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ABSTRACTS OF THE PAPERS

THREE PROSPECTS FOR THEODICY.

SOME ANTI-LEIBNIZIAN APPROACHES

by Enrique Romerales

In focusing on the problem of evil from the viewpoint of theodicy, I argue that new conceptual regions are to be explored in order to get out of the permanent impasse. These possibilities respectively are: to reject the tenet that this world, if created by God, must be the best possible world; either to reject the tenet that human beings have had no previous existences to their present ones; or finally to reject causal determinism in the framework of the creation of the world and accept the idea that God proceeds with a margin of randomness in a non-deterministic universe. Since these three tenets are all embedded in the philosophical tradition, and explicitly in Leibniz's Theodicy (most remarkably the first one), my prospects are in this sense anti-leibnizian.



A METHODOLOGY FOR THE REPRESENTATION OF LEGAL KNOWLEDGE:

FORMAL ONTOLOGY APPLIED TO LAW

by Daniela Tiscornia

For the development of applications, artificial intelligence requires the identification of models of human cognitive mechanisms and of the process of knowledge acquisition: formal ontology, too, which constitutes one of the most recent approaches to modelling knowledge, is in reality a revisitation of linguistic and philosophical theories. In the field of legal applications, the theory of law and dogmatics are a rich reservoir of ideas which offer solutions and suggestions exportable to other sectors: one need only consider the application of deontic logic to the generation of databases. From computational models, on the other hand, it is possible to extract interesting feedback for legal science.

In this article, we shall describe the principles on which formal ontology is based, comparing its characteristics with those of legal domain and referring, as exemplification, to some models offered by legal theory which could lay the bases for a legal formal ontology.



DENIED CONDITIONALS ARE NOT NEGATED CONDITIONALS

by Joseph S. Fulda

This note addresses the problems that arise from denying conditionals in classical logic and concludes that such problems result from using propositional logic where predicate logic with quantification over cases is indicated.



INDEXICALS AND DESCRIPTIONS

by Fernando García-Murga

Reference is a common feature to indexicals, definite descriptions and, at least some uses of indefinite descriptions. A referential expression triggers a search for a referent, which ranges over the linguistic context, physical environment or encyclopedic knowledge. I argue for a unified theory of reference within which indexicals and definite descriptions refer to salient objects while indefinite descriptions refer to non salient objects. The descriptive content attached to each expression provides information making it possible for the addressee to find an object the speaker has referred to. Ostension and other non linguistic knowledge helps the addressee's search. Saliency, rather than mutual knowledge or givenness, is the crucial aspect the speaker considers when he performs a referential act. Unlike indefinite descriptions, indexicals and definite descriptions presuppose the referent's existence. However, current theories of presupposition-projection maintain inheritance mechanisms which are shown to be inadequate from our present approach.



TEXTUAL IDENTITY

by Jorge J. E. Gracia

What does make texts the same? Three types of sameness are distinguished: achronic, synchronic and diachronic. The latter two involve time and so are more restrictive; thus I concentrate on achronic sameness. After examining various possible views I reach the conclusion that there are three conditions which, taken together, constitute the necessary and sufficient conditions of the achronic sameness of texts and hence explain their identity: sameness of meaning, of syntactical arrangement and of type-sign composition. We can thus understand how different copies of a book are the same text, for they have the same meaning and they are composed of the same type signs arranged in the same way. Thus, in spite of the many differences that characterize them, they are still to be regarded as copies of the same text.



CRITICAL NOTICE OF RAÚL ORAYEN'S *LÓGICA, SIGNIFICADO Y ONTOLOGÍA*

by Lorenzo Peña

Orayen proposes some kind of intensional approach in philosophy of logic, with meanings playing a central role in implementing the notion of logical truth. Orayen regards Quine as his main interlocutor. The major topic gone into through the book is logical form, validity and logical truth. As an outgrowth, Quine's operationalist view of language receives an extensive coverage and discussion.

The investigation into the notion of logical truth and validity leads to a critical assessment of the relevantist challenge to the classical conception. This critical notice casts doubt on Orayen's defence of analyticity as a requirement for logical truth.

THREE PROSPECTS FOR THEODICY: SOME ANTI-LEIBNIZIAN APPROACHES¹

Enrique Romerales

In the present paper I shall assume the following points: (1) the problem of evil is a crucial challenge to theism; (2) in confronting this problem we need plausible theodicies, not just possible defenses; (3) the atheistic logical argument from evil has been cogently shown not to hold;² (4) the evidential form of the problem concerning moral evil can reasonably be met by the free will defense (I have doubts about whether this kind of defense can also cope with the most appalling cases of moral wickedness *and its consequences*, such as the holocaust and similar); and 5) the crucial issue then is natural evil, and particularly the actual amount and quality of it. So it is this last question alone that I will address.

It could seem that as we are left *just* with the problem of natural evil, it will be rational to be confident that, in the same manner as we have eventually managed to overcome the former aspects of the problem — not without effort —, we will finally be able to settle this point as well. But it seems to me that it is just now that the real issue begins. So I will restrict my attention to the problem of natural evil as an *evidence* which *tends to* disconfirm theism. For speaking in Swinburne's terms, there is — to my mind — a very good C-inductive³ atheistic argument from evil, since the amount and quality of evil we find in the world fits very well with the atheistic hypothesis, while the theistic hypothesis seems to entail — *prima facie* at least — a far smaller quantity and rather different quality of evil.⁴

¹ I am very grateful to Richard Swinburne for many helpful comments on a previous version of this paper

² Cf. A. Plantinga: *The Nature of Necessity*, Oxford, Clarendon, 1974, ch. IX. pp. 164-93, and *God, Freedom and Evil*, New York, Harper & Row 1974, I, a.

³ For the distinction between C-inductive and P-inductive arguments cf. his *The Existence of God*, Oxford, Clarendon, 1979, p. 7 ff.

⁴ Swinburne's huge effort to show that were the theistic hypothesis true, we would find exactly — or very approximately — the evils we in fact find, that all evils are providential evils, seems to me unconvincing. Cf. op. cit. chp. 9-11.

In the first place, although not being inconsistent with the God of classical theism, the existence of natural evil poses a serious handicap to the believer. As it has frequently been asserted, it is not just the mere existence of evil, but the enormous amount and horrendous quality of evils what demands an answer from the theist. For that reason there is a strong need for a theodicy (or for more than one). Given that *certain evils* are necessary means for a greater good, the theodicist has to spell out why the other evils exist. And in doing so he neither possibly can nor is obliged to find out *the* true answer. He has only to state a coherent answer, that is to say, an explanation of these evils that sets forth a coherently describable state of affairs. But, as some have pointed out, if the answer is very implausible, then the theodicy in question is prone to getting bogged down. So what we need is not just a coherent theodicy, but a more or less plausible one, which fits with the theist doctrine and not be totally ad hoc. Possibly we will never be able to discover the true answer to the problem of (natural) evil, but to find some credible solution to this problem would make theistic belief something much more rational to accept and much easier to entertain.

Now in facing the problem of the huge quantity and terribly bad quality of natural evil, you can choose between two distinct approaches: the holistic and the particular. Let us take the former first.

There are several well known theodicies of natural evil: the higher goods defense, the necessity of knowledge defense etc. If you have a look to all the evils in the world, you can think as follows: well, perhaps the idea of a best of all possible worlds is not coherent,⁵ or God might not have any obligation to create his best after all,⁶ but surely certain little changes would have made this world slightly better (notice, not simply more pleasant). Why then didn't God do that? But suppose there is a line representing the worlds God could have created. At the one end are the worst, at the other end the best worlds. If none is the best *or* God has no moral compulsion to create the best (note that it is very plausible that at least one member of this pair be true), the He can choose any among the possible worlds to actualize, nevertheless, we feel strongly inclined to think that He ought not choose one of the lower zone of the scale, at least not one which rate good/bad were overweighted to the bad. He should likely choose one in which there were a large amount of good. Now, whatever the world God finally decided to create, we could always ask «why not a slightly better one?», «why not a slightly better good/bad ratio?» That is, if you look at all the goods and evils in the world, while granting the need of certain evils in order to promote or allow higher goods, acquire knowledge, have deep responsibility and a choice of destiny etc., then it is almost impossible to show that there is too much evil, because for

⁵ This is the view of Plantinga in *God, Freedom and Evil*, p. 34, and of Swinburne's «The Problem of Evil», in Brown (ed): *Reason and Religion*, Ithaca, Cornell U.P. 1977, p. 84, and I agree.

⁶ This is R.M. Adams' position in his «Must God Create the Best?». *Philosophical Review*, 1982. I find it more difficult to accept Adams' arguments.

any slightly or much better world God might have created, you could always raise the question: «why not a slightly better one?»⁷

Let us take the other way. This way consists in pointing to certain evils that according to all appearances can not be accounted for in terms of the theodicies currently offered, i.e. gratuitous evils. A remarkable example of this pattern is the alleged case of fawn severely injured in a fire until it finally dies through enormous suffering *this being unnoticed to anyone* (person or animal).⁸ If it is just unnoticed, further discovering of it could promote animal or human compassion, and this is a higher order good, and likewise epistemic distance could always be broken at any future time. So, for the sake of argument, let us suppose we are dealing with *unnoticeable* suffering.⁹ I myself would claim that the problem of animal suffering, specially when it is unnoticed to everyone, is the most untractable part of the problem of natural evil.¹⁰ It can serve no higher goods in terms of moral compassion, solidarity and the like, because they are not persons, and consequently not moral agents. Further, in the example just referred to, it can not promote good feelings and deeds from people towards the animal, because it is unnoticed (what about animal suffering long before the rise of man?). Hardly can there be *in such a case* a gain of knowledge, because the fawn eventually dies. On the other hand, animals will not rejoice in God's heaven, they will not be rewarded for their hardships. Nor can they be blamed for original or any other

⁷ A. Flew was quite aware of this theist move as a response to the atheists attack that would undermine the atheistic position. Cf. «Divine Omnipotence and Human freedom», in Flew & MacIntyre: *New Essays in Philosophical Theology*, London, SCM Press, 1955, p. 154.

⁸ This example comes from William Rowe's «The Problem of Evil and Some Varieties of Atheism». Now in Adams & Adams (eds): *The Problem of Evil*, Oxford U.P. 1990, p. 129-30.

⁹ Of course, if it is unnoticeable by definition you could ask «what reason do we have to believe such cases really exist?» But this surely would be a tricky move. More decisive is the question whether there can be any fact *ex hypothesi* undiscoverable.

¹⁰ Books that are very valuable, like John Hick's *Evil and the God of Love*, (London, Macmillan, 1966) or Richard Swinburne's *The Existence of God*, are rather disappointing when facing this topic, as Swinburne himself recognizes (p. 196 ff.). That this is the hardest problem has been emphasized by L. Kolakowsky in his *On Religion* (London, Fontana, 1982). Peter Geach's answer in *Providence and Evil* (Cambridge U.P. 1977), in terms of a God quite concernless of any kind of suffering, seems to me detestable. And C.S. Lewis solution in his *The Problem of Pain* (London, Geoffrey Bles, 1940), is highly speculative and leaves the problem unresolved for most animals in asserting that *only well treated tame animals will be saved*.

sins. Is not, then, this specific sort of suffering quite pointless?¹¹ Note that something similar, albeit not so strong, could be said concerning other natural evils such as disease, earthquakes and the rest. Are there not enough evils of this kind to offer to humans all possibilities of higher goods, that is, the practice of virtues such as courage, solidarity, altruism etc. that we need yet more and more natural evils to bring about more opportunities of good actions? Have we not reached yet enough knowledge about the possibilities open to us, in order to have a clear moral responsibility and a genuine choice of destiny, that we need yet more and more natural evils to learn from them? By the way, it seems to me that the possibility of knowledge defense has, in certain circumstances, something a bit odd about it, for in many cases this knowledge would be quite unnecessary, were the evil that prompted it not to exist. For example, Aids or cancer are two means that prompt the acquisition of knowledge of how these viruses work and how the human body reacts, in order to avoid these diseases and, may be, in turn other diseases as well. But were these blemishes not to exist (and neither any viral diseases of similar kind) we would have no need of that knowledge, and we could turn our efforts to other, perhaps more creative, goals. True, these evils increase the range of choice of good and evil, for we can allow new evils to occur through neglecting to avoid them or by not helping people who are in these evil situations. But is not the margin of choice large enough yet? To sum up, the huge quantity of evil in the world, a part of which appears to be pointless, requires us to offer theodicies far more reaching than the greater goods theodicy, the usefulness of pain theodicy, soul-making theodicy, or the necessity of knowledge theodicy. These can bear a good weight, but not all.¹²

Let us call the first kind of theodicy the many worlds theodicy. The classical complaint to the theistic hypothesis run as follows: «why did God not make a world at least a little better than this one?» And the reply might well be «How do you know He didn't do such a thing?» So, let us suppose, as it indeed seems reasonable, that in fact there are possible worlds better than this one (whether or not one of them is the best is quite irrelevant). But if God is a perfectly good

¹¹ R. Griffin has argued very well why soul-making theodicy can not account for animal suffering: i) if animal suffering may promote human virtues, what about animal suffering before the rise of man? And ii) if men should have been put within evolutionary process in order to keep epistemic distance, why had it to be so long a process with so much suffering? In S.T. Davis (ed): *Encountering Evil. Live Options in Theodicy*, Edinburgh, T. & T. Clark, 1981, p. 53. We could add iii) animals are supposed not to have a soul, at least not one capable of soul-making.

¹² Furthermore, the higher-good theodicy, probably the most suitable of all, has some difficulties of its own: Are the goods towards which evils are necessary means *always* so good at least as bad are the evils? Has anyone (even God) the right to cause evils to some in order to benefit others? What if lower evils bring about higher evils instead of higher goods? Cf. R. Swinburne: «Knowledge from Experience and the Problem of Evil», In Abraham & Holzer (eds): *The Rationality of Religious Belief*. Oxford, Clarendon, 1987. I can not pursue these issues here, but I'm afraid that this theodicy can not meet all these difficulties, mainly the first one (I owe points 1 and 2 to R. Swinburne).

agent, besides being omniscient, omnipotent and infinite, and a person such that always acts because of reasons, then He has likely created or is creating those other worlds as well, for if there are some plausible reasons to create a world like this one, there presumably are yet stronger reasons to create better worlds than this. So Leibniz's insistence on the claim that God, not only must have created the best of all possible worlds, but that *this world must be our world* is entirely gratuitous.¹³

But what does exactly mean to say that God has created, or is at present creating («in another dimension» so to speak) other worlds better than this? Suppose it means

1] If there is a possible world better than this one (as a whole), then God must have created or be creating that world (provided it is logically possible for him to do so)

Now, there are infinitely many possible worlds better than this one. If you commit yourself to the dubious claim that all of them are actual, you will have to face a lot of difficulties. To begin with, there is a possible world that is just like ours except that in that world the fawn referred to does not suffer any pain; and there is yet another world in which I don't have a headache today and so on. But if these worlds are also actual at present, then I (and the fawn) exist in more than one world, which seems totally counterintuitive, for how could one and the same individual exist in two distinct and actual worlds at the same time? In that case we could raise idle questions such as «should I worry too much about what is going on with me and my relatives in this world if there are lots of other worlds where things concerning us are going on very differently?» To prevent this we should accept the theory of world-bound individuals as proposed originally by Leibniz.¹⁴ That is, each individual exists only in one possible world. Nevertheless, this theory has many difficulties which have led David Lewis to postulate counterpart theory as a substitute for trans-world identity: each individual has

¹³ For Leibniz this is so eventually because he supposes that only one possible world can be actual, but this supposition, as I will try to show, is implausible. The Leibnizian remark that, in spite of all appearances, our world is the best possible one, appear scattered in many writings but, apart from his well known *Essays of Theodicy* and *Discourse on Metaphysics*, most emphatically in his opuscule *On the radical origination of things* (1697) where he brings together two inconsistent solutions: 1) that we must proceed entirely *a priori* in demonstrating that this world, as created by an omnipotent and morally perfect God, can not be but the best; but, 2) on the other hand, there also are a posteriori reasons of all kinds that show that all evils in the world play a (short or long term) beneficial role, and on that account *even we can see that none of them are gratuitous!* (Gerhard: *Die philosophischen Schriften* VII, p. 306-8).

¹⁴ In several places. For instance in his *Discourse on Metaphysics* 8-9; and also in a Letter to Arnauld from 1686, where he says: «if, in the life of any person and even in the whole universe anything went differently from what it has, nothing could prevent us from saying that it was another person or another possible universe which God had chosen».

counterparts in other worlds which are very similar to but not identical with it. Counterpart theory as an analysis of transworld identity is a long discussed and difficult topic.¹⁵ I think neither it nor its correlative realism about possible worlds (the view that *all* possible worlds are equally actual, only that *for us* is actual just the one we inhabit) are very plausible. On the contrary, they have many difficulties to meet. For that reason I prefer not to deal with this issue but instead reformulate 1 so as to avoid this realism.¹⁶ If we grant that among the many possible worlds that contain one and the same individual only one can be actual, then the actual world sets a limit to which other worlds God could actualize. For if you and me exist in this world, then all other possible worlds in which *you or me or both* exist are such that they can not be simultaneously actualized, even by God. And this means that every one of the individuals existing in this world puts a limit to the worlds possibly actualized or created by God: only those worlds in which none of us is present can be actualized, so:

2] if there is a possible world better than this one, then God must have created, or be creating, that world so long as that world does not contain any individuals which already exist in this world (provided... etc.)

