

# Explanation and Interpretation in the Sciences of Man

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There is a long tradition for separating explanation from interpretation that has permeated the natural sciences, the social sciences and the human sciences. The tradition was fuelled partly by the positivistic distinction between the context of discovery and the context of justification, partly by Hempel's model of explanation, but mostly by the hermeneutic philosophy in the social and human sciences. These traditions may now have come to an end. In this paper I shall present a unitary theory of explanation and interpretation, a theory which I have argued for elsewhere, in which interpretations, or rather a group of interpretations, are considered as explanations of meaning.<sup>1</sup>

The view to be defended may be called the pragmatic-rhetorical theory of explanation. It sees an explanation as a discursive response to an explanation-seeking question. Explanation is part of a rhetorical practice in the sense that explanation is an intentional act of communication. Rhetoric, as it is used here, has to do with expedient communication that is context-bound, directed and intentional, and potentially persuasive. An explanation is a response to a question by an interlocutor, and the explanation is meant by the respondent to inform him about what he does not understand by providing some missing information, by making something probable, or by making abstract issues concrete. The respondent's answer brings insight to the questioner by placing the information he asks about into a broader context of what he already knows or what he is willing to accept.

Any pragmatic theory of explanation is characterized by the idea that there is an intimate connection between explanation and context. But where other pragmatic theories

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<sup>1</sup> Jan Faye, "Interpretation in the Natural Sciences", in Mauro Dorato, Miklós Rédei, and Mauricio Suárez (eds.) *EPSA Epistemology and Methodology of Science: Launch of the European Philosophy of Sciences Association*. Springer Verlag 2009.

(such as Bas van Fraassen's and Peter Achinstein's) associate explanatory relevance of an answer with truth or correctness, the rhetorical theory permits that false answers act as explanations whenever they are consonant with the background knowledge of the explainer (and the explainee). Thus an explanatory answer is relevant and informative with respect to the context in which the question is placed and with respect to the background assumptions of the interlocutor and the respondent and perhaps their personal interests.

### *Explanation as an act of communication*

To begin, let me briefly say what I take explanation to be.<sup>2</sup> I hail a pragmatic theory of explanation which characterizes explanation in terms of its role of providing understanding. In contrast to any formal approach to explanation, a pragmatic approach denies that the concept of explanation can be characterised solely in semantic or syntactic terms. And contrary to an ontic approach, it refuses to accept that explanation is only concerned with ontological categories like causation. The pragmatic-rhetorical approach sees explanation as part of the scientific discourse and our general communicative practise. It regards explanation to be an appropriate answer to an explanation-seeking question in relation to a particular epistemic context. A question is being raised in a situation where the questioner has a cognitive problem because he or she lacks knowledge of some form and now hopes to be informed by an explanatory answer. Therefore, this pragmatic view regards the context of the explanatory discourse, including the explainer's beliefs, cognitive interest and background assumptions, as what determines the appropriateness of the answer. Pragmatists think that the acceptability of the explanatory product is partly a result of the circumstances under which the explanation is produced.

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<sup>2</sup> See Jan Faye, "Explanation Explained," in *Synthese*, 111, 1999, 61-75; Jan Faye, *Rethinking Science. A Philosophical Introduction to the Unity of Science*. Aldershot: Ashgate, ch. 3; and in particular Jan Faye, "The Pragmatic-Rhetorical Theory of Explanation", in Johannes Persson & Petri Ylikoski (eds.) *Rethinking Explanation*. Series: *Boston Studies in the Philosophy of Science* Vol. 252. Dordrecht: Springer Verlag 1997, 43-68.

Also, they take scientific explanations to be basically similar to explanations in everyday life.

The similarity between different kinds of explanations is found in the discourse of questions and answers that takes place in a context consisting of both factual and cognitive elements. The claim is that we do not understand what an explanation is unless we also take more pragmatic aspects around a communicative situation into consideration. The pragmatic-rhetorical view regards explanation as an agent of change in belief systems.

