inspired by the great American philosopher Charles Sanders Peirce[1] (one of the three Americans whose contribution to civilisation I admire most, the others being Charles Ives and John Coltrane). Claims like this are dangerous, because one has to explain what one meant by putting them forth. Therefore, I want to write this brief contribution to the ICS newsletter, briefly explaining about Peirce's logic of abduction and its relevance for humanities.

Charles Sanders Peirce lived from 1839 to 1914. Trained in chemistry, he had a brief but ultimately unsuccessful university career, published numerous papers and reviews, and worked on a number of books in the fields of logic, philosophy and philosophy of science, none of which was ever published. He is mostly known as the father of American pragmatism (later made popular by Dewey and James), but has also been very influential through his work on the nature of reasoning and inference. We all probably have heard about the logical figures of deduction and induction. Deduction is the form of those syllogisms that allow us to infer from some general law to a particular case:

        All men are mortal
        Socrates is a man
∴   Socrates is mortal

Deductive inferences are 'safe' but not particularly revealing, since they never tell us anything we didn't know beforehand. Induction, on the other hand, lets us proceed from a number of singular cases to a general law: if you know fifty-seven vegetarians who are in good health, and no counterexample, you might infer by induction that 'all vegetarians are in good health'.

Now Peirce pointed out that there is a third thing besides deduction and induction, something he variously called abduction (with a term borrowed from Aristotle), inductive hypothesis, hypothetical inference, and hypothesis *tout court*. The model for this is

        A surprising fact O has been observed.
        If the hypothesis H were correct, O would be an obvious thing.
∴   Therefore we have reason to assume that H is true.

We have noticed, for example, that a number of people are in surprisingly good health. We know that vegetarians (except for those who also are chain smokers) are usually in good health and wonder 'what if all these people were vegetarians? This would explain why these people are doing so well health-wise.'

This is indeed not deduction, but it is different from induction, too; our sample is probably far too small to make any safe inductive generalisation. However, it is not too small to form a

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[1]the name is pronounced like 'purse'.

reasonable hypothesis about what *would* be an explanation of the facts if it indeed were the case[2]. This is, at the same time, at least according to Peirce, the figure of reasoning that is behind all our perception and experience, behind all scientific activity, and that is the main instrument by which we make sense of the world.

In a paper published in 1883, "A theory of probable inference"[3], he says that induction is reasoning from particulars to the general law, and abduction (or hypothesis) reasoning from effect to cause; induction does the work of classification but abduction the work of explanation. He argues that any historical fact (like that Napoleon Bonaparte lived) is a hypothesis: we conclude that Napoleon must have lived since we observe certain traces after him (traditions, stories, monuments). "But no mere generalisation of observed facts could ever teach us that Napoleon lived."[4] By way of hypothesis or abduction we conclude that some fact A exists, a fact A that is totally different from anything we have observed, but which in compliance with known and established laws necessarily will produce something which we have observed.

A similar reasoning of a more implicit kind is behind of many of the episodes in Eco's novel *Il nome della rosa.*

Thus Brother William of Baskerville, in the Prime of the First Day of Eco's novel, concludes from a broken twig, tracks of hooves in the snow and the appearance of the cellarer of the monastery *in persona* that the abbot's favourite horse Brunellus has come past on the way to the dungheap.

This is neither induction nor deduction, although one sometimes finds the erroneous idea (both in accounts of methodology of the humanities and in detective novels) that deduction is the path by which we can proceed to new knowledge. Rather, Brother William's inference is an act of hypothesis-forming or abduction: he infers a fact which, if true, together with our knowledge of the world, would have the facts we have observed as consequences, and in this way these inferred facts make sense of, and explain, the observed facts.[5]

This is what humanities is about (making sense), this is what Peirce's logic of abduction is about, and this is what (ultimately) Eco's *Nome della rosa* is about. Have fun reading!

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[2]Here we can see the parallel to the detective story: *If the butler were the murderer*, it would explain why the murderer didn't have to leave the house after killing the false count and why the chambermaid was so eager to confirm his lousy alibi.

[3] in a collection of papers by Peirce and his students at Johns Hopkins University, Studies in Logic, Boston 1883, 126-181, reprinted in *Writings of Charles S. Peirce*, Bloomington: Indiana University Press 1986, vol. 4, pp. 408-450

[4] p. 423 in the 1986 reprint.

[5]The best introduction to Peirce is probably (for those of you who read Norwegian) the introduction by Ingemund Gullvåg in *Charles Sanders Peirce*, Oslo: Pax 1972. Of Peirce's own articles the most easily accessible is "Deduction, induction and hypothesis", originally published in *Popular Science Monthly* 13, 1978, pp. 470-482, and reprinted in *The Collected Papers of Charles Sanders Peirce*, vol. 2, pp. 619-644, Cambridge, Mass.: The Belknap Press, 1960 as well as in *Writings of Charles S. Peirce*, Bloomington: Indiana University Press, vol. 3, pp. 323-338. A German translation ("Deduktion, Induktion und Hypothese") was published in *Die Festigung der Überzeugung*, ed. E. Walther, Baden-Baden: Agis n.y., pp. 127-142, and a Norwegian translation ("Deduksjon, induksjon og hypotese") is found in the Norwegian collection of papers by Peirce referred to above, pp. 171-186.