But yet, it could be the case that an individual *x* non-existent in our world, came into existence by being created another world *W'* of which it is a member. This, in turn, would prevent the possibility of a third possible world *W''* being created if *W''* contained that same individual *x*. So each new world that is actualized restricts the range of possible worlds that can become actual. We should then append to 2] the clause «or in any other actual world».

With this proviso, the worlds that God should have created in addition to our world are far less. May be they remain to be infinite in number, but nevertheless they are not all the possible worlds better than ours. Now I go on to meet some possible objections.¹⁷

The first runs this way: given 2, the other worlds that are actual are populated by beings that do not exist in the actual world, and to some

¹⁵ Cf. D. Lewis: *Counterfactuals*, Oxford, Blackwell, 1973, p. 39 f. A. Plantinga: *The Nature of Necessity*, Oxford, Clarendon, 1974, Ch. VI. G. Forbes: *The Metaphysics of Modality*, Oxford, Clarendon, 1985, p. 57 f.; and *Languages of Possibility*, Oxford, Blackwell, 1989, p. 72 f.

¹⁶ In any case, should our theodicy admit realistic consequences about possible worlds, they would apply *only* to the worlds *better than* ours.

¹⁷ Plantinga's argument against the possibility of more than one world being actual is that if *W* and *W** are both actual and different, they must differ in at least one state of affairs *S*, such that *W* includes *S* and *W** precludes *S*. «But then... *S* both obtains and does not obtain, and this... is repugnant to the intellect» (*The Nature of Necessity*, p. 45). But if more than one world is actual then truth (of propositions) and obtaining (of states of affairs) both become relative-to-worlds. And there is no problem in saying «*S* obtains in *W* and does not obtain in *W**».

philosophers (as Plantinga) there is no sense in supposing that there are possible entities which do not exist in our actual world. We should deploy Ockham's razor against these unwelcome multiplicity of possible but non-existent beings. For that Kantian conception of possible worlds, which worlds are possible it depends on which is the actual world and its inhabitants. Possible worlds are just «ways things could have been», that probably meaning ways in which *the very things that actually exist* could have been.¹⁸

But firstly, there is no compulsion to entertain a Kantian conception of possible worlds instead of a Leibnizian one, according to which, which worlds are possible is quite independent of which one is the actual world. On the contrary, one can think all possible worlds are previously before God for He to decide which ones to actualize. But secondly and more importantly, the objection that Plantinga raises against possible but non-actual entities¹⁹ has no point here, since the worlds and entities we are referring to are indeed actual («in another dimension», let us repeat). I mean by 'another dimension' that these other worlds if existing at present either are no material worlds, or if material they bear no spatio-temporal relation to our world, and consequently are not causally connected to our world (perhaps it is rather misleading to call them 'possible worlds' and we should instead refer to them just as 'worlds'.)

Second difficulty: are we not in fact with this move turning the theistic hypothesis into something much more complex, and consequently more improbable *a priori* (all other things being equal)? For according to Swinburne only a very simple theistic hypothesis can be more probable than its rival naturalistic one.²⁰ I will concede for the sake of argument that simplicity is a desirable property of any theory, not only scientific but metaphysical one, and that its probability increases with simplicity (I have some doubts about this latter). But I don't think that this move make things more complex. Rather the other way round, because it has always been a puzzle for theologians and theodacists to account for why God chose to create just a world like this. If God acts, as Swinburne puts it (rightly to my mind) always for reasons, it is very difficult indeed to envisage what could conceivably have been the reason to create this world *instead of others*.²¹ And the point is not just that in many cases, when an

¹⁸ This is the construction of possible worlds by Saul Kripke in «Semantical Considerations on Modal Logic», in L. Linsky (ed): *Reference and Modality*, Oxford U.P. 1971, p. 64. And in his *Naming and Necessity*, Oxford, Blackwell, 1980. This seems also to be Stalnaker's position in his «Possible Worlds», *Nous*, 1976, p. 70.

¹⁹ *The Nature of Necessity*, p. 131-163.

²⁰ *The Existence of God*, sp. ch. 3.

²¹ I think that Swinburne grants some of this point when asserting that the prior probability of this world being created by God is not high, although he adds «Nor can I see that he [God] has overriding reason to make or not to make any alternative world» (*The Existence of God*, p. 130-1). The reasons offered by Robert Adams to show that God has no moral obligation to create worlds better

agent confronted with different courses of action has reasons to do either A or B or C, but not any particular action rather than the other, it is reasonable for him to do any of them, and the particular choice admits of no further explanation (provided the three are incompatible and equally good), because in the case of God it *seems* to be not only other equally good alternative worlds to create, but other substantially better ones also.

But if you assume that God must have created also all the worlds better than this which are compatible with the actuality of this one, and also compatible with each other, then the reason is fairly clear: God decided (is deciding/will decide) to create all the worlds which ratio good/bad is overweighed towards the good, simply because it is a good thing, that things good as a whole, should exist (I think this is the point of the Genesis story when the Lord's reason to create is simply and recurrently put as *He saw it was good*). The good/bad ratio is then crucial, because it decides whether a thing or event is as a whole «metaphysically good», that is, better for the world that it exists. So, to the question «why God created this and those other worlds?» the simplest reply could be «it was worth creating all of them». 'All of them' means a lot indeed, but not all possible worlds. How many exactly, it depends on certain views about matters of philosophical logic.²²

If you continue to think, notwithstanding, that with this added hypothesis theism become more complex and so more improbable *a priori*, other things being equal, I could just remark that things are no longer equal, because with this hypothesis theism can cope with (at least a larger part of) the existence of evil, and so has more explanatory power and is better confirmed than normal theism.

An additional but important point is whether God should or would be morally entitled to create worlds even worse than our world. If you say 'no', then you are on the razor's edge between theism and atheism, because what you are in fact saying is: this is the worst world God was entitled to create. And you may well be right. But I don't think so. I myself think that surely it is worth creating worlds even (not too much) worse than this one. So possibly — although I am less confident about this — God has created or is creating worlds rather worse than this one.

than this one seem to me not to be compelling, for even if God has no duties to his (yet not existent) creatures, surely a being who acts only upon duties is far from being morally perfect and maximally holy. It is possible that God should also do his best as a supererogatory act, or may be God has a duty to himself to act at his best. Cf. R.M. Adams op. cit. So even if God has no obligation to create the best, a perfectly good God surely would do so.

²² For instance, if you think that what forms the identity of a person is its haecceitas or thisness, then there could be infinitely many worlds qualitatively identical, that is made up of exactly the same properties predicated of qualitatively identical (but essentially different) individuals. I regard more plausible a qualitative conception of identity that would considerably reduce the number of worlds better than this. But anyway, there is no real need for any such reduction of worlds for God to create if He is truly infinite, eternal and omnipotent, and you dwell upon what these words mean.

But does this hypothesis fit well with classical theism, or is it just an implausible ad hoc hypothesis? Kuhn, Lakatos and Feyerabend have shown that «ad hocness» is not always a vice but sometimes a virtue. It is a virtue when the new hypothesis to be attached to the old is coherent, likely and on normal epistemic standards reasonable to believe in. I think this is our case. Moreover, there is a long tradition within Christianity that asserts the existence of many other beings and kinds of beings in addition to the ones of this world or universe. The idea that God's creative activity has operated long before the creation of this world through a large variety of beings is typically christian.²³ In former times within the christian frame of mind there was no doubt of this being so. Hence, in fact this many worlds hypothesis is nothing alien to christian religion, and so not ad hoc at all. On the contrary, it was very reasonable to expect such a thing, given the infinity and eternity of God as well as his infinite power.

There unfortunately remains a fourth objection that I regard much more telling. Before going into it, I would like to point out how much we would achieve were this theodicy to hold, for then the question the atheist could raise against theism would no longer be «why this world is not better than it is?» but «whether this world as it stands is worth creating as a whole». And while the first question seems very difficult to answer, the second deserves an almost unequivocal 'yes' (I imagine most atheist would be willing to grant this, specially if there is a infinitely better possibility awaiting for us, as theism claims).

When one looks at this attempted theodicy through the glass of what I have called «holistic approach» it seems fairly well suitable to meet its challenge. But if one chooses the particular approach instead, then it seems that we have gone not too far. For, granted, God may have created or be creating other better worlds with different individuals and different kinds of individuals. But the question yet remains, couldn't God have created these kinds of individuals (i.e. humans and animals) and even these same individuals (the ones that *in fact* exist) in a better arranged world, so that the amount of pain and suffering was, if not banished, at least kept at a *reasonable level without thus losing any greater goods*? Surely we can not prove the answer to be 'yes', but if 'yes' is a probable answer to this question, as it *prima facie* seems, we should carry on trying to find more insights

²³ In the OT appear three kinds of creatures other than man: archangels (Dn. 8:16), seraphins (Is. 6:2), and cherubins (Ezequiel 1:5), and in other places. The NT enumerate seven kinds of beings: thrones, dominions, virtues, powers, principalities, archangels, and angels. Pseudo Dionysius Areopagiticus rearranged the nine kinds of being in three different hierarchies in his *The Celestial Hierarchy*. S. Jerome (*De fide orthodoxa*, II, 3) and S. Gregory of Nazianzus (Orat. 38, *In Theoph.*) claimed that angels were begotten *before creation of this physical world*. But Aquinas opted for the other interpretation: «for the angels are part of the universe, in the sense that they do not constitute a universe on their own, but are combined with the physical creation to form one total world» (Suma Theol. I a. 61,3, Blackfriars ed. IX, p. 211). But adds «this, at any rate, *seems a likely inference*... However, the contrary view should not be called an error... Jerome is expressing the view of the Greek Fathers, all of whom held that the angels were created before the corporeal universe» (ibidem).

in other sorts of theodicies. So this theodicy does not explain why *you* and *me* are not in a slightly better world, not in the sense of why haven't we had more luck with the world we have been put into, but in the sense of why the world *you* and *me in fact* inhabit is not rather better.

Nevertheless we have got one important point that should not be overlooked: we no longer need pursue nor defend the claim that our world should or must be the best of all possible worlds, *which is the most recurrent dogma in Leibniz's theodicy and has subsequently usually been taken for granted*, just because there is no reason to suppose that God has created solely one world. At most, we would need to assert that this is the best world (or rather one of the best worlds) *of its kind*, that is, one of the best worlds for human beings to inhabit, and this is a much less strong claim, and far more easy for the other theodicies on the field to hold.²⁴ Whether or not this world is also a very good one for animals to inhabit depends on certain features of *this world* which this theodicy is not prepared to account for. So we must turn now to other kinds of theodicy which can account for this issue just by aiming at how *our world* is.

This second kind of theodicy I am putting forward is not original at all. It relies upon a pervading insight of some people that the many evils and goods of this world must be a sort of punishment or reward for previous deeds. It is also part of the doctrine of some religions, among them two major religious traditions such as hinduism and buddhism. I would like to point out that I have no intention of defending Christianity in particular but theism in general. But I think that this kind of theodicy — let us call it purgatorial theodicy — albeit not compatible with Christianity, it seems to me entirely compatible with the God of christian theism, that is, with the omnipotent, omniscient, wholly good and eternal person who exists of non-logical necessity and is the creator of the world. So purgatorial theodicy claims that this world is a sort of purgatory for what all of us have done in previous lives (we don't need pursue the question of how many lives).

Christianity has supposed that this life is the only one, and that as a result, within it each of us has a absolutely decisive choice of destiny. Once you have died there will be no second opportunity. So our only life is of momentous importance. This, of course, could well be so. But if the purpose of God in creating humankind is, partially at least, the one of create free beings who develop themselves until eventually acquiring full knowledge, full responsibility, and a perfect will, this huge task could well take more than one life until some of us, or perhaps at the end all of us, have reached such a high standard. This has been the intuition of other major religions, and in this point I agree with John Hick in that there are no compelling reason to opt for one doctrine rather than the other.²⁵ Reincarnation is just a possible explanation of the apparently pointless

²⁴ That this is a fairly suitable world for humans to inhabit and develop themselves and their souls has been deeply and persuasively argued by John Hick in his *Evil and the God of Love*, sp. ch. 13-17.

²⁵ At the end of his *An Interpretation of Religion* (London, Macmillan, 1989), he acknowledges that we should suspend judgment concerning reincarnation, because the doctrine is coherent and has certain evidences in its support. And

evils of this world. Reincarnation can, naturally, mean very different things. I can not exhaust here all the possible interpretations of this doctrine, but I will bring out some of them: 1] all men have lived previous lives, whether on this earth or possibly in other places. The fortunes and misfortunes of this life are causally related in a moral way to the previous lives. We will not reach salvation and get out of the chain of reincarnations until we will be completely purified. Possibly some of us will need lots of lives to achieve this end. May be others will be able to obtain salvation in a few lives or even just in one life (saints). We need not pursue the question whether at the end all men will be saved or if, on the contrary, some of them will lose irretrievably their opportunity to be saved (Plato himself vacillated about this), although I am more sympathetic with the first option.²⁶

2] The same as 1, but including animals in the economy of salvation. I mean by 'animals' here only higher animals. I do not intend to apply this argument to insects and so on. This has the enormous advantage of solving a problem unsolvable within christian theism, the one of animal suffering. It is unnecessary to remind ourselves once more of the huge quantity of animal suffering that must have been deployed throughout the history of the planet. Nobody will wipe their eyes? I strongly feel that a good God should do so to all his sentient creatures. As we have seen, the solutions that have been put forward within the christian tradition look quite unsatisfactory. For instance, it is incredible Descartes' claim that animals, not having any soul, have no sensations nor feelings either, that they are just machines.²⁷

since it is incompatible with the teaching of christianity we can not reach a consensus on this point. Reincarnation is nonetheless fully compatible with soul-making theodicy. For the doctrine of Karma as an explanation of present world suffering see J. Bowker: *Problems of Suffering in Religions of the World* (Cambridge U.P. 1970). He asserts: «Karma is the exact working-out of cause and effect... particular instances of suffering are a direct consequence of a sufficient preceding cause», p. 248-9.

²⁶ Eternal punishment seems clearly incompatible with God's goodness, but the destruction of the damned which Swinburne proposes as an alternative («A Theodicy of Heaven and Hell», in Freddoso (ed): *The Existence and Nature of God*, Notre Dame U.P. 1983, p. 51) or their existing «for ever pursuing trivial pursuits» seems to me to entail a final failure in God's creation. If anyone would be damned or destroyed for ever, God's aims would have been thwarted. On the other hand, if one is free, one has the possibility of never becoming good, and God can not do that this one becomes good without compelling his will. So I would tentatively conclude that God should keep open the way of salvation for ever, but whether all will eventually decide to take this way we can not know in advance, because it is up to each of us, not up to God. I agree that God should not save anyone against his will.

²⁷ Descartes entertained animal mecanicism in many places, cf. N. Kemp Smith: *New Studies in the Philosophy of Descartes*, London, Macmillan, 1953, p. 132 f. On the severe limitations that christian theodicies like the need of

This claim of animals being included in the economy of salvation can also be differently understood: 2.1] souls can be embodied in humans or in animals, animals being humans who because of their bad behaviour have been degraded; 2.2.] everybody has to go through various levels of life until the reaching of a human status (perhaps there will be further more developed levels). So animals would be prehuman souls. 2.3] Animals and humans are different kinds of being, so neither animals can become humans in subsequent lives nor conversely, but there will be a heaven for animals as there will be one for humans. If heaven is more a state than a place, may be animals and humans alike can reach this state. It should be noted that if we rule out the doctrine of reincarnation but retain the doctrine of animal heaven, this would be much more acceptable for Christianity, although it would no longer a purgatorial theodicy.

I am not claiming that any of this hypothesis is true. I am not even assessing its probability. The only thing I want to bring out is that these are coherent hypothesis to answer the problem of evil, and specifically the problem of animal suffering — not just animal pain-.

Are they plausible or likely? Plausibility is a matter of fitting well with one's other beliefs, that is, with complete systems of beliefs. Within our christian tradition these appear to be not very plausible beliefs, but this could be mainly due to historical and socio-cultural reasons. A century and half ago it seemed totally incredible the story of the evolution of species, largely on theological grounds. Now that we are well aware that there is no historic-natural barrier between animals and men — in the sense that they are subsequent steps in within the same process we know that our origin was common, the time could be ripe to take seriously into account the possibility that our destiny, for the good or the bad, will also be common. I do not see anything logically wrong with this hypothesis. Of course, there are plenty of difficulties with these beliefs, and careful and arduous work should be done before all of them could be met. But is christian theism free from difficulties? Let us face just two.

As far as I can see, the main difficulty from the philosophical viewpoint is that of animal identity. If animals are to be resurrected, or transmigrated, or reincarnated, or at any rate sent to heaven, each animal must be a self, have a soul if you like. But if the problem of human selfhood is a very difficult topic, the one of animal selfhood is yet harder, because we know much less about animals, partly on scientific grounds (i.e. we have less information about any animal species than about human kind), partly on metaphysical grounds (i.e. we are men and can not have the experiences and feelings of animals), and partly on pragmatic-philosophical grounds (i.e. we lack a philosophical theory of animal hood because we are much less interested in and concerned with it). We know very little about their psyches. So the answers to questions such as «have animals a self?» and «which animals have a self and which not?» must be highly speculative ones. Surely we would need to bring together in a coherent picture detailed knowledge from animal psychology, ethology and zoology, and long work in the philosophy of mind before draw any stable conclusion. But I guess that higher animals like dogs or dolphins have enough memory, enough

knowledge have when applied to animal suffering, cf. R. Swinburne: «Knowledge from Experience and the Problem of Evil», p. 165-67.

individuality of character, intelligence and consciousness as to have an individual self or mind. I hope most people who have had any experiences with higher animals will agree with me on this point.