Thus, the pragmatic-rhetorical approach holds that a fitting response to an explanation-seeking question in science need not follow by *valid* deduction from a set of premises, nor does it need to appeal to a causal mechanism; hence, the acceptance of a fitting response as an explanation includes lots of contextual elements such as depending on exigence, audience, and constraints. This approach does not pretend to give us more than a *descriptive* account of what the audience will accept as an explanation. Whether an explanation is good or bad, true or false, is not the issue as long as it fits into the general pattern of scientific inquiry. So the insight that can be associated with the pragmatic-rhetorical view of explanation is that scientific inquiry, and thus scientific explanation, is goal-oriented and context-bounded. It is always performed relative to some set of interests and a set of epistemic norms and standards which are context-dependent. Moreover, those norms and standards often change with the change of context without being explicitly acknowledged; thereby leading to controversies about what is an acceptable explanation.

A pragmatist like Peter Achinstein characterizes explanation as an illocutionary act.<sup>3</sup> In his groundbreaking theory of speech acts John Austin distinguished between three sorts: locutionary, illocutionary and perlocutionary speech acts.<sup>4</sup> According to the speech act theory, an illocutionary act is successful whenever the illocution succeeds, that is, if the sentence is stated in the right circumstances and is understood as intended by the speaker. But I think there is more to the notion of being an explanation than being an illocutionary act. It is not enough to call an appropriate answer to an explanation-seeking question

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<sup>3</sup> Peter Achinstein, *The Nature of Explanation*. New York and Oxford: Oxford University Press 1983, p. 16.

<sup>4</sup> John L. Austin, *How to Do Things with Words*. Oxford: Oxford University Press 1962

successful as an explanation merely by saying that the questioner or audience understands the intention behind the answer.

Imagine a situation in which the explainer provides the questioner with an answer. Indeed the answer is stated in the right circumstances by being a direct response to an explanation-seeking question; moreover the questioner or audience understands the speaker's intention, namely as the speaker's wish of providing an answer to his or her question. But as long as the answer does not improve the questioner's understanding, we seem not to have a successful explanation. What is needed for such an answer to be successful as an explanation is that the perlocution succeeds, that is, an answer to an explanation-seeking question is successful as an explanation if and only if this linguistic act changes the cognitive situation of the questioner. Thus we can separate *explanations* from *successful explanations* by stating what counts as an explanation and what counts as a successful explanation in terms of a perlocutionary speech act. Whether or not an answer to an explanation-seeking question functions as a perlocutionary speech act, and therefore acts as a genuine explanation, depends on whether the speaker has intention of informing the explainee so that the latter can reach a new or better understanding. In this case the answer has a *perlocutionary purpose*. Moreover, the answer is successful as an explanation if it has a *perlocutionary effect*, and the answer has a perlocutionary effect if it actually has an informative effect on the explainee by changing his or her cognitive state.

A common objection against any pragmatic theory is that it cannot cope with the widespread wisdom that the understanding one gets from scientific explanations must be true, objective and invariable. To the extent this intuition is correct I believe the pragmatic-rhetorical approach can account for it. The pragmatist does not have to deny that scientific explanations are concerned with a mind-independent world against which scientific explanations therefore are measured to find out whether they are true or not. She may be a realist of sorts. But in my opinion the common wisdom has limited value. It is based on a flawed metaphysics that there is *always* one, and only one, correct way of describing the mind-independent world, that there is just one perspective from which the world is truly described. To be objective is not to be context free, but to be aware of the context and the perspective we speak from.

Our description of the world is dressed in conceptual and theoretical clothing, but our description is dressed for the occasion and the conceptual garb may be renewed from time to time. Norms and standards for evaluating one's beliefs also change with respect to the problem in need of an explanation. Such a change of explanation comes not only with historical development over time but also with the shift in the problem context. Also on a higher level the fact is that scientific theories may be empirically underdetermined by evidence, which means that the theory one accepts is determined by other factors than mere observations. These other factors are, however, not equally objective, nor do they have an objective ranking. Here personal or shared interests play an important part.

In my opinion, explanation should be understood in the general context of interpersonal communication. Explanation is closely connected with understanding. When we explain things and events to each other, we pass on information about an immense range of different topics. These may cover such things as the structure of the natural world, social tensions, historical events, reasons for our actions, the meaning of words, symbols, literature and art works, or instructions on how to operate a certain piece of machinery. Explaining things and events is thus an appropriate linguistic reaction to what is considered to be an explanation-seeking question by which we distribute information of all kinds to one another.

Now if neither truth nor correctness matters with respect to whether an answer to an explanation-seeking question accounts as explanation, you may wonder how we can distinguish between possible and actual explanation. I suggest the following distinction: A *possible explanation* is for the explainer a perlocutionary response that seems plausible in the light of his beliefs concerning the evidence, his background knowledge, assumptions, and cognitive interests. An *actual explanation* is for the explainer a perlocutionary response which he thinks is true in the light of his background knowledge, assumptions, cognitive interests and beliefs concerning the evidence. Indeed, according to these definitions, both a possible and an actual explanation may be false and therefore explainees may rightly take them to be false.

## *Explanation in the social sciences*

A pragmatic-rhetorical notion of explanation may help us to solve some methodological disputes within the philosophy of the social sciences. Over the years we have seen many different views on which grounds the social sciences should explain social phenomena. Some approaches begin by assuming that it must be possible to establish genuine causal laws concerning social forces and given these laws one can explain various social facts. These approaches see the methodological strategy of the natural sciences as their natural goal for theory-building and objectivity. A few approaches base their study of social phenomena on intentionality and on the rationality of the individual social agent. There are those approaches that look for individual causes, rather than general laws, and there are those that attempt to explain social phenomena in terms of social rules and conventions, and still others that believe that the behaviour of social agents must be explained by its social function. This diversity of theories and methodologies in the social sciences have sometimes created a heated debate about which of these approaches, for instance methodological holism or methodological individualism, is the correct way to acquire understanding of social facts. But it is not at all obvious from the debate that such questions have a proper answer.

Since our explanatory understanding of the social and cultural phenomena is even more context dependent than that of natural phenomena, it is no wonder that we may find alternative explanations within the human and social sciences. Nevertheless, some philosophers and social scientists urge that the elementary unit of social life is the human individual action. For instance, Jon Elster argues: "To explain social institutions and social change is to show how they arise as the result of the actions and interaction of individuals. This view, often referred to as methodological individualism, is in my view trivially true."<sup>5</sup> Thus, methodological individualists believe that scientific knowledge within the social sciences is appropriately acquired through the study of individuals.

Methodological holists take the opposite view claiming that scientific knowledge within the social sciences is appropriately derived through the study of groups, classes,

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<sup>5</sup> Jon Elster, *Nuts and Bolts for the Social Sciences*, Cambridge: Cambridge University Press 1989, p. 13.

organizations, institutions, forces or social processes. The explanation of individual behaviour should be based on the sustaining role this behaviour has for the social system as a whole. Philosophers and social scientists who believe that the scientific understanding of aggregate levels is prior to the scientific understanding of individual human actions may prefer various kinds of explanation. They may look for nomic, causal, structural or functional explanation depending on which thematic problems they want to pursue.

The methodological debate in the social sciences just mentioned is concerned with two partly independent questions: 1) How should we understand the difference between methodological individualism and methodological holism? Which one is the correct approach? 2) How should the social sciences consider types of explanation other than causal explanation such as structural, functional or intentional explanations? An answer to each of them may be separated since you can be a methodological individualist and appeal to intentional explanation, or you can be methodological holist and still defend causes and mechanisms. But most often we associate individualism with explanations in terms of causes and intentions and holism with explanations in terms of structure and functions.

Now, let us focus on the explanatory significance of these two methodological approaches. As I understand them, we can illustrate their virtues by using the two models "homo economicus" and "homo sociologicus" as representing individualism and holism respectively.<sup>6</sup> The two models stand in opposition to each other. The first sees human agent as rational, free to choose, and utility maximizing individual, the second sees it as a socialized, norm, cultural and role governed individual whose behaviour is determined by the structural features of the society.

If we want to explain a phenomenon like social mobility, i.e. the difference in peoples' chances to move up the social ladder in relations to their social background, the economical approach will point to the agents' rational calculation of possibilities and risks. Children of unskilled worker, for instance, may see higher education to be more risky and

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<sup>6</sup> See Martin Hollis, *The Philosophy of the Social Sciences*. Cambridge: Cambridge University Press 1994, pp. 94-114.

cost demanding than children of academics. The sociological approach will rather point to limits and barriers in the agents' environment and structural conditioned resources.