Another difficulty, this one concerning reincarnation, is that there seem to be no point in punishing someone if he does not know that he is being punished and why is he being punished, for in that case the punishment would not have neither a regenerative effect nor a retributive one. And this is the case with reincarnation since nobody (or a very few people) has memories of past lives nor is aware of being punished for former bad actions. But it could be the case that the apparent pointlessness of the suffering is part of the punishment.

In short, if you place yourself into the hindu/buddhist tradition, these hypothesis are currency, at least in certain trends there is nothing odd with them. Frankly, I don't know how plausible or likely they are from a logical or philosophical point of view irrespective of religious and cultural traditions. It seems to me that they are no more unlikely than the christian alternatives. My point here would be an appeal to ignorance: there are many possibilities that we have not taken seriously into account, which could account for some or all the apparently gratuitous evils of this world, included those of animals. We should regard this possibility before rejecting theism as incompatible or very unlikely with the amount and quality of natural evil. And anyway, it seems to me very difficult that any theodicy may fulfil fully its task without animals being engaged in the economy of salvation in some way or other.

We turn now to the third kind of theodicy, let us call it non-deterministic theodicy (henceforward NDT). The first fact to recall is that there are strong reasons why God should never or seldom interfere in the human history, for to do so often would mean to interfere with natural laws, to suspend them, and this would have deep influence on the kind of world the world is and on the ways humans behave in it. But further, it would break the epistemic distance which, as insisted upon by John Hick, is a necessary condition for humankind to develop into real human beings, and to carry out the process of soul-making. It is true that according to Hick God could interfere so long as we didn't know it was He who was interfering. But God undoubtedly knew that as the time passed humans would become very keen people and even be able to detect interfering that happened long ago, and this would, if not break, significantly weaken epistemic distance. Given this supposition, the question this theodicy addresses is: why has God not arranged all things rather differently from the beginning in order to prevent, or to keep at a minimum, or at a fairer level, present natural evils? Given that God is supposed to know all beforehand (at least every state of affairs involving no free agents' actions), why has He not acted in a different manner in creating the world to maintain pain and suffering at a reasonable level? Here is where our theodicy must start. For a theist one chief purpose, albeit not necessarily the only one, of God in creating the world was to allow the development of humanly free agents who could acquire knowledge, will, responsibility and freedom, and so respond freely to Him. Now, a theist obviously admits that the project of creating human agents is a worthwhile one (if you disagree with this, I'm afraid there will be little place for further dialogue). But, quite obviously, human beings are corporeal, i.e. material beings, and their souls or minds are closely connected to their brains, and through them to their whole bodies. The brain is unequivocally a material

thing — a member of the world 1 in Popper's terms-. May be it has «emergent» properties, i.e. properties that were in the dull matter just as a possibility. Yet, the brain is material, and has a well overt influence over the mind. I will call 'fully deterministic matter' (FDM) a set of space-time-matter arranged in such a way that each state of it is causally brought about by the precedent one because of general laws entailing deductively the succession of states, so that each future state is necessitated and predictable in all its details. Now the hypothesis that this theodicy requires is the following: if matter were FDM then no material being or spiritual entity closely connected to a material being could be free in any significant way. On the other hand, a not FDM would allow either the rise of sentient and conscious material beings which could bring about spontaneous, that is free, responses to their environment, or a free intercourse between some material being and the corresponding spiritual mind attached to it. Whether this free responses would be produced by a spiritual soul that acted upon his non-deterministic brain, or directly from the brain itself that would have spontaneousness, I leave it open. I will only assume that humans have free will. So the only thing NDT claims is that possibly a non FDM is a necessary condition for free material agents to evolve. We could set this just as possible and leave to the atheist the task of showing it impossible — in that case we would have a non-deterministic defense-. But it is much better if we could argue for the truth of this hypothesis, and to some extent I think we can.

This hypothesis seems plausible because without it we are compelled to the Kantian schizophrenia of two unconnected worlds: the noumenal world of freedom of the will, and the phenomenal world of fully deterministic causal laws of nature. And in that case the mind-body problem becomes yet more difficult than it already is, because in that case for the soul to act upon the body it should break the laws of physics, since the body is physical.

It requires, no doubt, a lot of work in the philosophy of mind to work out this hypothesis at length and to determine its truth value. May be we will never achieve this last, but I think there is an initial chance of this hypothesis being true, and perhaps we will be able to assess its probability.

If this hypothesis is true, then natural laws will be non-deterministic. For 2,000 years or more it was taken for granted by almost all scientists (Aristotle was a major exception) that natural laws are deterministic. I imagine the reason for this being both that common sense experiences confirm the view that things behave always in a regular way, and that scientific experiments and predictions fit pretty well — until this century — with the view of deterministic causal laws ruling nature. Moreover, the very notion of randomness is hardly intelligible. So it seemed that the prior probability of natural laws being deterministic is very high. In reality, it was quite a shock when in the first decades of this century Niels Bohr suggested that this was not so. To many — for instance A. Einstein — it was just incredible that «God was playing dice». But the evidence now available seems to point overwhelmingly to the other direction. Most scientists now agree that natural laws are non-deterministic. Why this is so is not a scientific question. But it is a question that NDT answers: were it not so, there wouldn't have been any free agents at all. But then we have a fairly good reason why there is so much natural evil: it is the natural by-product of an

indeterministic world.²⁸ God could act to hinder this or that natural evil, but this would violate his epistemic distance. On the other hand, He couldn't have created a world with free agents were He created a fully deterministic world; but a non-deterministic universe entails of logical necessity that its future states are not fully predictable. They could be predictable between a larger or smaller margin, but not in full detail, and so are not covered by divine omniscience.²⁹ Consequently God does not know and (because He has so disposed) can not know which things will go astray, which concrete events will turn out wrong, and as a consequence, can not prevent them in advance. Natural evil, including animal suffering, is then the price of free agents to exist. If this hypothesis is true, then natural evil, all natural evils, are means to a higher good, i.e. moral goodness and free will. And then the proper question to ask, as in the first kind of theodicy, is whether this world is anyway worth creating, provided its creation demands *such a high risk* (note, things could possibly have turned out yet worse!). I think it is, in spite of all pain and suffering.

The main obstacle for this hypothesis is that it presupposes a claim about the mind and its relation to the brain very difficult to prove indeed. But, it is not more easy for the atheist to prove the contrary. In the meanwhile we might warily embrace this as a reasonable response to the problem of natural evil which makes room for faith to exist.

I can envisage, notwithstanding, two major objections against this argument. The first would run as follows. If matter is FDM that implies that there is a full causal explanation for every material event. If mind is matter, then there should be a causal material explanation for every mental event, given that in fact it is a material event. In such a case no material event can be free in the libertarian sense. So, free will is truly incompatible with deterministic materialism. This, of course, does not show that it is compatible with non-deterministic materialism, but let us suppose it is. But if mind is distinct from, and independent of, and not causally determined by matter (or by the brain, if you like), then it does not matter whether matter is deterministic or not, because the mind, or the soul, in being independent is free, not in the sense that it acts at random, but in that it causes itself to act. Hence, only a materialist would be committed to such hypothesis in order to save theism, but materialists are quite often, and on very good grounds, atheists. Theists, on their part, are very often, and also for good reasons, dualists. But dualism in the sense of asserting a soul autonomous and independent from matter, has no need of this hypothesis.

This rejoinder would be compelling if souls lived alone and detached from bodies. If souls lived on their own and never, or only from time to time, entered in connection with bodies, then surely they could be free, and deterministic matter would impose none or very few restrictions on them. But the fact is that souls or

²⁸ ²⁸ Some two years ago in St Anthon's day Karol Wojtyla asserted we should treat animals well because «they also have a soul». And recall C.S. Lewis's case.

²⁹ This would spread Swinburne's account of divine omniscience, as voluntary restricted not to cover future free actions, to all future states of the world concerning its exact details. Cf. *The Coherence of Theism*, p. 172 ff.

minds have such a strong liaison with the brain that even dualist interactionism accounts have to recognize that mind is causally affected by the brain, and vice versa. So, given the mind-brain interaction (and we know of no mind without a brain), if brain was made up of FDM, each causal intervention from the mind would be an awkward interference with the laws of nature. We can reasonably think that such matter would be opaque to causal interference, that the world would be entirely closed. Contrary to this, this margin of indeterminacy would make room for a causal interaction from the mind to occur. Randomness would be the gap of physical laws in which mind could intervene. So, although this hypothesis is only inescapable to the theist that is also a materialist, and effectively they do not abound, it is very suitable to the dualist theist as well. In any event, I don't want to get into the touchy subject of the nature of mind. All that this hypothesis claims is that, be mind as it may, since it is either dull matter, or emergent matter, or spirit closely connected to matter, it could not be spontaneous and free — i.e. not necessitated by previous states — were matter fully deterministic.

The second objection, partly related to the former, is this. May be there is a necessary liaison between mind and brain, or body and soul, or even matter and spirit in the human case. But if mind is matter this liaison is physically necessary, and if mind is spirit this liaison is metaphysically necessary. In neither case would it be a logically necessary connection, because any state of the brain is compatible in the broadly logical sense with any state of the mind. We can coherently conceive that any particular causal relation between mind and brain holds. But it is a logically necessary connection which is needed for this theodicy to work, because being God the creator of nature and natural laws, and being omnipotent, He was able to arrange things in any particular way, so He could have set up things in so different a manner that deterministic matter could have brought about free will. He could not have broken or changed a logical connection, because He himself is subjected to the laws of logic. But, since the liaison is not a logical one, there is no reason why God should have created a non-deterministic matter in order to bring about free creatures. The point is that being omnipotent God was not compelled to set any particular causal connection or disconnection between any two substances He decided to create.

Now the principle underlying this objection: that God could have devised any causal relation He wished between any beings for He is their creator, seems to be false. For suppose God had decided that matter would be ruled by the inverse of Newton's law of gravitational attraction, so that every particle would repel each other with a force proportional to the product of their masses etc. Now, it seems impossible even for God that in such a world could appear any conscious material beings, not even any living beings, because living and conscious beings are of (logical?) necessity very complex beings which demand a complex structure made up of lots of particles. But this gathering of particles would be precluded for that natural law of universal repulsion. So, generally speaking, God can not match (causally relate) just any natural laws with any natural beings, with any natural outcome.

Let us take now the particular objection. If mind is matter, *and* matter is fully determined by causal laws, then mind is fully determined too, and there is no place for free will whatsoever. Naturally, in that case the mind-matter relation

is a physical one, because everything is physical. But then, the physically necessary connection is also a logically necessary one, for it is logically necessary that if mind is matter and matter is entirely determined, *then* mind is entirely determined. Suppose, now, that mind is spirit closely related to matter. Could God have created a world in which spiritual minds closely related to material bodies composed of FDM were nonetheless free (in the sense of not being necessitated by precedent causes)? Is there any possible world in which this obtains? I really don't know. I think that all of it depends on how close the relation is. If the relation is very close, I think this could not be possible. Now how close is the mind-body relation? All evidence points to a strong liaison indeed, although a very complex and often surprising one.³⁰ My conjecture is that for a liaison so close as the one of human case, this is not logically possible, for the reason that human souls never act independently of the body and of the brain (if parapsychological phenomena could be confirmed, they would have to be seriously taken into account), not in this life at least. And in doing so they are bound to all the limits of their material bodies. Should their bodies be fully determined, they would also be. But I am well aware that this is a claim that remains yet to be proved or argued for within a complete philosophy of mind that I can not offer here. So I introduce this NDT much more as a searching program than as a well developed doctrine.

Professor Swinburne has pointed out to me yet another crucial objection: is it not logically possible that matter should be basically deterministic but that once reached a certain high level of complexity (typically with the human brain) it started to operate in a non deterministic way? Surely this is logically possible, but the question is whether it is a possible state of affairs that God can actualize (for we now know very well that there are certain states of affairs that although logically possible, are such that it is not possible for God to bring them about). Either *basic laws of matter*³¹ are deterministic or not. If they are, then *ex hypothesi* all material components of the world, simple or complex, will be deterministically governed. But suppose basic laws of matter are non deterministic. In that case surely non deterministic effects would be spread all over matter, because basic laws of matter *rule over all the matter* independently of how it is arranged, built up or made up. Maybe what this proposal amounts to is to the view that in that case non deterministic effects would be irrelevant in very simple components of matter, and would become noticeable and relevant just in more complex material entities. But this is quite in accordance both with NDT and with general known facts (for instance that random mutations play a crucial role in genetic transmission and the subsequent evolution of organisms). But even granting that it would be possible to have determinism up to a point, and from that point onwards nondeterministic effects to occur, why should it start with the human brain? If the turning point is a very complex arrangement of matter, surely living organisms are already very complex entities. And if non deterministic

³⁰ Cf. K. Popper & J. Eccles: *The Self and its Brain*, Berlin, Springer, 1977, sp Eccles's chapters.

³¹ I am supposing that a world with humans must be governed by basic laws. If there were no basic laws at all, the world would be quite different, and it is very doubtful that we might describe 'humans' as rational beings in it.

effects should occur at that point (say in the living cell), most animal and human suffering caused by natural means — diseases, plagues, innate shortcomings and so on — would be covered by this theodicy.

What do we gain with this hypothesis? 1] This theodicy accounts not only for the general amount of natural evil in the world, but for particular evils also. Why should my brother suffer from such and such a disease: because in order to eventually bring about free agents the world is arranged in such a way that diseases and other upsets are unpredictable and unpreventable. Why God does not intervene to stop it? Because in so doing He would break his epistemic distance.³² The answer for global evil is quite obvious.

What about animal suffering? Within this hypothesis animal suffering is the price nature has to pay for conscious creatures to be brought about. So animals are means towards humans. It might be so. But when one dwells upon the enormously long history of natural life, compared with the quite short period of humans on earth, one can have some doubts about the waste of energy, time and pain necessary to reach such an end without violating epistemic distance. It has correctly been pointed out by John Hick that only in the middle of an evolutionary process could man feel himself alien to God. If there were no animals man's presence would be wholly inexplicable, and quite properly attributed to miraculous intervention.³³ So, possibly this is a good answer after all to the question «why should animals exist anyway?». And, moreover, may be animal life as a whole is worth living, because animals also enjoy it very much. But there yet remains the concrete suffering of particular animals *unnoticed* to anybody, because in this case God's assistance would hardly break any epistemic distance, since the animal has no need of epistemic distance because it lacks any soul to bring up (nor has it any notion of God), and no men would realize God's action. To some extent, I have doubts whether this kind of theodicy can cope even with these most pointless cases of suffering as well.

There is finally an additional advantage of this theodicy over the traditional ones. If nature is deterministic and God omniscient (as Descartes and Leibniz, among others, emphatically supposed), then He foresees everything that is going to happen, at least until the advent of conscious free beings. Now, if the aim of creation is to bring about free beings, why such a long and tortuous journey until this eventually happens? It seems there is no point in so long and slow a history of the universe before the appearance of man, furthermore if this history is totally foreseen in all its details. But if matter is not FDM, then the evolution of the

³² I don't deny that in many cases suffering is good for other reasons: for bringing us closer to God, for making us repent, for endurance that strengthens character, for making us realize of our finitude, for providing opportunities to display higher virtues towards the sufferers, and so on. All of this is compatible with my account.

³³ *Evil and the God of Love*, p. 351. I am not saying that since God has reasons to put us in a religiously ambiguous world, the fact that the world *is* ambiguous in that there is no clear and distinctive trace of God, *is* itself evidence for God's existence. Only that it is not evidence against his existence.

universe is something *really new* even for God, something He can be well interested in. Something that can cause him to wonder and surprise. So, it seems that a creation not fully predictable in all details, although its outcome in the long term was predictable, would be something much more interesting to create and which would deserve much more care and attention on the part of God. And all this would spell out why the history of the universe until present, and the evolution of life in particular, has been a far from straightforward process.

These are the three prospect of theodicies I wanted to put forward to open new ways out. Each drops some or other dogma from the classical philosophical theism. Each has its merits and its shortcomings. Each has its power to account for these or those evils.

But we could combine the three theodicies exposed in different ways because they are not mutually exclusive. We could even gather the three together, and assert that possibly God has created many worlds better than this one (with conscious beings very different from humans), that every conscious being capable of suffering will have an afterlife (or a before-life, or both), and that natural evils are the unforeseeable and so unpreventable by-products of a fully autonomous non-deterministic universe in which free agents, not immediately aware of God's presence, could evolve. Given these premises, which bear some plausibility, the argument from evil, *which I continue, anyway, to regard as a good C-inductive argument*, could be weakened perhaps sufficiently so as to be counterbalanced by the theistic arguments, including the massive amount of religious experience.