None of the diverse approaches seems to exclude each other in practise. There is no fact of the matter which determines what kind of representation of social phenomena one must choose to make science proper. It depends on our cognitive interest which kind of explanation we want to pursue. (Indeed, there is more at stake than cognitive interests and purposes. The discussion is also loaded with moral, normative and ideological interests. ) I believe that theoretical and methodological pluralism is as healthy for the social sciences and the human sciences as it is for the natural sciences. In the natural sciences there is not only one model which can be used to explain all physical phenomena. Not even within quantum mechanics. In physics and chemistry there exist different and mutually excluding approaches which can be used to get theoretical information about a certain physical system. For instance, in nuclear physics you have mutually inconsistent representations of the atomic nucleus, the interacting boson model, the liquid drop model and the shell model, and which of them a physicist actually uses depends on the kind of problem she wants to solve and the context in which the problem appears. You cannot say that one of the models is correct whereas the others are incorrect. The shell model is very useful for explaining the effect of individual particle movements inside the atomic nucleus whereas the liquid drop model is better for explaining the collective movements of the nucleons. Thus, it is the problem context that determines which information we can get.

Similarly, the "homo economicus"-model and "homo sociologicus"-model assign different and partly excluding properties to the agent. In one perspective her action is the result of deliberation and rational free-choice, in another much of the agent's behaviour is determined by collective features which she is not aware of, and therefore which makes her action not so free and rational. In the same way as the physicist can choose between the shell model and the liquid drop model, depending on whether she wants to explain individual processes in the nucleus or wants to explain collective processes in the nucleus, the social scientists can choose between homo economicus-models, game theories, etc. and "homo sociologicus"-models if she either wants to explain the agents' actions in terms of



free decision-makers or wants to explain their actions in terms of social roles and memberships of institutions.

In neoclassical economics, say, one finds the rational choice of individuals very appealing as the source of the behaviour of the financial market, whereas in new institutional economics one focuses primarily on the emergence of institutions out of interaction among individuals. But it need not be an either or. It depends. Sometimes we can get a better understanding of a social phenomenon by seeing it as a result of the actions of individual agents, but sometimes we can get a better understanding if we turn around and look at it from the institutional perspective.

Individuals shape institutions, and institutions shape individuals. This interdependence cannot be explained properly from one perspective only, because seeing free agents as rational individuals excludes the attribution of different properties to humans in situations where they are seen as determined by the social patterns they partake in. In other words, we must put different perspectives of explanation on man depending on the selected context. These contrasting perspectives supply or complement each other, since none of them need to be false. But whether or not both are true depends on whether or not they can be empirically justified. It is the single scientist who chooses a certain perspective of explanation with respect to the cognitive problems she wishes to solve, and it is then experience which determines whether or not this particular explanation is empirically satisfactory.

### *Interpretation in Context*

We do not only respond to why-questions but also to how- and what-questions. The latter questions are traditionally associated with interpretation-seeking rather than explanation-seeking questions. In contrast, why-questions are typically seen as explanation-seeking question; although there is little to substantiate that an explanation-seeking question is only a why-question. The fact of the matter is, however, that we cannot use logical or linguistic means to differentiate between whether or not a question is explanation-seeking or interpretation-seeking. Rather it is the context that determines it.

I hold that interpretation is a response, often hypothetical, to a question concerning a representational problem. This question may be formulated as a what-question or it may not be so formulated. A representational problem can be one of two different sorts of problems. The first kind rises from our ignorance of how to represent or conceptualize a certain object or phenomenon. The second kind stems from our lack of knowledge concerning what is the meaning of a certain phenomenon, sign, symbol, sentence, text, action, etc. What kind of represent is it, and what does it refer to, symbolize, stand for, signifies, etc?

The first form of interpretation appears in connection with problems concerning classification, categorization, conceptualization, and mathematization.<sup>7</sup> It consists in an appropriate responds to a question like: "What kinds of entity is Y", "How can Y be represented" and "Does Y make any sense?" Elsewhere I have called this *investigative interpretation*.<sup>8</sup> It may also be termed construction of representations, frameworks, conceptual systems, theories, or meanings. A simple example is the archaeological classification of the prehistorical findings into artefacts of the Stone Age, Bronze Age, and the Iron Age. When this categorization came to light it was a genuine work of constructing a conceptual framework. Today that framework is part of archaeologists' background assumptions and something which shapes their terminology. Their use of this rough framework of classification no longer involves interpretation because their findings as a whole do not possess a representational problem. What may be a subject of interpretation is whether or not a particular item belongs to this or that period.