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A METHODOLOGY FOR THE REPRESENTATION OF LEGAL KNOWLEDGE:

FORMAL ONTOLOGY APPLIED TO LAW

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In this article, we shall describe the principles on which formal ontology is based, comparing its characteristics with those of legal domain and referring, as exemplification, to some models offered by legal theory which could lay the bases for a legal formal ontology.¹

1. The limits of artificial intelligence

The aim of artificial intelligence, the reproduction of mental schemata and processes of reasoning, find a great limitation in the vastness and vagueness of common knowledge and of the language by means of which it is expressed and communicated (let us not consider the further problem of vision and of oral language comprehension). The study of processes, as it is based on logical tools, can not deal with elements of content (semantics in the linguistic sense), and thus, nor can it deal with mental activities such as interpretation, value judgements and, in general, the comprehension of meaning. «Where is the weak point of this approach? In two words, logic is fragile and *rigid*, diametrically opposed to the human mind which, instead, can be characterised as ‘flexible’ or even ‘fluid,’ as far its extraordinary capacities to face completely new situations without precedents is concerned..... Logic and its multiple descendants depend on human beings to translate every situation into an unambiguous formal notation..... Logic therefore does not know activities such as classification or recognition of forms and structures. However surprising it may seem, though, these activities play an absolutely central role in intelligence.»²

To break free of this deadlock, recent trends of study in artificial intelligence follow two directions: 1) obtain a homogeneous «nucleus» of universal knowledge which can be used as foundation to build specialised knowledge bases; here, the multiplicity of meanings is reduced by means of generalisation, uniformization and classification processes, which utilise the comparison of situations and the

¹ See also: [McCarthy, 1989], [Breuker, Valente, 1993], [Valente, Breuker, 1994].

² [Hofstadter, 1994], p. 14.

search for analogies; 2) transform a large part of reasoning processes (value judgements, in particular) so that they can be brought back to deductive processes;³ some conceptual aspects are inserted under the form of syntactic elements and the programmes utilise *proof-theoretic* semantics instead of *model-theoretic* semantics.⁴

For reasons of space, in this paper, we shall deal only with the first aspect, referring the second to specialised literature.⁵ After delineating the novelties in knowledge modelling developed in Artificial Intelligence, we shall note several aspects peculiar of law, attempting possible computational interpretations of legal theories.

The examination shall be purely exemplary in nature, to consider only as a first step towards developing a methodology to deal with legal knowledge: the exploration of legal theory and philosophy requires a much more in-depth investigation than the one assumed in this preliminary phase. The aspect on which we shall focus our attention is the *attitude* of many legal theories to offer the background for formal models of legal knowledge, or at least of several components. For example, the *theory of fundamental concepts* by Hofheld, or the *theory of Speech Acts* by Searle, from the beginning have been developed in formal structures, even though with merely descriptive objectives, and therefore make a considerable contribution to the development of computable models of knowledge. In the same manner, legal theory provides sources for *formal models of reasoning*; we need only consider the argumentative models developed on the *theory of argumentation* or on the *theory of discourse* (Perelman, Alexy, Wroblewski, Toulmin).

On the other hand, we must remember that the aims of AI are essentially practical, which is to say, to find a remedy for the high costs, both in terms of time and money, inevitable in building knowledge bases; common to the entire sector of developing systems based on knowledge is the necessity to use *shared knowledge bases* which constitute the fundamental nucleus for every specialistic application and can be reused in different contexts.

2. Knowledge Organisation

As Artificial Intelligence, until a few years ago, considered reasoning as absolutely pre-eminent to perception, another discipline, *pattern recognition*, attempted to find ways to reproduce the classificatory capacities of the human mind: to reduce the infinite multiplicity of reality to pre-known categories. The

³ which does not mean they are deductive!

⁴ In simpler terms, the concept of logical validity (and of meaning as correspondence) is replaced by that of derivability: a proposition is valid if it is derived from the premises with the inference rules of the theory.

⁵ See [Sartor, 1994], [Prakken, 1993], [Gordon, 1993], [Loui, 1993], [Hage, 1993], etc.; other recent proposals are in the Proceedings of the IV ICAIL, Boston, ACM, 1994.

traditional Pattern Recognition approach consisted in breaking up the picture of reality into a series of atomic components which one attempted to label on the basis of conceptual categories. Another approach⁶ is based on identifying abstract characteristics: comparison criteria are expressed along with organising groups of sets, analysing their characteristics until general attributes are identified which make classification possible, for example, several groups of figures can be compared on the basis of shape, colour, represented sign, number of elements, etc. We then continue, alternating *abstraction* phases and *comparison* phases until we discover analogies: «which is to say, the activity of choosing the important characteristics of a complex situation... and the activity of discovering similarities and differences between situations described at a high level of abstraction [Hofstadter, 1994].⁷

What can be drawn from these experiences?

— 1) the necessity to deal with cognitive processes as *sequences*, which is to say as the concatenation of phases, both perceptive and of reasoning, which succeed and alternate one another, often recursively. Generally speaking, we may hypothesise as follows: perception, representation by abstraction, search for analogies, classification, reasoning (subsumption, deduction);

— 2) the method of validation based on the formulation of hypotheses, which are equivalent to plausible expectations, susceptible to being modified at every step, or verified (by means of pragmatic analyses, or annulling counter hypotheses, or by means of probabilistic evaluations);⁸

— 3) the construction of models by means of integrating *bottom to top* strategies («by bottom-top process, we mean the construction of high abstraction levels on a rather solid underlying basis of hypotheses...») and *top to bottom* strategies («by top-bottom process, we mean the opposite image, i.e. the attempt to build hypotheses close to the brute data specifically to provide a solid base or hypotheses that have sense on higher levels.»)⁹

Considering that what has been said till now concerns the whole cognitive process of learning (and understanding), remaining on the same cognitive level, we would place the moment of legislative production as the conclusive and

⁶ [Bongard, 1968].

⁷ Cognitive science refers to this alternation to explain visual perception: the method has been translated into a series of programs and transferred to the sector of oral comprehension in order to reproduce the perception of spoken phrases. This has enabled the distinction of various levels of analysis, from phonemes, analyzed first as sound waves and then as phonetic hypotheses, to syllables, words, syntagms and finally phrases which are analyzed on the pragmatic level, placing them in possible contexts and then choosing the most plausible hypothesis of meaning.

⁸ [Scank, 1986].

⁹ [Hofstadter, 1994].

explicative moment of the legislator's *decision-making* process and jurisdictional activity as the moment of problem solving. It presupposes that the new problem, before it is solved, must be *described, classified and understood*; and then compared with knowledge (the norms).

Adapting the methodological hypothesis prospected above to legal domain, we would say that the following are necessary: 1) parameters of comparison, *knowledge categories* or *primitives* to which to relate the new and by which to classify and understand it (the conceptualisation of law operated by legal theory and doctrine); 2) *generalisation* processes which, from analogies and diversities, should lead to enriching the initial «*a priori*,» which could be newly reapplied and compared, recursively (a good example is case law).

2.1. Knowledge Primitives

In 1979, Ron Brachman proposed a classification of knowledge in four levels¹⁰

<i>Levels</i>	<i>Primitives</i>
Implementative	<i>Memory cells</i>
Logical	<i>Propositions, predicates, functions, logical operators</i>
Conceptual	<i>Conceptual relations, primitive objects and actions</i>
Linguistic	<i>Linguistic terms</i>

The schema can be read from top to bottom, as a process of «reificazione» or instancing of a formal theory to reality, or from bottom to top, as a construction process, from a state of affairs described in natural language, to a computable model of the same. Under this second aspect, the passage of abstraction involves the passage from *linguistic entities* (names, verbs) with a definite meaning, to *concepts* with meanings independent of the context (roles, actions); from these to *logical symbols*, the semantics of which concerns the relation between these and the world; on the level of implementation, no *a priori* semantics is necessary.

Brachman himself noted a gap between the conceptual level, in which concepts have a specific understood meaning (i.e. *the red apple*) and the logical primitives with a neutral general meaning (both *red* and *apple* can be unary predicates); he proposed an *epistemological* intermediate level whose primitives would define the internal structure of the concepts: i.e. that a link is admissible between the concept *apple* and the attribute *red*.

Defining the structure of concepts is fundamental to controlling conceptual inferences, the most classic of which is the classification of concepts on the basis of their belonging to a taxonomic conceptual network: to be able to deduce that an object (or a concept) is an entity or sub-entity linked to a general concept by

¹⁰ The description of Brahman's schema is taken from [Guarino, 1993].

the ISA relation,¹¹ it is necessary to know the internal structure of this concept, in particular, what attributes or properties are necessary to define the object as subsumable (i.e. that the concept of *apple* must have a colour as attribute).

The epistemological level then makes it possible to bind the structure of concepts, but not the meaning, which remains formed by the sum of the understood meanings of its components: the structural content of the concepts and the interconnections of meanings are better defined, but not the meaning itself. Choices among the structures make it possible to utilise to the fullest the formalisms descriptive of knowledge representation, such as semantic networks or *frames*, for example, explaining the attributes (*slots*) necessary to define a concept; in order to reach an expressive power higher than that of first order logic; however, we have not identified *what*, in the entities of reality, is a *slot* and what is a *class*, an object of knowledge to which that slot refers. Continuing the example, justify the fact that *apple* is a concept (a class: *sort*), while *red* is not. It is a question of making *ontological* choices.

The ontology of which we are speaking here is *formal ontology*, which combines the intuitive, informal methods of philosophical ontology with the formal methods of modern symbolic logic: as the object of classical ontology, in an intuitive manner, studies the properties, modes and aspects of being, while the method of classical logic is the rigorous reconstruction of axiomatic formal systems, formal ontology is «the systematic, formal, axiomatic development of the logic of all forms and modes of being.»¹²

The ontological level is therefore placed between the conceptual level and the logical level, providing «knowledge primitives [that] satisfy formal meaning postulates, which restrict the interpretation of a logical theory on the basis of formal ontology, intended as a theory of *a priori* distinctions: — among the entities of the world (physical objects, events, processes...); — among the meta-levels categories used to model the world (concepts, properties, states, roles, attributes, various kinds of part-of-relations...).¹³

Categories play a fundamental role in the philosophical/ontological dimension, as they do, as we have said, in the development of a methodology to describe and classify reality: from the viewpoint of the former, they are «fundamental classes to which entities or concepts belong,»¹⁴ from that of the latter, they are «subdivisions of a system of classification» utilised to catalogue knowledge, for example, a database. A third level (of meaning) refers to a cognitive dimension in which they are «notions which serve as rule of investigation,» which is to say, to make *predictions* about objects and relations between objects in unknown situations. In the beginning, we evidenced the links

¹¹ ISA, «*is a*,» translates the relation of belonging of a subset to a set, while INST («*instance of*») translates the relation of belonging of an element to a set.

¹² [Cocchirella, 1991], p. 640.

¹³ [Guarino, 1993].

¹⁴ In [Gangemi, 1994], as the two other definitions which follow.

between conceptual models of knowledge and processes of learning, the latter presupposing an *a priori* conceptual structure which is recurrently enriched by new experiences; we therefore see how the first meaning of the term «categories,» which we shall also call, in Artificial Intelligence terminology, *knowledge primitives*, must take into account the third definition, considering a meta-organisation (cognitive categories) of the conceptual categories.

There are therefore ontological categories which collect the entities of the world (*apple, red*) and meta-categories which guide the organisation of these entities. For example, meta-categories are those which differentiate *apple*, in as much as it is a *concept* because it serves to classify and enumerate entities inside a class, from *red*, in as much as it is a *property* attributable to an entity of itself already identifiable and enumerable. The distinction, fundamental for Artificial Intelligence and knowledge representation (KR), between concepts and properties traces the philosophical/ontological distinction between enumerable universals (*sortal*) and non-enumerables (*non-sortal* or *characterising*), a renewed version of the Aristotelian distinction between essence and accident, and the linguistic distinction between nouns and adjectives..

If first we have defined formal ontology on the level of theory, now on the level of practice, we can call it «theory of *a priori* distinctions (and therefore general, not depending on the particular problem considered): between *things*, or entities of the real world (physical objects, situations...); between *relations*, or entities utilised to model the structure of the real world (qualities, properties, states, roles, various types of relation *part-whole*).»¹⁵

Let us reformulate the initial schema integrating it with the epistemological and ontological level: ontological primitives serve to limit the generation of models (interpretations) of logical theory to those *understood, on the basis of ontological commitment*; a function which, as we have said, the epistemological level, operating on the structure from inside, is not able to perform. It is therefore clear how ontological commitment is in any case tied to the subjectivity of linguistic/conceptual interpretation.

<i>Levels</i>	<i>Primitives</i>	<i>Interpretation</i>
Logical	<i>Predicates</i>	Arbitrary
Epistemological	<i>Structure primitives</i>	Arbitrary
Ontological	<i>Postulates of meaning</i>	Bound
Conceptual	<i>Cognitive primitives</i>	Subjective
Linguistic	<i>Linguistic primitives</i>	Subjective

Having thus introduced *Concepts* as atomic entities with which to build the model of knowledge, and *categories* and *meta-categories* as tools with which to classify and organise them, we can apply the method to legal knowledge.

¹⁵ [Guarino, 1993].

3. The Primitives of Legal Knowledge

The aim is to create knowledge bases for systems which reproduce part of the jurist's activity. We must therefore model the knowledge which they commonly utilise; we can neglect part of the knowledge *about* norms, but we must envelop all of the knowledge *object of* the norms; and, as the norms deal with reality, all the knowledge of the world. We can neglect to resolve crucial matters, on the nature of the norms; on the difference between norms, directives, moral principles, value judgements; on the axiological aspect of law, in brief a large part of meta-juridical questions. This does not mean that domain must coincide exclusively with what is called *positive law*, because it is necessary to include:

- 1 — the meta-norms (on the interpretation, the solution of conflicts, analogy, application, etc.) which serve the jurist to deal with norms,
- 2 — the hierarchical relations between legal sources,
- 3 — the distinction between *norm* and *statement*: the fact itself that we speak of *norms* instead of *normative statements*, involves the obvious consideration that the linguistic level (legislative text in natural language) is surpassed, in as much as the norm, intended as «meaning of the enunciation» (or of parts of an enunciation, or of several enunciations) finds a place on a conceptual level; before we move on to the logical level (first order logic¹⁶), it is necessary to establish:
- 4 — rules which bind the process of conceptualization, which we have called «meaning postulates», to enable the meta-organisation of the conceptual categories.
- 5 — assumptions as to the structure of the norm: the *norm*, too, is a primitive concept which must necessarily be defined, in as much as it can itself become content, object (we need only consider the meta-norms).

Of the five points we have delineated, and which do not claim to constitute an exhaustive list, the first two points are computationally treated as *processes*, instead of as components of knowledge: we shall speak of them only briefly, referring, as we have already said, to literature on the topic.

In a model of normative system considered as a theory, the properties of completeness and consistence required by logical laws contrast with a legal reality of inconsistency (conflicts between norms) and non-completeness (gaps). What is more, the passage from statements to propositions is filtered through interpretative processes.

The rediscovered interest for the theory of argumentation¹⁷ is due to the contemporaneous development of non-monotonic logic systems. In these, the

¹⁶ In [Guarino, Carrara, Giaretta, 1994] it is specified how the language utilized for formalizing the ontological level is necessarily *richer* than the one utilized to represent the object knowledge, requiring the introduction of modal and temporal operators and of «mereological» relations.

¹⁷ [Perelman, Olbrechts-Tyeca, 1958], [Toulmin, 1958], [Alexy, 1992].

difficulty of finding intuitively valid semantics lies, to a great degree, in the fact that, from a single theory, inconsistent conclusions can be (non-monotonically) inferred; the problem can be solved considering the *default theories* (or Brewka's *sub-theories*, or Reiter's *default logic extensions*¹⁸) as *arguments* capable of justifying these conclusions. It is evident how this perspective matches perfectly with the dynamics of the legal debate in which both parties, departing from the same normative and factual premises, build arguments in defence of opposite claims.

In the argumentative model, the problems of inconsistency (conflicting norms) are solved by admitting conflicting conclusions from consistent subsets, while the problem of incompleteness finds a remedy in: a) inferring solutions by *default*, which can be invalidated by new knowledge of the facts (i.e. presumptions); b) inferring conclusions based on analogical argumentations which surpass the normative gaps and can be equally defeated.¹⁹

The «choice» between consistent but mutually exclusive subsets, in other words between «arguments,» is guided by criteria (hierarchy, types of interpretation, search for most significant precedent) which, from semantic, are transformed²⁰ into syntactic criteria to evaluate the force of the arguments.

We therefore feel it appropriate to not consider these aspects as elements of knowledge in themselves, but as formal definitions of terms such as *validity*, *applicability*, which as ways of being, status of norms are elements of knowledge. In computable models,²¹ they are generally expressed with meta-predicates which, like the normative predicates, are part of argumentations (and especially counter-argumentations) and therefore provide argumentative strategies.²²

¹⁸ [Brewka, 1991], [Reiter, 1980].

¹⁹ For a distinction between the types of analogy, see: [Tiscornia, 1994 a].

²⁰ [Loui, 1993], [Prakken, 1993], [Sartor, 1993], [Hage, 1993], [Gordon, 1993], [Yoshino, 1993]. In the argumentative models, the concept of logical consequence is substituted with that of *defeasible consequence*, which makes it possible to define further types of consequences (logical, plausible, defensible, etc.) provided that a counter-argument does not exist capable of invalidating the thesis sustained, and that this counter-argument exists and has a hierarchical level («force») equal or superior to the argument adopted. This brings with it a weakening of the nexus of causality between the antecedent of a norm (the facts of the case or their generalization in the normative case in point) and the legal consequence. As far as the nature of the interrelations between the conditions are concerned, these are *necessary* in the norms (and *non-sufficient*, if not in the non-monotonic sense), to establish the derivability of the consequent; in the precedents, the elements of the case are *factors*, each of itself relevant to the ends of the decision.

²¹ [Tiscornia, 1993].

²² In [Gordon, 1993], the predicate *baking* translates the relation between *warrant* and *rule* [Toulmin, 1958] which is to say, the logical/interpretative

Point 3, too, can be considered as included in the extensive meaning of the predicate of applicability, comprehensive of the interpretative passage from the enunciation to the norm; we therefore move on to examine point 4.

The traditional approaches to the conceptualization of knowledge, the so-called *terminological logics*,²³ are based on the assignment of a *name* to each element considered primitive (whether it be an individual or a property), and which will become a predicate on the logical level. Semantic rules are lacking, however, so that the models of the theory built in this language (the model of normative system), are only those *intended*, which is to say compatible with the underlying meaning assumptions. Semantics which can not be extensional (i.e. the meaning of a class of legal subjects can not be identified with the set of individuals), but have intrinsic characteristics. Picking up the previous discourse, it is not sufficient to define the content and relations of the concepts utilised in a legal context, which is to say to build models «from the bottom,» but to identify the (meta-)categories to organise these concepts, which have universal legal value (even though subjective), which is to say, to build the models «from the top,» search for the ontological foundations of these categories.

3. 1. Legal Ontology

As we have already said, one of the merits (at least for artificial intelligence) of formal ontology is that of providing *meaning postulates* which make it possible to formally identify the ontological categories, surpassing the indefiniteness of intuitive distinctions: i.e., the already recalled classification of the objects of reality²⁴ into *sortal* entities (which «supply principles for distinguishing and counting individual particulars which they collect») and *non sortal* entities, (which «supply such principles only for particulars already distinguished, or distinguishable, in accordance with some antecedent principle or method»).

Sortality presupposes *countability*, which is to say the capacity to distinguish one sortal entity from another and *reidentifiability* («*this is the same P as before*»). Another fundamental notion is that of *rigidity*: the class of sortal predicates is divided into:

- the class of sortals ontologically rigid or *substantial*, in as much as lacking this predicate, the individual loses his identity (like *apple*), but not *divisible*, in as much as the same predicate can not be attributed to components of the entity,
- *non-substantial* sortal predicates which, though countable, are not rigid (like *student*).

passage from the statement to the rule. In Sartor, the predicate *applicable* encompasses both the check of consistence and the correctness of interpretation.

²³ [Brachman, Fikes, Levesque, 1983].

²⁴ Both the large class of sortals and the non-sortals are in turn again included in the class of discriminating predicates, which is to say, such that of these it can be said for each individual that: *it is P* or *it is not P*.

In traditionally utilised terminology, substantial predicates correspond to *types*, while non-substantial predicates correspond to *roles*.²⁵

The property of divisibility instead applies for the *non-sortal* predicates²⁶ which, in turn, can be

— ontologically rigid, or *pseudo-sortal* (i.e. collective names and high-level predicates: *event*, *individual*, to which we shall return);

— *non* ontologically rigid, or *characterizing*, (like the colour red).

These distinctions represent one step further than terminological logic in as much as they make it possible: to formally distinguish *attributes* (which correspond to the characterising non-sortal predicates) from *concepts* (sortal predicates and pseudo-sortals), to formally define the relations of subordination and disjunction between the concepts and to identify, within the pseudo-sortal predicates, the class of *categorial* predicates (individuals, events, physical objects) which identify the cognitive meta-categories of which we have already spoken. The general schema²⁷ is:

Returning to law, let's begin with the categorial predicates to verify whether they are congruous for legal reality. Legal phenomena (or components of phenomena) can be distinguished²⁸ into four large subclasses: *subjects*, *objects*, *acts*, *facts*. Objects and facts represent the more immediately real aspect, while subjects and acts represent the more properly human aspect. Subject and object are spatial phenomena: they constitute the point of connection between successive cases in point (i.e.: the transfer of property of a possession can be seen as a change of the proprietor subject, or as a change of status of the subject from proprietor of the right of property to creditor of the counter-performance); while facts and acts belong to the category of temporal phenomena: they characterise cases in point connected and temporally differentiated.²⁹

²⁵ See [Brachman, Fikes, Levesque, 1983], [Guarino, 1994] and [Sowa, 1984].

²⁶ For the formal definition of these and other categories, see [Guarino, Carrara, Giaretta, 1994].

²⁷ See Guarino, 1994.

²⁸ See [Falzea, 1967, p. 942].

²⁹ The definition of the atomic components of the conceptual entity *norm*, which we examine here, represent a deeper structural analysis than the definition of the logical structure of the norm as rule, (point 5), generally viewed in the conditional form (if...case in point...then consequence); here, the bipartition of legal phenomena is translated into an identification of subjects and objects in logical subjects, while acts and facts are relations or properties which can be attributed to them and therefore *predicates*; the concept of individuals must always be intended as denoting classes of elements inside the logical universe taken into consideration: different hypotheses on the structure of the norm as *collection of elements* are in [Breuker, den Haan, 1991], and [van

Facts are the content of both the consequence (effectual) and the case in point (causal), with a further specification: an effectual fact will commonly consist of an act, which is to say a behaviour, and it will always be referable to a subject: indeed, there would be no sense in foreseeing a natural phenomenon, which as such is independent of human will, as a legal effect, nor would there be sense in not identifying a usufructuary subject of the norm.

Is there correspondence between general ontological categories and legal ontological categories? Law will probably require the insertion of second level *ad hoc* postulates, on which we shall make several intuitive observations which, however, will require further in-depth examination:

— *Facts/physical events*: law does not take all physical events into consideration, but only those relevant for the organisation and regulation of social groups; what can the discriminating feature between facts that concern law and facts for which the legal order is indifferent, be? Perhaps *social effects* (Reinach, 1989). For Reinach, who developed the richest contribution to legal phenomenology, the universal structure of law consists in *social acts* which, generating *a priori* normative relations — — obligations, duties, etc. — — have an existence independent from specific positive law which regulates them; and positive law, on the other hand, by imposing obligations and instituting rights, can not leave out of consideration facts and social relations which justify their creation. Among social acts, *promise* is the one which for Reinach has greater importance because it produces modifications of the states of affairs which have social relevance. Promise can be born of a hidden mental state, i.e. when the will to not keep it is left unexpressed; it can be not received by the subject; it is, in any even, a *linguistic act* that causes mutations in the normative sphere both of the maker and of the receiver, every time the legal system asserts its relevance.³⁰ The mental/linguistic mechanism of the promise can be applied to a large part of legal phenomena.

— *Acts*: the same consideration made above applies for acts: what is the characteristic which makes it possible to identify acts relevant for law? The class of actions which are object of norms has a wider extension than human actions, including i.e. «actions depending on language,» or «speech acts,» of great importance for legal domain (Searle, 1969). Acts could therefore be identified with the propositional content of the *illocutionary acts*, those classes of illocutive acts which have *illocutive aims* consonant with the finalities of law, which is to say, *binding, directive, declarative*.³¹

The theory of speech acts, of which Searle himself with Vanderveken (1985) elaborated the logic, offers a great wealth of indications for a characterisation of legal acts, permitting their representation as autonomous primitive entities compared with the other elements of the norm. The different mental position

Kralingen, Schmidt, 1993].

³⁰ See [Schumann, 1001], p. 774.

³¹ For a reformulation of the theory of linguistic acts from the viewpoint of law, see [Sartor, 1993b].

(perceptive states) of the subjects about the objects of reality, which alone can be true or false, generates the *states of affairs* which, as such, can be positive or negative, certain, possible, probable but, in any event, timeless. Thus, the promise expresses the will to obtain performances from others, the command expresses the will to obtain a new state of things, a question expresses a state of uncertainty, an assertive act can express a conviction. The conviction depends on a unitary underlying mental state, though admitting various degrees of certainty, while the assertion which expresses it is a punctual act, tied to a definite propositional structure of the language.

— *Subjects/individuals*: the legal concept of *person* presupposes the existence of a subjectivity and capacity of persons to create law to regulate legal and social relations; the category of legal subjects leaves the physical existence of the individual out of consideration, and therefore embraces a sphere wider (the conceived, incorporated bodies, public agencies) than the individuals characterised by general ontology. It is a question of formally defining, in a postulate, the requisites of *subjectivity*, *legal capacity*, *capacity to act*.

— *Objects*: certainly the objects of law are a category wider than physical objects: we need only consider obligations, wherein the object of law is a legal relationship.

— *Legal relationships*: the Hohfeld theory of *fundamental legal conceptions* has already been utilised in knowledge-based systems.³² Hohfeld identifies the primitive relations capable of expressing all of the possible legal relations existing between subjects in eight concepts (*right*, *duty*, *privilege*, *non-right*, *disability*, *immunity*, *power*, *liability*); he provides examples, taken from jurisprudence, but instead of defining the content, he formally defines the relations of opposites/contraries between them. Contrary to Bentham and Austin, who recognise *freedom* as the state in which there is no obligation towards the holder of a right, for Hohfeld, the concept of right is always tied to that of duty, as a relation between two subjects is always presupposed. The concepts of the second group³³ serve to create or modify those of the first.

Kanger³⁴ systematised the theory of fundamental concepts utilising propositional logic, the logic of action and deontic logic.

Lindhal³⁵ developed the *theory of legal positions* in a complete formal system. To each fundamental legal concept of Hohfeld corresponds a series of possible positions, rigorously defined by the conjunction of logical expressions which, in addition to connectives and axioms of classic logic, also utilise the

³² firstly [Allen Saxon, 1986, 1991, 1993], then [Morris, McDermid, 1991], [Jones, Sergot, 1992].

³³ [Azzoni, 1994] reminds the distinction between *deontic* (the first four) and *anankastic* (the remaining).

³⁴ [Kanger, 1966].

³⁵ [Lindhal, 1977].

deontic and action operators.³⁶ The advantages of utilising this logic, of which computerised versions exist, in a universal representation language, makes it possible to substitute the modality operators of formal ontology with the deontic operators in order to express the characteristic of prescriptivity of law.

We make no claim that the categories we have examined (to which we would add the spatial dimension and temporal interval) are exhaustive; we do intend, however, to sketch a methodology which remains to be further investigated. Space is not sufficient to even briefly hint at the possible contents of the classes of *concepts* (sub-categorical), for which dogmatics more than the theory of law, will be examined; nor of the class of *attributes*, which certainly will present aspects (i.e. *legitimated, responsible, null*) peculiar of law. An example of attribute has already been provided with regards to *validity* and *applicability*.

While *validity* is a concept of doctrine,³⁷ the contents of the *applicability* concept must be identified on the pragmatic level; computational models normally assume as verified³⁸ the requisite of formal validity, intended as validity of the process of legislative production, and instead utilise a meaning of applicability which includes a narrow version of the concept of validity. Doctrine (Guastini, 1994) distinguishes a type of *weak invalidity*, belonging to norms, from a *strong invalidity*, or non-existence, belonging to legislative statements and normative sources in general; «invalidity is a property of rules... while non-existence is a

³⁶ Lindhal's theory of normative positions contains: the operators and syntax of propositional and predicative logic; the rules of deduction and the axioms belonging to it; plus the operators: Do (action); Shall (obligation); and the axioms and rules of inference belonging to them [Lindhal, 1977], p. 68.

³⁷ In 1986, J. Wroblewski, in the intent to define models of legal systems capable of being computerized, had proposed a definition of legal system (LS) composed of all of the legislative norms validly emanated (LSLE). The concept of validity was intended as «systemic» validity, which is to say: «A rule *N* is valid in LSLE if: (a) is a norm enacted in LS according to norms valid in LS, and is in force; (b) *N* is not derogated explicitly; (c) *N* is consistent with other norms valid in LS; (d) if it is inconsistent with at least one of the norms valid in LS, then either it does not lose its validity on the strength of the conflict of law rules, or is interpreted in a manner eliminating the inconsistency in question.» The model of normative system can be extended to include all of the norms inferable from LSLE (LSFC), adding a further criterion of validity: «(e) *N* is an acknowledged formal consequence of a norm valid in LSLE.» And further extended to include the interpretations of the norms valid in LSLE and in LSFC: «(h) or the rule is the result of an accepted interpretation of a rule valid in LSLE and/or LSFC.»

³⁸ In reality, a specific sector of legal informatics exists, *legimatics*, which produces systems that assist the automatic drafting of laws; for the present, however, the points of contact with the sector of artificial intelligence are few; future developments foresee the designing of systems for the automatic generation of legal texts which should utilize the same knowledge models described in this article. See (Tiscornia, 1994b).

property of legal sources» (p. 222). The conditions of applicability include the respect of the rules on contents and the consistence with higher order norms. Also included are the meta-norms which regulate the application of norms of positive law, which is to say the sphere of application and the norms considered applicable on the basis of interpretative processes of subsumption, extensive, restrictive interpretation, etc.

Conclusions

The lacking development of *knowledge-based systems*, programmes capable of performing complex reasoning, is principally due to the difficulty to build knowledge bases which are sufficiently broad (amount of knowledge) and in-depth (detail of the semantic/conceptual aspects). The modelling of knowledge is also the focus of theoretic research in artificial intelligence and object of the investigation of cognitive sciences. Attaining increasingly higher levels of abstraction, the process of universalisation has therefore touched philosophical dimensions, looking for ontological foundations of the *primitives* (with a cognitive term: *a priori*) of knowledge.

In law, a methodology of legal knowledge representation need to be consistent both with the results of formal ontology and the contributions of legal theory: the present work is just a possible starting point towards a promising field of investigation.

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DENIED CONDITIONALS ARE NOT NEGATED CONDITIONALS

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To gappists, denial is not negation: ‘not’ and ‘not not’ are consistent. In this note, I argue that even classicists must accept the *dictum* when it comes to conditionals, i.e. $P \rightarrow Q$ is not necessarily $\sim(P \rightarrow Q)$.

Consider first the denied conditional: It is not the case that if I win the lottery, I will travel the world. I might know this to be true because I know myself and because when I won the lottery two years back, I was not taken with a desire to travel the world. Yet, the truth conditions of this denied conditional are met only if I win the lottery and do not travel the world. From this, in turn, it follows that if the proposition is true, as I claim it is, I will win the lottery! The deduction is immediate: $\sim(L \rightarrow T) \vdash L$.

Consider, as a second example, the denied biconditional: It is not the case that I am eligible for Social Security if and only if I am of retirement age. This denial is true: I might be disabled. However, in classical logic, we have: $\sim(E \leftrightarrow R) \leftrightarrow (\sim E \leftrightarrow R)$. Yet this is surely false, for it claims, contrary-to-fact, that I am ineligible for Social Security if and only if I am of retirement age! All this arises, it would seem, from the traditional definition of material implication.

There is a way, however, of saving denied conditionals within classical logic, and it is quite simple. What we must do is move from the propositional calculus to the predicate calculus and quantify over cases in the latter. Thus, the claim about Social Security becomes $\sim(\forall x)(Ex \leftrightarrow Rx)$, from which $(\exists x)(Ex \& \sim Rx)$ follows, but $(\forall x)(\sim Ex \leftrightarrow Rx)$ most assuredly does not. Likewise, the claim about the lottery-winner becomes $\sim(\forall x)(Lx \rightarrow Tx)$, from which the truth of Lx is not known *a priori* but depends on the case, x , in question.

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Indexicals and Descriptions

Fernando García-Murga

Introduction

Reference is a highly intricate question at the very core of philosophy of language, linguistics, and cognition. In this paper, we maintain that reference is a common feature to indexicals, definite descriptions and, at least to some uses of indefinite descriptions.

The main aspect of a referential expression, from the addressee's point of view, is that it triggers search for a referent, the search ranging over the linguistic context, physical environment or encyclopedic knowledge.

As regards the antecedent's location, traditionally only the last two ranges gave rise to existential presuppositions. That's why the referent's source had great theoretical importance and, since no referential expression automatically triggered presuppositions, presuppositional theories had to be complemented with projection theories for presuppositions.

Following research on the relation between language and other cognitive abilities, we maintain that it is salience, and not the referent's source, that conforms speaker's choice of referential expressions. Accordingly, indexicals and definite descriptions indicate that the speaker acts as if the object he intends to refer to were salient, whereas indefinite descriptions guide the search for a non salient object. Therefore, salience and presupposition divide reference expressions equally.

Moreover, we find a pervasive referential/attributive distinction in indexicals and descriptions. Our claim is that the dubbed attributive reading is a consequence of a search failure that provides a «weak understanding» by «accommodating» referential expressions to their utterance context. This paper is an initial step toward a unified and abstract theory of referential expressions.

1. Definite descriptions.

In this section, we are concerned with the analysis of expressions headed by a definite article.¹ Obviously, such expressions appear in sentences playing different grammatical roles: subject, direct object, embedded under different

¹ It is an accepted assumption in generative grammar that determiners constitute DP heads (see, for instance, Chomsky and Lasnik (1991)).

clauses, and, according to the «pragmatically defined» topic/comment structure, definite descriptions also occur in both sentential divisions.

Traditionally, a main linguistic feature of definite descriptions has been their role triggers for existential presuppositions.² The different roles definite descriptions play have given rise to puzzling questions such as the projection problem for presuppositions and topic assignment. We hope our proposal will help to dissolve such intricate questions. As a methodological claim, we will analyze the definite article and the descriptive content of the description independently.

The role of definite articles, stated in procedural terms,³ lies in the search for an antecedent. Definite articles give the addressee the search order automatically. The search range includes linguistic, encyclopedic, and the «physical» environments.⁴ So, assuming that «the President» is not present in situation of utterance of (2) and «a man playing chess» is present in (3), we have the following respective examples:

- (1) If there is a car in Hyde Park, the car runs slowly.⁵
- (2) The President has resigned.
- (3) The man playing chess is Karpov.