The second form is about explanation of meaning. I call this *determinative interpretation* or *interpretation proper*. This kind of explanation provides us with an answer to questions like: "What does X mean?", "What is X evidence of" or "How can we understand X?" Determinative interpretation is as such context-dependent as other forms

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<sup>7</sup> This kind of interpretation is, as far as I understand, the main subject in Lenk's works on interpretation. See Hans Lenk (1993), *Philosophie und Interpretation*. Frankfurt a. M.: Suhrkamp 1993; Hans Lenk, *Interpretation und Realität*, Frankfurt a. M.: Suhrkamp 1995; or Hans Lenk, *Grasping Reality*. New Jersey, London and Singapore: World Scientific Printers, 2003.

<sup>8</sup> See Jan Faye, "Interpretation in the Natural Sciences", *Op. cit.*

of explanation. Likewise what is used to explain meaning depends on the cognitive interest and background knowledge of the explainer.

Let me provide you with an example which illustrates how different interpretative perspectives can be put on the explanation of certain cultural data. Nearly forty years ago I took part in an investigation involving iron crosses in Danish churchyards.<sup>9</sup> Around the country you find cast iron cross memorials dating from the beginning to the close of the nineteenth century, the period during which the first iron foundries were set up in Denmark. This fashion lasted in each county fifty to sixty years until tombstones became popular.

Indeed, the first question you may raise is “What does these iron crosses mean?” I knew already as part of my background knowledge that they are memorials. This was what started the investigation in the first place. I was not completely in an epistemic no-man’s-land. Nevertheless the correct interpretative answer to *your* question depends on what you mean. It is you, we assume, who stand with a representational problem. If you want to know what their function is, an appropriate answer is that they were meant to be personal commemorations of a deceased which reminded the living about the dead. In contrast you may want to know what caused people to select iron crosses rather than wooden crosses or carved tombstones. In this case the concrete answer is that iron crosses are more permanent than wood, though much more important is that they became fashionable as soon as they became available. It was the fashion which began among high class people like admirals, bishops, counts, dames, and esquires. Over the years as the iron crosses became cheaper the fashion sunk down through the social classes until it became a poor man’s symbol.

However, the incidence of these cast iron crosses is higher in the western and the northern parts of Jutland than in the eastern part, and here again it is higher than on the peninsula of Denmark and at cemeteries around Copenhagen. So on average fewer churchyards on the peninsula have one or more of these iron crosses than in the regions of

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<sup>9</sup> Jan Faye, “Støbejernsgravkors - et metodologisk lærestykke” (Cast iron cross memorials - a methodological lesson), *Fortid og Nutid*, 37, 1987, 225-38.

Jutland. The variation between the regions was between 12.7 and 73.0 percent. Hence the next question you may raise to me, or I put to myself, is/was something like “What does this variation mean?” “What is the explanation of this phenomenon?”, “What is this variation across the country evidence of?” “How can we understand this variation?” or “Why do we see such a variation?” All these questions express the same intention of the explainee, namely that I, the explainee, have a representational problem concerning what these data signifies.

After the field work I personally had the opportunity to conduct an examination of the data of the survey covering half of the churchyards in Denmark. This gave me a chance to work with inferences to the best interpretation/explanation in practise. First I had to produce various relevant interpretations of the data based on some common principles concerning understanding and representing such data. I formulated a principle, which I called the unity of time, space and cause, demanding that any understanding of this unequal distribution should be connected to the time the iron crosses were established and the time that has elapsed since then, the place where they were produced or where they were set up, and should only involve causes which I deemed to be relevant based on common background knowledge and ontological beliefs and assumptions.

These constraints resulted in the framing of no less than nine distinct hypotheses, all seemingly able to explain the distribution detected. Some of them interpreted the data as a sign of status quo from the days when the memorials were erected; the other group interpreted the data as the result of a development over the years in between. These purported explanations advanced considerations as various as access to cast iron as a substitute for wood, the size and number of the foundries, the number of deaths, how long the vogue for the crosses lasted, its pervasiveness, wind and weather, the veneration shown the dead, increased permanence of residence along with a rise in the number of family graves, and the number of burials proportional to the size of the churchyard after the highpoint of their use.