The speaker, by using the definite article, acts as if the antecedent were a salient object⁶ for the addressee. We maintain that while salience implies familiarity, the

² We must be careful when using the word «presupposition». Nevertheless, we can state that, from Frege on, presuppositional effects have strongly influenced referential theories. Indeed, we will assume a close relation between presupposition and reference, but see Ariel(1990) for a criticism of such approaches.

³ See Miller & Johnson-Laird (1976) for a procedural interpretation process.

⁴ Ariel (1990) offers the following «geographic division of contexts»:
 — encyclopedic knowledge: stored in long-term memory, tend to be presupposed.
 — physical environment: stored in short-term memory, tend to be presupposed.
 — linguistic context: stored in short-term memory, plays an anaphoric role.
 Even if natural languages code the «geographic source», what is important here is that, since we are able to speak about what we see (perceive), what we remember and what we linguistically decode, we must assume translations to common formats (see Jackendoff (1987) for attempts in this direction).

⁵ Obviously, we will require a binding theory, a task beyond this paper.

⁶ For the sake of simplicity, from now on we will be talking of «objects», when, strictly speaking, we should talk about objects, events or states.

converse does not hold.⁷ Therefore, familiarity is a necessary but not a sufficient condition for the speaker to refer to an object by using a definite description.

Now, let us assume that definite articles provide a semantic marker to semantic representation, whatever type of semantic representation we are disposed to assume, and let us use «R» as such a semantic marker.⁸ We assume that the semantic representation of expressions of the form «the X» looks like this: [X]R. On the basis of such a semantic representation, we adopt the following inference pattern:

$$[X]R \rightarrow \text{EXIST}([X])$$

Before discussing the rationale for the inferential rule just established, we must face the referential/attributive distinction⁹ in the light of our frame.

Suppose the following context: Jones is on trial charged with Smith's murder. Jones begins to cry, and the speaker utters:

(4) The murderer of Smith is a coward.

It seems obvious to us that, in this situation, the speaker can act as if Jones were a salient object. Automatically, the addressee looks for an object that the speaker takes to be salient and that satisfies¹⁰ the descriptive content. The addressee easily finds Jones and interprets the speaker's utterance as referring to Jones. In other words, the utterance receives referential interpretation.

⁷ By saliency we mean that a mental representation is «activated» in a person's consciousness. Therefore, if a speaker owns an activated mental representation, that representation is familiar to him (be familiarity formal or epistemologically defined). Because of the existence of non activated mental representations, familiarity does not imply saliency. The crucial point here is that the speaker must calculate the addressee's consciousness activation state. Were such a calculation to be based on mutual knowledge, we should face the so-called «mutual knowledge paradox» (see Clark and Marshall (1981)). However, a complete revision of this question lies beyond this paper.

⁸ Definite articles have descriptive content in some languages. So, Spanish and French, for instance, provide the object's gender indication. Latin, on the other hand, lacks these articles and, as a result, does not offer this type of guidelines for interpretation.

⁹ Donnellan (1966) defined this dichotomy. Below, we offer an example adapted from Donnellan's — nothing special goes in the adaptation.

¹⁰ A puzzling question lies on whether «the object» referred to necessarily has to satisfy the «literal» description or whether a success in the referential act suffices. The discussion centers on truth-value assignment for propositions as:

(i) The man drinking a Martini is tall.

when that man is drinking water. For the time being, we skip these questions because we are primarily interested in cognitive significance of linguistic expressions.

Suppose, by contrast, that a person finds Smith's body with a knife hanging on his shoulder. Nobody knows who the murderer is, but the speaker utters (4). In this case, we want to maintain, nothing alters the article's linguistic behaviour. So, as usual, the addressee searches for an object, but now he cannot find any salient object that satisfies the descriptive content. Nevertheless the crucial point here is that the inference pattern applies because the definite article is present in semantic representation. Therefore, although in this context there is no other reference specification but linguistic description, the addressee takes it that there is an object that satisfies the descriptive content. This is the so-called attributive reading.

The specificity of this reading lies in the fact that the addressee creates the reference using the available linguistic description. In a sense, the attributive reading is the result of an accommodation process.¹¹ Nothing prevents us from saying that the attributive reading triggers existential presupposition.¹²

Moreover, the referential/attributive distinction is parallel to the distinction between a strong and a weak understanding.¹³ In our view, the attributive reading arises from a failed search; the interpretation being, therefore, the pure procedure, the concept, the expression's character.¹⁴

¹¹ Karttunen (1974) noted that, provided with an ideally ordered discourse regarding shared information, speakers make «leaps and shortcuts». So, it is frequent to utter sentences such as (i) below instead of (ii) even though the existence of a Nicaraguan Prime Minister is not part of the current «conversational context»:

(i) The Prime Minister of Nicaragua is a woman.

(ii) There is a Prime Minister of Nicaragua and she is a woman.

All what is required to interpret (i) is to extend the context, to «accommodate» the missing information (Lewis (1979)). So, the speaker is allowed to act as if the shared information were wider than it actually is. Obviously, accommodation seems to be a too powerful mechanism.

¹² Of course, such a claim requires important moves in presuppositional theories (note that there is no semantic nor pragmatic oddity if Smith committed suicide). Indeed, as this paper advances we will progressively introduce hypotheses that alter presuppositional claims (see conclusions below).

¹³ Weak understanding of an expression is the bare comprehension of its linguistic meaning, whereas strong understanding requires the contextual identification of the referred object. See Recanati (1993) and similar intuitions in Bar-Hillel (1954).

¹⁴ In another sense, we can think of attributive readings as an accommodation process (see note 11). So, in our frame, we avoid the so-called «presupposition failure». Blatant presupposition failures, given the contemporary world, such as the following:

(i) The king of France is bald.

should be explained as contradictions between alleged presuppositions and encyclopedic knowledge.

If the general frame we are developing is close to the mark, we can state a precondition for attributive readings: the addressee is not able to find the salient object signalled by the descriptive content. So, in some sense, we can say that all definite descriptions — even under attributive reading — are referential.

We must discuss, at least briefly, the descriptive content we have represented semantically as X. We want to maintain that X is a representation of an object-as-perceived.¹⁵ As such, we think X represents a concept.¹⁶

Now, clearly the existence stated by the inference rule we have introduced represents an existence in a world-as-perceived. Therefore, no ontological claims follow from such an existential rule.

Up to now, we have argued that definite descriptions are referential expressions that refer to salient objects-as-perceived. As salient, the object referred to by definite descriptions are familiar to the speaker and, therefore, he presupposes the existence of the object referred to. Our next task lies in the extension of these assumptions to indexicals.

2. Indexicals.

We will characterise indexicality on two features. On the one hand, indexicals are highly context-dependent expressions, and, on the other, they have low descriptive content.¹⁷ We assume that both pronouns and demonstratives are indexical expressions:

(5) There is a man at the door. He is crying.

(6) He is Karpov.

The thesis we want to maintain can be stated as follows: the role of indexicals is the very same we established for definite descriptions, that is, indexicals indicate to the addressee that he must start a search for a salient antecedent, be it linguistic or physical.¹⁸ So, we will use the same semantic

¹⁵ Strictly speaking, we should indistinctly talk about object-as-perceived, object-as-remembered and object-as-described, and so, about world-as-perceived, world-as-remembered and world-as-described.

¹⁶ See Jackendoff (1983), (1987). Note, by the way, that if X were a representation of a «real» or «physical» object, provided the different sources of reference (see note 4) we could scarcely adopt a unified theory for definite descriptions.

¹⁷ Note the approximate nature of this first characterization due to vagueness of high/low concepts.

¹⁸ It is not easy to find encyclopedic antecedents for indexicals. Such an example could be:

(i) That wonderful time in London was extremely short.

To our mind, nothing special follows from possible asymmetry in antecedent's

marker for the semantic representation of indexicals, and, of course, we will maintain the inferential pattern adopted for such marker.

As we have just mentioned, the alleged antecedent must be a salient object, as in the case of definite descriptions, but now the addressee has less descriptive content available for the search than in the case of definite descriptions.¹⁹ This lack may be surmounted thanks to a very prominent salience accompanied, in some cases, by a demonstration.

Let us analyze, as an example, the first person personal pronoun «I». We assume that «I» indicates the addressee is looking for a singular person who could be responsible for the assertion:

(7) I am hungry.

We can find two possible readings again. On the one hand, if the addressee finds a salient object that satisfies the descriptive content, the addressee understands that object as the one the speaker is trying to refer to. This reading corresponds to the known referential reading or strong understanding.

On the other hand, the addressee will not always be able to find the proper salient object. In that case, as we have already seen, the addressee has to create an object. In other words, indexicals have attributive readings. We maintained in the previous section that a precondition for an attributive reading is that the addressee not be able to find the salient object. Obviously, this means that we should think of a quite strange context for (7) to read it attributively.²⁰ However, there are other examples where such a reading is mandatory:²¹

(8) Condemned prisoner: I am traditionally allowed to order whatever I like for my last meal.

An obvious problem arises when we ask why the speaker of (8) is not the salient object the addressee is looking for. Intuitively, the salient object (8) refers to is not the speaker as a particular person, but the role the speaker is playing. In fact, were the speaker the object referred to, a contradiction arises between a last dinner as a necessary unique event and the multiplicity introduced by the expression «traditionally».

We assume that in a first attempt at interpretation, the addressee takes the speaker as the reference of the personal pronoun «I» until the presence of the expression «last dinner» forces a reinterpretation. This is not, to our mind, a

sources for indexicals and descriptions.

¹⁹ Obvious exceptions are sentences as:

(i) This red car I bought last year runs well.

Note, by the way, that it is possible to use no term at all (Ariel (1988)):

(ii) Open with care.

²⁰ We can imagine a ghost uttering (7), or (7) being a sentence written on a piece of paper.

²¹ The example appears in Nunberg (1993).

strange or an ad hoc resource. On the contrary it is a widely extended phenomenon (think of «garden-path sentences»). Anyway, the salient object referred to is the speaker not as a particular person but as a player of a role.

If the picture sketched on indexicals is basically correct, then we maintain that indexicals provide the semantic marker «A» to the semantic representation of such expressions and the inferential rule we defined applies: $[X]R \rightarrow \text{EXIST}([X])$. Nothing prevents us from saying that indexicals are — even under attributive readings — referential terms.

3. Indefinite descriptions.

Indefinite descriptions have the form «a(n) X». Our thesis tries to reflect a close similarity between indefinite descriptions and the referential expressions we have already analyzed. So, we maintain that indefinite descriptions are also semantically represented by the semantic marker «R» that triggers the inferential rule we introduced in section 1. Following the method we used in the first section, we analyze the indefinite article separately from the descriptive content.

We keep the procedurality we are assuming throughout this work by maintaining that indefinite articles indicate to the addressee to look for an antecedent:

(9) There is a woman in the bank.

It is crucial to note that the antecedent the addressee is looking for is not a salient one — or, more precisely, the speaker acts as if the antecedent were not a salient object. So, the object lacks salience in the context up to the moment of its utterance. In fact, utterance of an expression is a usual mode of providing salience to the object referred to by an expression.²²

Accordingly, since a linguistic utterance makes the uttered elements salient, it is not possible to take linguistic antecedents for indefinite descriptions:

(10) John has a cat and feeds a cat.

The cat John has and the cat John feeds is not the same cat — at least under normal intonation.

Now, the two readings — referential and attributive — we have encountered for definite descriptions and indexicals apply also for indefinite descriptions. Following a similar example by Wilson (1978), suppose Mary is trying to seduce Peter and since the speaker knows Mary is a chess player, utters the following sentence:

(11) A chess player is trying to seduce Peter.

²² By recognizing the simple fact that a linguistic utterance provides salience to an object and assuming the distinction in saliency we are drawing between indefinites and other referential expressions, we supply Heim's «novelty-familiarity condition» (Heim (1982)), that states that an indefinite NP cannot be an element of the «domain of files».

According to our assumptions, the addressee begins to look for a non salient object that satisfies the description «be a chess player». If the addressee finds such an object²³ he will construct what is traditionally known as a referential reading for (11). In sum, in this situation, the addressee understands the indefinite description as referring to Mary.

Alternatively, if the addressee is not able to find an appropriate object, since the semantic marker has triggered the inferential rule, the addressee creates a mental representation for a new object on the basis of the descriptive content available to him. In other words, the addressee ends with an attributive reading for (10).

Since the referential/attribution distinction depends exclusively on the success of the search the addressee performs on mandatory grounds, we can maintain that indefinite descriptions are referential expressions.

4. Conclusions.

We have argued for a unified theory of reference for definite descriptions, indexicals and indefinite descriptions based on a common procedural task these expressions share. However, indexicals and definite descriptions refer to salient objects while indefinite descriptions refer to non salient objects. The descriptive content attached to each expression (varying from the low content of pronouns to the higher content of descriptions) provides information that makes it possible for the addressee to find an object the speaker has referred to.²⁴ Ostension and other non linguistic knowledge helps the addressee's search.

Now, the traditional referential/attribution distinction relies on the success of the search process common to indexicals and descriptions. This means that the ambiguity hypothesis²⁵ should be ruled out. The referential/attribution distinction is a kind of strong/weak understanding distinction and we find inferential process as its theoretical ground.

²³ Note that the addressee can succeed by finding a person who behaves as a person trying to seduce someone usually behaves — and assuming that that person is a chess player.

²⁴ We have skipped the question of whether the reference assignment process is guided by psychological principles. For the time being, we leave this question open.

²⁵ Ambiguity theory followers adopt different «linguistic meanings» for each reading (it is not clear whether Donnellan himself adopted such a view). Neither implicature theory (where distinction lies on the pragmatic level of «what is communicated» — Grice (1969)) nor contextual theory (where the difference comes from the contextual construction of a proposition expressed — Recanati (1989)) are directly supported by our frame.

From the frame we have presented, we conclude that salience, and not mutual knowledge or givenness, is the crucial aspect the speaker considers when he performs a referential act.

We think it is not fortuitous that the difference in salience between definite descriptions and indexicals on the one hand, and indefinite descriptions on the other coincides with the difference presupposition imposes on such expressions, since while indexicals and definite descriptions presuppose the reference existence, indefinite descriptions do not presuppose such existence.

From our thesis on referentiality, and, since we claimed at the beginning that our analysis would not differentiate the roles these expressions play in sentences, it follows that all indexical expressions and all definite descriptions trigger existential presuppositions. However, all theories on presupposition projection²⁶ maintain inheritance mechanisms for presuppositions such that, for instance, it is claimed that (the speaker of) our example (1) does not presuppose the existence of the car. So, non cumulative strategies seem to be inconsistent with our theory. However, since all presuppositional theories I am aware of require projection mechanisms, we have to define a new presuppositional theory. But these questions require further investigation.²⁷

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²⁶ The projection problem for presuppositions is concerned with explaining the presuppositions attached to complex sentences (see Soames (1982), Karttunen (1973), van der Sandt (1992), etc.).

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TEXTUAL IDENTITY

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There are several volumes in the University library with the title *Don Quixote*, whose author is identified as Cervantes. These volumes have important differences among them. They occupy different spatio-temporal locations, the typescript they use is different, the number of words per page they have varies, the paper on which the words are printed has different consistency, and so on. In spite of these differences, however, most of us regard these volumes as copies of the same text, and, indeed, most users of the library have no trouble in identifying them as such.¹ So we may ask: What is it that makes them the same. And more generally, we may pose the question: What makes texts the same. These questions raise the issue of what constitutes textual identity.

Apart from the importance and interest that the question of textual identity may have for other issues involved in textuality, it is itself puzzling because the basic approaches frequently adopted to answer it pose difficulties. Five of these views suggest themselves.²

— One identifies a text with the entities that are used to convey meaning considered separately from that or any other meaning, namely, the entities which constitute a text, or ECTs for short. In a text composed of marks made on a piece of paper, it is the conditions of identity of the marks, apart from the meaning they are supposed to convey, that are considered to be the conditions of the identity of

¹ Not everyone agrees. Some recent textual critics hold that texts are not the same. For example, Joseph Grigely argues that no text is iterable or repeatable, for each iteration or repetition is a new text owing to the new circumstances that surround the iteration. See «The Textual Event,» in Philip Cohen, ed., *Devils and Angels: Textual Editing and Literary Theory* (Charlottesville and London: University Press of Virginia, 1991), pp. 171-86. I do not intend to show that Grigely is wrong, but rather that there is a sense in which we can speak of texts as being the same and as being different.

² There are others as well, of course. For example, there is a view that considers authorial intention as determinant of textual identity, but this view presupposes the notion of an intended text which I reject in Chapter 3 of *A Theory of Textuality* (Albany, NY: SUNY Press, 1995). The notion of an intended text is frequently used in the literature. See G. Thomas Tanselle, *A Rationale of Textual Criticism* (Philadelphia, PA: University of Pennsylvania Press, 1989), pp. 70 ff.

the text. This view encounters difficulties, however. Were this view to be accepted, for example, we would lack a way of distinguishing texts from entities which are not texts. Moreover, this view would allow a text to have contradictory meanings, since the same entities can be used to convey such meanings.³

— The second view identifies a text with the meaning considered independently of the entities (ECTs) used to convey it. In this way, the conditions of identity of a text apply to the meaning only and not to the entities used to convey such meaning. It is not the conditions of identity of the marks made on the paper that determine the identity of a written text, for example, but rather the conditions which determine the identity of what it signifies.⁴ The difficulty with this position is that different texts, including texts in different languages that have the same meaning but different ECTs, would have to be considered the same text if this view were correct.

— The third possible view holds that texts are to be identified with the entities that are used to convey meaning (ECTs) considered together with meaning, when meaning is taken in general and not identified with a particular meaning. In this sense, the conditions of identity include meaning but not any meaning in particular. The conditions of identity of a written text represented by marks on a paper include the conditions of identity of the marks plus a condition that the marks have meaning, but not that the marks have any meaning in particular.⁵ The difficulty with this view is similar to the difficulty mentioned in connection with the first view presented, for in accordance with it the same text could have any meaning whatever, and that does not seem acceptable.

³ This is one way to understand Jacques Derrida's view (for a second way, refer to the third view discussed below). The possibility of different and even contradictory meanings does not bother Derrida: *la différance* is for him of the essence of language. «Signature Event Context,» *Glyph* 1 (1977): 183-4 and 192-3. J. Meiland has also accused E.D. Hirsch, Jr., of holding this view. See «Interpretation as Cognitive Discipline,» *Philosophy and Literature* 2 (1978): 32-3. Shillingsburg also appears to subscribe to a version of this view in *Scholarly Editing in the Computer Age: Theory and Practice* (Athens, GA: University of Georgia Press, 1986), p. 49. See also Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols* (London: Oxford University Press, 1968), pp. 116 and 207.

⁴ This position has been attributed to Hans-Georg Gadamer by Brice Wachterhauser in «Interpreting Texts: Objectivity or Participation?» *Man and World* 19 (1986): 442 and 453-5, where he criticizes it. It appears to be defended by Stanley Fish, in *Is There a Text in This Class. The Authority of Interpretive Communities* (Cambridge, MA: Harvard University Press, 1980), p. vii.

⁵ This is a less radical version of the first view described above. It may also be a way of understanding Derrida's position. See the reference in n. 2, and Grigely, «The Textual Event,» p. 170.

— The fourth view identifies texts with certain acts.⁶ This view is derivative of Austin's well-known conception of language in terms of speech acts.⁷ A text, then, would be a series of acts someone performs. Since Austin distinguished among three different kinds of pertinent speech acts, the question arises as to which of these constitutes a text. The locutionary act, for Austin, is the act of uttering that takes place when someone says, for example, 'Pick up the ball, please.' It is the act performed when one utters the sounds which constitute an oral text. (This could be applied as well to writing, of course.) The perlocutionary act is the act of getting whoever is asked to pick up the ball to do so. It is the act performed when the locutionary act produces the desired effect. And the illocutionary act in this case is the act of asking someone to pick up the ball. It is the act performed when one says something, that is, when one performs a locutionary act. Within this framework one could identify the text 'Pick up the ball, please' as a set of locutionary, perlocutionary, or illocutionary acts or as a set composed of all or some of these acts. In any case, the important point is that a text becomes a set of acts performed by a speaker or writer. One of the problems with this position is that it leaves no place for meaning to play a role in textual identity. Moreover, it confuses the use (i.e., an act) of a text with the text, just as it confuses the act of uttering with the utterance. Yet it is not the act of uttering, but the utterance — just as it is not the act of writing, but the writing, with which one communicates meaning. So the text cannot be the act of uttering or writing, even if one were to add to these perlocutionary and illocutionary acts. The text must be the utterance or the writing.⁸

Finally, there is the view I shall defend, according to which the conditions of identity of a text include not only the conditions of identity of the entities (ECTs) used to convey its meaning, but also the conditions of identity of the particular meaning they are used to convey. But this position is not entirely without difficulty. In the first place, this view seems to preclude the possibility that a text may have different meanings depending on its context and how it is used. And, in the second place, it also seems to preclude the possibility that different audiences understand the same text differently.

⁶ See, for example, Jerome J. McGann, *The Textual Condition* (Princeton, NJ: Princeton University Press, 1991), p. 4.

⁷ J.L. Austin, *How To Do Things with Words*, ed. J.O. Urmson (Cambridge, MA: Harvard University Press, 1962), pp. 98 ff.

⁸ James McLaverty has defended the view of a text as an utterance, but he understands an utterance as the *product* of certain acts such as putting forth, issuing, expressing, publishing, etc. And he also brings in authorial intention, but not intention of meaning (as do Hirsch and others), but of utterance. A text is the intended product of a certain authorial act such as publishing. See «Issues of Identity and Utterance: An Intentionalist Response to 'Textual Instability,'» in Cohen, ed., *Devils and Angels*, particularly pp. 140 and 144. Mikhail M. Bakhtin also describes a text as an utterance in *Speech Genres and Other Late Essays*, trans. Vern W. McGee, ed. Caryl Emerson and Michael Holquist (Austin, TX: University of Texas Press, 1986), p. 105.

In spite of the importance of the issues involved in and related to the identity of texts, and the considerable attention that texts are receiving in recent literature, the question of textual identity is seldom explicitly raised by philosophers.⁹ Textual critics by contrast are much concerned with this issue. But their concern relates more to the question of the identity conditions of particular texts, rather than of texts in general.¹⁰

Before I begin the discussion proper, I would like to make an important qualification. In this paper I intend to discuss the question of identity from an ontological rather than an epistemological perspective. My issue is with the identity of texts, not with the discernment of that identity. I am aware that the epistemic question of identity is as important as the ontological one and that some regard it as necessarily propaedeutic to the latter. Nevertheless, I shall omit consideration of it in the present context, leaving its determination for another time.

1. Sameness

The notion of 'sameness' is one of the most versatile in our ordinary conceptual framework. We apply it to all sorts of things, such as colors, persons, times, spaces, relations, essences, experiences, events, concepts, and so on. We speak of persons and/or their lives as being the same or of the same type: we say that a daughter is the same as her father with respect to this or that characteristic; we refer to the use of the same concepts in discourse; we agree that sometimes we have the same experiences; and we talk about being in places at the same time, being essentially the same, and witnessing the same events. Indeed, an endless number of examples could be given to illustrate the usefulness and pervasiveness of this notion in ordinary discourse, but for our purposes the examples provided should be sufficient.

The notion of sameness has obvious relationships to the notion of similarity. Indeed, it is not unusual to find that authors use the terms 'same' and 'similar' interchangeably. Yet there are important distinctions between the two notions. Perhaps the key distinction is that similarity occurs always in the context of difference. That is, in order for two things to be similar, they must also be different, although the difference in question must refer to aspects other than those on which the similarity is based. Thus one may speak of two persons as being similar provided that they differ in some way. If they do not differ in any way, then they are regarded as the same. The conditions of similarity may be expressed in the following way:

X is similar to Y if and only if X and Y (1) have at least one feature F that is the same in both and (2) also have at least one feature F₁ that is not the same in both.

⁹ For an exception, see Gregory Currie, «Work and Text,» *Mind* 100 (1991): 325-39.

¹⁰ Several of the articles in Cohen's *Devils and Angels* take up this issue. Particularly relevant is McLaverty's «Issues of Identity and Utterance.»

Sameness, on the other hand, does not require, indeed it precludes, difference. That does not mean that two things could not be regarded as the same with respect to some feature or other and different with respect to something else. A daughter, for example, may be the same as her father with respect to stubbornness while being different, as is obvious, with respect to gender. The point is, however, that in order for the daughter and father to be the same with respect to stubbornness, their stubbornnesses must not involve any difference whatsoever. If there were some difference, say that their stubbornnesses were not exactly the same in every respect, one would speak instead of a 'similarity of stubbornness.' We might express this understanding of sameness of things and sameness of their features in the following two propositions:

X is the same as Y if and only if there is nothing that pertains to X that does not pertain to Y and vice versa.

X is the same as Y with respect to F if and only if there is nothing that pertains to F of X that does not pertain to F of Y, and vice versa.

Part of the reason for the frequent blurring of the distinction between sameness and similarity is that the term that is often used as the opposite of both is 'difference,' even though there exists a term which is used more properly to express the opposite of similarity, namely, 'dissimilarity.' Similar/different and same/different are generally regarded as pairs of opposites. This usage has not always been prevalent, however. In the Middle Ages, for example, there was a concerted effort to keep the notions of similarity and sameness separate, and this was supported by the use of different opposite terms for them. 'Difference' (*differentia*) was used, at least in technical philosophical discourse, as the opposite of 'similarity' (*similaritas*), while 'diversity' (*diversitas*) was used as the opposite of 'sameness' (*identitas*).

Apart from 'similarity,' there are also other terms that are sometimes exchanged with 'sameness' in both ordinary and philosophical discourse. Perhaps the most commonly used ones are 'identity' and 'continuity.' There is very little difference in ordinary discourse between the notions of identity and sameness. 'Identity' is a learned term derived from the late Latin *identitas* (in turn a derivative of *idem*, which means «the same»), while 'sameness' comes from an Old Norse common root. In technical discourse there can be differences in the usage of these terms, but since those are idiosyncratic to particular authors, they are irrelevant to our present purposes. With respect to continuity, things are otherwise, however. The notion of continuity carries the implication of noninterruption either spatially or temporally, while the notion of sameness, as we shall see, is much broader. Continuity turns out to be interchangeable with only one type of sameness.

Not all sameness about which we speak is of the same sort. There are at least three fundamental but distinct types of sameness, which I shall respectively call achronic, synchronic, and diachronic. Achronic sameness is sameness irrespective of time — it may be understood as follows:

X is achronically the same as Y if and only if X is the same as Y.

By contrast, synchronic sameness and diachronic sameness have to do with time. The first may be taken thus:

X is synchronically the same as Y if and only if X is the same as Y at time t.

Diachronic sameness may be understood in the following way:

X is diachronically the same as Y if and only if X is the same as Y at times t_n and t_{n+1} .

The distinctions between achronic, synchronic, and diachronic sameness, then, have to do with time. In the first case, sameness has no reference to time at all; in the second case, sameness applies to a specified particular time; and in the third, it applies to two (or more) different times. These three sorts of sameness generate three different problems for those who wish to account for them. In the case of achronic sameness what is sought is to determine the necessary and sufficient conditions that make a thing to be the same irrespective of time. This is another way of asking for what makes a thing to be what it is and the answer involves identifying its necessary and sufficient conditions. For this reason, I like to call this issue *the problem of identity*. Because of the atemporal character of the inquiry involved in solving this problem, such an inquiry may concern atemporal entities, such as universals, in addition to temporal ones. Indeed, this sort of investigation can be applied to anything which may become the subject of philosophical discourse. We may ask about the necessary and sufficient conditions not only of an individual person, but also of universals, concepts, propositions, events, and so on.

The case of synchronic sameness is different from that of achronic sameness insofar as what is sought for in this case is an account of the necessary and sufficient conditions that make a thing to be the entity it is at a particular time. This difference is significant because it restricts the relevant types of entities to temporal ones. It would make no sense to ask for an account of the sameness of atemporal entities at a particular time. Thus, for example, questions concerning synchronic sameness could not apply to universals, mathematical entities, or even to God if God is conceived as being outside of time, as Augustine thought. Apart from this significant difference, achronic and synchronic sameness are similar because their analyses abstract from the passage of time; this abstraction is what distinguishes them both from diachronic sameness.

In diachronic sameness what is at stake is the determination of the necessary and sufficient conditions that make a thing to be the same at two (or more) different times. Indeed, it is usual for philosophers to speak of this as the problem of accounting for «identity through time» or that of «temporal continuity».¹¹ From this it should be clear that diachronic sameness may apply only to those things to which temporal passage applies. It would make no sense to talk about the diachronic sameness of instantaneous entities, that is, of entities that exist only at an instance of time, or of atemporal entities such as universals, mathematical entities, and God.

¹¹ Cf. Roderick M. Chisholm, «Identity through Time,» in *On Metaphysics* (Minneapolis: University of Minnesota Press, 1989), pp. 25 ff.

2. Conditions of the Achronic Sameness of Texts

In the previous section we have seen that there are three different kinds of sameness. For our present purposes, however, we will be concerned only with achronic sameness. The problem of achronic sameness has to do with the identification of the necessary and sufficient conditions that make entities the same apart from any consideration of time. The question involved in the case of texts is the identification of the necessary and sufficient conditions that make a text the text that it is. Note, however, that we are not dealing here with token texts; we are not concerned with the identity of the various copies of, say, the text of Cervantes's *Don Quixote* or the American Declaration of Independence. That is, we are not concerned with determining the conditions that make a copy of a text the individual copy it is. Rather, our concern is with whatever makes different individual copies be the same text. The question of the individual identity of texts is both interesting and important, but it is not the one that shall be discussed here.

In order to bring out the problem of the achronic sameness of texts more clearly, let us consider the following examples of texts:¹²

1. $2 + 2 = 4$
2. $2 + 2 = 4$
3. Two and two make four.
4. Two plus two add up to four.
5. Dos y dos son cuatro.
6. Dos ma's dos son cuatro.
7. TWO AND TWO MAKE FOUR.
8. Four two and two make.
9. $3 + 3 = 6$

Our ordinary intuitions would seem to dictate that we consider (1) and (2) as the same text, and likewise with (3) and (7). Indeed, when we speak about the text of Thomas Aquinas' *Summa theologiae* we make no distinction between the manuscript copies of it written in different medieval hands and those printed on a page. Nor is the color of the ink used relevant or of the paper or parchment, the size of the letters, or even whether those letters are all capital or not. We are also quite certain on the basis of our ordinary intuitions that (9) is not the same as any of the other members in the group, and the reason given would be most likely that it means something different than the others. Moreover, most people, I believe, would not regard (5) and (6) as the same texts as (1), (2), (3), (4), (7), (8) or (9). They would argue that (5) is a translation of (3) and (6) of (4) into a

¹² It is not necessary for us to dwell on the nature of texts in order to discuss the issue of their achronic sameness. Nor is it significant at this point to distinguish between relatively simple and more complex texts. For our purposes it will suffice to give some examples of simple texts. For a more in depth discussion of the nature of texts, see my *Theory of Textuality*, Ch. 4.

different language. The matter of whether (3) and (4) or (5) and (6) are different texts or not would probably elicit some disagreement. Some would argue that since they mean the same thing, are written in the same language and contain the same key words ('two' and 'four' in the English text; 'dos' and 'cuatro' in the Spanish text) or functionally synonymous ones ('and' and 'plus,' 'y' and 'ma's,' etc.) they are the same text. But others would argue that they cannot be regarded as the same even under those conditions, because they are composed of different signs even if those signs are synonymous. Besides, they might point out, there are different physical characteristics to contend with as well.

From all this it should be clear that the matter of the identity of texts is by no means easy to establish. A list of the necessary and sufficient conditions for the achronic sameness of texts does not seem to be readily available. The most likely candidates are the sameness of meaning, author, audience, context, arrangement of signs and signs themselves. Let us look at these possibilities in the order given.

A. Sameness of Meaning

The condition that appears at first as most obvious in connection with the sameness of texts is sameness of meaning. I take sameness of meaning to indicate at least that two texts have the same meaning if their truth conditions are the same. Thus, 'Dos y dos son cuatro' and 'Two and two make four' have the same meaning because the conditions under which one would be true are the same conditions under which the other would be true, and the conditions under which one would be false are also the same conditions under which the other would be false. It is, of course, common to find texts which have meanings to which truth value cannot apply, e.g., commands. And there may be other exceptions to this conception of meaning sameness. But the minimal understanding of meaning sameness provided here may serve to give a rough idea of what is involved. The presentation of a satisfactory view of meaning identity would require more space than I can provide for it in a discussion of textual identity, thus I cannot address the many problems it poses at this point.

One could easily see why it might be argued that sameness of meaning is both a necessary and sufficient condition of the achronic sameness of texts, that is, that texts that mean the same are the same text. Indeed, this condition allows us to distinguish (9) from (1)-(8) above, for its meaning is different from that of the other texts on the list. This condition is particularly attractive, of course, to those who identify a text with its meaning.

There are various ways in which this view may be assailed, however. Some of these ways are ineffective, but there is at least one I consider effective against the view that sameness of meaning is both a necessary and sufficient condition of textual sameness.

Although sameness of meaning does appear to be a necessary condition of textual sameness in the sense that texts that do not mean the same could not possibly be the same texts, it would be difficult to argue that it is also a sufficient condition. That it is a necessary condition can be seen clearly in the reasons why (9), for example, is not the same text as any of the texts (1)-(8) it does not share

the same meaning. On the other hand, to have the same meaning does not ensure textual sameness. If that were the case, texts (1)-(8) would all be the same text, something which very few would be prepared to accept, and something I certainly do not wish to defend. To do so would imply that two texts composed by different authors in different languages could be regarded as the same text provided their meanings were the same. It would also suggest that a painting and a written text would have to be regarded as the same text if their meanings were the same. But none of this seems acceptable. Therefore, we must conclude that sameness of meaning is a necessary condition of textual sameness under the specified strictures, but it is not a sufficient condition of it.¹³

B. Sameness of Author

Apart from sameness of meaning, there are still other alternatives to account for textual sameness that may be explored, however. Some of these do not seem very promising. Take, for example, the author.¹⁴ It is possible to argue that a text is the same if the author is the same, but that would not make much sense. Such a view would imply that all the texts an author writes are one and the same regardless of the differences that may exist among them. One could, of course, argue that by «the same text» in this case is meant «part of the same text.» And indeed this is a sense that is sometimes used in discourse. We sometimes speak of everything an author has produced as a single work. But, obviously, that is

¹³ W.V.O. Quine's view that no two sentences from two different languages can have the same meaning does not undermine the view that a necessary condition of textual identity is meaning identity, although it does preclude the possibility that two sentences from two different languages could be textually the same. «Indeterminacy of Translation Again,» *Journal of Philosophy* 84 (1987): 9-10.