What is interesting about these explanations is the fact that they are, to a considerable extent, translatable into numbers; this makes them amenable to assessment by statistical

methods with a view to the identification of the best explanation. The upshot in the present instance proved to be an excellent correlation between the observations and the 'pressure' hypothesis defined as deaths per square meter: over the years an increase in the number of fresh burials in churchyards meant that old graves bearing cast iron crosses came under pressure. The greater the number of individuals who die in a given parish and the smaller the size of the churchyard, the more necessary it became to reuse old graves. This resulted in an escalation in the rate of removal of cast iron crosses relative to the number of deaths and the size of the churchyards.

There was little or no correlation between the data and the other hypotheses. However, the hypothesis concerning veneration was interesting since it assumed that the religious sentiments were much higher in Jutland in this period and might have caused a higher reluctance to destroy family memorials and people therefore had expanded the churchyards because plenty of land was available. But I had difficulty in finding relevant data to test this hypothesis since I did not know how to measure veneration other than by interviewing people.

Eventually I got the idea that I might be able to circumvent the impossible task of interviewing people by looking into the result of the parliament election in 1970 and seeing how many voters the small Christian Democratic Party gained in the various regions and comparing these numbers with the figures of cemeteries with one or more iron crosses. The correlations turned out to be highly significant. So I was left with two distinct hypotheses, both strongly supported by evidence. Apparently, these two provided me with equally good causal explanations. One explained the variation in terms of the individual agents, and thereby supported methodological individualism; the other one explained the variation in terms of a general pressure on the graves, something that seems to vindicate methodological holism.

I would therefore claim that there is not one single correct explanation. Which one you actually choose depends on the context from where you see the problem. If your explanatory starting point is determined by your belief as a scientist that all social phenomena are determined by individual agents, then you would exclude some explanation. Similarly, if you believe as an explanatory starting point that all social

phenomena are a result of forces and pressures in the system as a whole, then you will be blind for equally good explanations.

There was, however, a common cause lurking behind this strange coincidence. Both explanations related to phenomena which were a result of the urbanization which took place during the industrialization of Denmark. During this period of a hundred years, cohorts of people moved from the country side into the main cities, changing the demography of the country completely. Not only did this cause a stronger impact on the churchyards around the cities in the Eastern part of Denmark, where the churchyards were comparably smaller than in Jutland, but also it changed the minds of the population when the majority became workers instead of farmers. An urban life with a regular income makes you on average less likely to continue to keep the same religious, social and political values as your forefathers than if you had a life depending entirely on the weather to give you a good harvest or a catch of fish.

## ***Conclusion***

Let us summarize the main view forwarded here. Explanation is an answer to an explanation-seeking question in a context in which some person lacks some information about a certain fact (or phenomenon). Humans have epistemic interests in understanding things according to their nature, and explanations are what give us understanding of the questions which are raised as a consequence of these epistemic interests. The response to such questions is an explanation. Whenever we possess an explanation, we also have an understanding of the question which has been answered by the explanation. But our background assumptions determine what the relevant answer to our questions is. Explanations take part of a bigger system of beliefs.

Interpretation, on the other hand, issues an answer to a question about explanation of meaning or about representation of a phenomenon whose comprehension falls outside somebody's background knowledge. Whenever we interpret something it is because we can't explain it since we don't understand it. The answer transforms a phenomenon, now understood in terms of some theory, from being somehow unfamiliar to something less

unknown. The phenomena, or rather beliefs about the phenomena, are thereby included among that person's background assumptions and connected to his or her background knowledge. Phenomena become intelligible and meaningful because *by attributing identity and tentative explanation to them, an interpretation brings them in connection with our theories or belief systems*. Interpreting is a process which creates provisional explanations, and these explanations provide us with understanding. Thus, the aim of interpretation is to reach a proper understanding of a phenomenon regardless of whether the proposed hypothesis is concerned with traditional meaning, function, intention or causation. In the end an interpretation is a hypothesis which is presented against a background of accepted conventions and ontological assumptions.