¹⁴ The notion of author has become the subject of considerable discussion in the recent literature. For present purposes, however, I am adopting the conception of an author as the producer of a text on pragmatic grounds, for the sake of simplicity and brevity, since my argument is not affected by the issues that have become controversial. For the pertinent literature on this subject, see: Michel Foucault, «What Is an Author?,» in *Language, Counter-Memory, Practice: Selected Essays and Interviews*, Donald F. Bouchard, ed., Donald F. Bouchard and Sherry Simon, trans. (Ithaca, NY: Cornell University Press, 1977), pp. 113-38; Robert Barthes, «The Death of an Author,» in *Image, Music, Text*, trans. Stephen Heath (New York: Hill and Wang, 1977), pp. 142-8; William E. Cain, «Authors and Authority in Interpretation,» *Georgia Review* 34 (1980), 617-34; Alexander Nehamas, «Writer, Text, Work, Author,» in Anthony J. Cascardi, ed., *Literature and the Question of Philosophy* (Baltimore: Johns Hopkins Press, 1987), pp. 265-91; Michael L. Morgan, «Authorship and the History of Philosophy,» *Review of Metaphysics* 42(1988), 327-55; and my own «Texts and Their Interpretation,» *Review of Metaphysics* 43(1990), 520-27; «Can There Be Texts Without Historical Authors?» *American Philosophical Quarterly* 31, 3 (1994): 245-53; and «Author and Repression,» *Contemporary Philosophy* 16, 4 (1995): 23-9.

something different from saying that every text an author has produced is the same text in the sense that it is identical with every other text produced by him. Thus, sameness of author could not be a sufficient condition of sameness of text, and the main reason is that the condition of sameness of meaning would be missing. But what if that condition were added. Would sameness of meaning and sameness of author combined ensure textual identity?

Unfortunately this combination does not seem to do the trick either. For the same author may create two different texts that have the same meaning, say a poem and an essay.¹⁵ Examples that illustrate this point abound in everyday experience, where we use different sentences to mean the same thing. Indeed, texts (1), (3), (4), (5), and (8) could have the same author and yet in spite of the sameness of meaning and author they would share could not be considered the same text.

So much then for the sufficiency of authors for textual identity. But what of necessity. Is sameness of author a necessary condition of the sameness of texts. Could there be two instances of the same text produced by two different authors. This is one of the puzzling questions that Borges explores in his «Pierre Menard, Author of the *Quixote*.» His answer there is negative, although Borges seldom gives an unambiguous answer. He assumes that the authors in question are separated by important temporal and cultural differences which alter the meaning of the text. So that, although the signs of which the texts are composed are the same, the meanings of those signs are different because of the cultural distance between them.¹⁶

But what about contemporary authors. Indeed, what about authors who are alike inasmuch as that is possible, say identical twins raised in the same environment and so on. Couldn't we say that in that case the authors of the text are different but the text is the same. Indeed, sameness of texts does not seem to require sameness of author if by «sameness of author» is meant the same individual person.

In short, sameness of author is neither a necessary nor a sufficient condition of the sameness of texts. But when we say «sameness» of author, we are speaking of numerical sameness. That is, it is altogether possible for two similar, but numerically different authors to produce the same text. This is obvious from the case of twins. But does it make sense to say that persons who are not only numerically different, but also different in other respects, could produce two instances of the same text?

In one way it is obvious that this can happen, for two persons may differ in respects that would have no relevance to their composing a text. For example,

¹⁵ For example, St. John of the Cross' poem *Spiritual Canticle* and the essay with the same title that is supposed to explain the poem presumably have the same meaning even though one is short and poetic in form and the other is long and prosaic.

¹⁶ Jorge Luis Borges, «Pierre Menard, Author of the *Quixote*,» in *Labyrinths*, trans. and ed., Donald A. Yates and James E. Irby (New York: New York Directions, 1962), pp. 36-44.

they may differ in the fact that one of them has a tiny birth mark on his back and the other does not. But would it make sense to say that two persons could be authors of the same text even though they had substantial differences in outlook, education, and so on?

Logically speaking, I do not see how this question can be answered negatively. Indeed, when it comes to short, simple texts, it does not seem difficult to think of counterexamples. There is no reason why two authors could not have produced two instances of the text «Please, do not smoke» independently of each other. But it is difficult to accept the real possibility of this happening with long and complicated texts, such as the text of Cervantes's *Don Quixote*.

C. Sameness of Audience

Another not very promising factor that may be used to account for textual identity is the contemporaneous audience. What I mean by the contemporaneous audience is the audience the author intended to reach with the text during his or her own time.¹⁷ The question is, can sameness of audience be a necessary and/or sufficient condition of the sameness of texts. As far as a sufficient condition is concerned, it is clear that it cannot, for the same audience can be the audience of different texts, that is, it can be meant to be the audience, by different or the same authors, of different texts.

On the other hand, when it comes to being a necessary condition, the situation is different. The difference comes about because the particular audience the author has in mind for a text influences in important ways what the author produces as a text. All texts are enthymematic; they contain *lacunae* that are meant to be filled by the audience. The meaning the author intends to convey through the text to an audience is incomplete unless what the audience is meant to supply is taken into account. It is not necessary for the audience to be the individual audience the author had in mind; the audience that is pertinent is the type of audience the author had in mind, just as it is not the individual author that is pertinent for the achronic sameness of texts but rather the type of author. It is the type of audience that can supply the needed elements for the text. This means that, although sameness of audience is not a sufficient condition of textual sameness, it is indeed a necessary condition in cases where the text contains *lacunae* to be filled by the audience.

Now, someone may wish to argue that if a particular type of audience is a necessary condition of the identity of a text, then the author (or type of author) should also be one. Indeed, it is the author who leaves out, intentionally or unintentionally, the parts of the text missing in the *lacunae* that the audience must fill. Moreover, the author's subjectivity has much to do with a text and its meaning. So how can the author be left out if the audience is thought to be necessary. Either both are left out or both are put in.

¹⁷ For an analysis of the various types of audiences of a text, see my «Texts and Their Interpretation,» pp. 527-33, and «Can There Be Texts Without Audiences. The Identity and Function of Audiences,» *Review of Metaphysics* 47 (1994): 711-34.

I do not want to argue that the author is not closely related to the text or not necessary for it. Indeed, the author is not only responsible for the selection and arrangement of signs that compose a text but also for the overall meaning.¹⁸ Moreover, the author is also responsible for the *lacunae* that the audience has to fill, as already noted. Nonetheless, there is an important difference between author and audience, namely, that in composing a text the author, consciously or unconsciously, takes into account the audience and what it is meant to supply. Signs are selected, arrangements are made, and materials are included or excluded with the audience in mind. Thus the audience intended by the author is a necessary part of the puzzle that reveals the meaning of a text in this special sense.

D. Sameness of Context

What applies to the author and the audience also applies to context. Context is always important for the meaning of texts. For what appears to be the same text may have very different meanings depending on context and thus may turn out to be a different text. The threat, «Do not touch that or I will kill you» means quite different things when it is addressed by a mother to a child reaching for a fragile object than when it is said by a policeman to a burglar reaching for a gun. But sameness of context does not insure textual sameness. It is obvious from everyday experience that different texts can be or are uttered under the same (in all pertinent respects) conditions.

Moreover, one may want to argue that, unlike the case of the audience and the author, sameness of context is not even a necessary condition of textual sameness, for contexts may play no role in determining the meaning of some texts. Take (1) above. It would appear that the meaning of this text cannot be altered by surrounding circumstances provided, of course, that the signs of which it is composed and the arrangements in which they are organized have the determinate meaning we associate with them. The example that has been given, however, is an unusual one, for the texts we normally use in communication are not mathematical. Most frequently we communicate with texts that take for granted the context as a determinant of their meaning. A more sensible view, then, would be to argue that sameness of context is not pertinent for all texts and as such it is not a necessary condition of their sameness, but that it is certainly necessary in the case of texts where it is pertinent for the determination of their meaning. Note again that, as in the case of the author and the audience, the sameness of context that is pertinent is the sameness of type of context, not of

¹⁸ I do not mean to say by this as E. D. Hirsch seems to do, that the meaning of a text is to be identified with the author's intention. The author of a text can be responsible for its meaning without having to have an intentional meaning in mind which precedes the production of a text. For Hirsch's view see, for example, *The Aims of Interpretation* (Chicago and London: The University of Chicago Press, 1976), p. 8, and *Validity and Interpretation* (New Haven: Yale University Press, 1967), pp. 26, 31, 48-9, and passim. For a discussion of Hirsch's views, see Georgia Warnke, *Gadamer: Hermeneutics, Tradition and Reason* (Stanford, CA: Stanford University Press, 1987), pp. 43-8.

individual context. In short, then, we may conclude that sameness of context is not a sufficient condition of textual identity, but that it is a necessary condition whenever the meaning of the text depends on it.

E. Sameness of Sign Arrangement

Another candidate for necessary and sufficient condition of the achronic sameness of texts is the arrangement of the signs that compose a text. But is sameness of arrangement a sufficient condition of textual sameness. Obviously not. Synta^o is not enough to make two texts the same. This is quite clear from texts (1) and (9) above. The same syntactical structure may be common to different texts and, thus, cannot insure textual sameness. But is it a necessary condition. The question concerns, for example, texts (3) and (8) above. Can texts that follow a different arrangement be considered the same texts. If we are going to follow our ordinary intuition on this matter, I would answer negatively; in other words, arrangement must be the same. Yet the matter is not that simple.

In short texts like (1)-(9) above, it appears that any change in order results in a different text. In some cases the reason is evident: the meaning of the text is destroyed or modified. Consider:

$$1. 2 + 2 = 4$$

and let us exchange the '4' for the first '2' that appears in the text. The result is:

$$10. 4 + 2 = 2$$

whose truth value is different from that of (1). Now consider:

3. Two and two make four.

and let us scramble its words thus:

11. Make and two four two.

Obviously the result is jibberish. However, there are changes of order that do not change the meaning, even though we do seem to regard them as implying a change of text. Consider:

8. Four two and two make.

On the other hand, in very extensive texts, say Cervantes's *Don Quixote*, some changes of order would not generally be regarded as sufficient to warrant a change of identity. The reason for this seems to be that the relevance and importance of a change in order has to be seen in a total context. A change that results in a change of meaning clearly will have to be regarded as implying a change in the identity of the text at least in cases where the change of meaning

is significant. If the change of meaning makes little difference for the overall meaning of a text, then the text can be regarded as the same. But if there is no change of meaning, changes can still be regarded as sufficient to change the identity of the text in cases where those changes alter the nature of the text in some sense. The change of (3) to (8) is a good example, for that change implies a change in the function of the text. Whereas (3) is primarily scientific, (8) appears to be literary. A change that implies a change of function, then, implies a change in identity. From this we can conclude that sameness of arrangement is a necessary condition of textual sameness except when the changes in question are such that neither the substantial meaning of the text nor its function are altered by it.

F. Sameness of Signs

Finally we come to signs, the components of texts. As before, the question we have to answer is whether sameness of signs is a necessary and/or sufficient condition of the sameness of texts. The first problem that we encounter with this question has to do with the meaning of ‘sameness of signs,’ for it is by no means clear what conditions apply to it. Interestingly enough, the search for those conditions is surprisingly similar to the search for the conditions of the sameness of texts.

The main differences between signs and texts are, first, that texts are necessarily composed of signs, while signs are not necessarily composed of other signs, and, second, that the meaning of signs is relatively simple if compared with the meaning of texts. Thus, for example, ‘I’ is a sign meaning “I» but is not a text, while ‘No smoking’ is both a sign and a text. Signs composed of other signs do not differ essentially from texts except in terms of degree.

The fact that some signs may not be composed of signs does not mean that they are necessarily simple. Indeed, no sign is simple, strictly speaking. Even a dot has features and therefore presents some composition and complexity. That means that signs, like texts, involve an arrangement, as well as an author, an audience, and a meaning. The relative semantic simplicity of signs makes irrelevant the consideration of author or audience as conditions of sameness, however, for two different authors can very well use the same thing or type of thing as a sign of some meaning. The audience is generally irrelevant also because simplicity diminishes the role of the audience. On the other hand, context is very important. It is one thing for an officer next to a cannon to yell «Fire!» and another for a joker to yell «Fire!» in a crowded theater.

Having said that, let me give a few examples of signs to see if we can determine on what basis they may be regarded as the same.

- a. bear (the noun)
- b. bear (the noun)
- c. BEAR (the noun)
- d. bear (the verb)
- e. oso

f. bare

g. rbea

On the basis of ordinary custom I would say that (a)-(c) are the same sign, (d), (e) and (f) are each different from each other and from (a)-(c), and (g) is not a sign at all, but simply a set of letters. (a) and (b) are different instances of the same sign and, therefore, are the same as far as the type to which they belong. (c) has the same meaning as (a) and (b) but has a different physical appearance, so we may ask whether it belongs to the same type as (a) and (b). (d) has the same appearance of (a) and (b) but has a different meaning and grammatical function. (e) is the Spanish translation of (a), (b) and (c). (f) is clearly a different sign altogether, even though when pronounced it sounds the same as (a)-(d). The difference in pronunciation is irrelevant, however, since sounds must be regarded as different signs from written signs although they may be used to convey the same meaning. The important thing is that (f) has the same components as (a) and (b) but the arrangement is different, and it has a different meaning. Finally, (g) again has the same components as (a)-(d) and (f) but it has a different arrangement which results in no meaning; that it has no meaning entails that it is not a sign at all.

From all this it would seem that the key factors to be considered in the sameness of signs are meaning, function, components, appearance, arrangement, and context. As in the case of texts, sameness of meaning seems to be a necessary condition of the sameness of signs, but not a sufficient condition. 'Oso' and 'bear' mean the same thing but are not the same sign. But 'bear' (the noun) and 'bear' (the verb) are exactly alike in all aspects but have different meanings, and therefore are not instances of the same sign.

Something similar could be said about function, for function is closely related to meaning. The meaning of 'bear' (the animal) and of 'bear' (the action) are different in part at least because 'bear' functions as a noun in some situations and as a verb in others. However, it is also true that different signs with different meanings may have the same function, v.g., 'bear' and 'cat' in a sentence such as 'The X is an animal,' where 'X' is substituted by either one of them. Moreover, different signs with the same meaning can have different functions, as is clear in paraphrases and circumlocutions. For these reasons it would seem that sameness of function does not insure sign identity and thus that sameness of function is not a sufficient condition of it. On the other hand, it would appear that the identity of signs requires identity of function.

The case with appearance is likewise not simple. Indeed, 'bear' and 'bare' have the same appearance in sound, and 'bear' (the noun) and 'bear' (the verb) have the same visual appearance, and yet are not the same signs. So appearance cannot be a sufficient condition of the sameness of signs. But is it a necessary condition. Not in all cases, since 'BEAR' and 'bear' are the same sign and yet look different. This indicates that it is only some aspects of the appearance of a sign that are relevant for the sign, and these are those aspects that have been determined by the author and/or are generally accepted to be so in a particular context. Thus color, arrangement, design, size, and so on, are all features that can

become necessary conditions of the sameness of signs, but they are not sufficient conditions, for sameness of meaning seems also to be necessary.

We may say, then, that the necessary and sufficient conditions of the achronic sameness of signs are three: 1) sameness of meaning, 2) sameness of function, and 3) sameness of features identified by the author and/or accepted as such in a particular context as relevant for meaning. Note that context should not be underestimated. Indeed, the difference between 'bear' (the verb) and 'bear' (the noun) depends on context. The two are different because the first is part of sentences such as «To bear such a burden is a virtue,» and the second is part of sentences such as «The bear liked the honey it found in the jar."

Before I leave the discussion of signs I should make explicit a rather serious implication of the view presented here. The requirement that signs have the same meaning in order to be achronically the same implies that words which have different meanings are not the same signs. This seems counterintuitive, for we frequently regard a sign as the same even if it is used to mean different things. Take, for example, the word 'father.' In a sentence such as «Philip was the father of Alexander,» the word is used to indicate biological paternity, but in sentences such as «Thales is the father of philosophy» it is used to mean that Thales was «the first» philosopher. The only answer I have to this problem is that, in order to preserve this intuition, we would have to give up too much. For giving up the requirement of sameness of meaning in the case of signs and also, as a consequence in the case of texts, creates too many problems, making it very difficult to account for sameness.

Having identified what 'sameness of signs' means, we can return to the question that prompted the discussion of signs in the first place: Whether sameness of signs is a necessary and/or a sufficient condition of sameness of texts. And the answer is that it could not be a sufficient condition for the reasons already stated in connection with (3) and (11) above. Nonetheless, it would seem that sameness of signs can be a necessary condition of sameness of texts, since a difference of signs may affect both meaning and appearance. Consider the following two sentences:

12. He was a respectable man.

13. He was a dignified man.

Clearly these two sentences, although having the same structure, and so on, mean different things if the terms of which they are composed are being used in the ordinary sense. Thus, they constitute not one but two texts. On the other hand, what do we make of the following?

14. The Angelic Doctor wrote the *Summa theologiae*.

15. Thomas Aquinas wrote the *Summa theologiae*.

And of the following:

16. He made a contribution to the fund.

17. He made a donation to the fund.

In (14) and (15) we have two sentences which are exactly the same except for the fact that (14) uses an honorific title to refer to Thomas Aquinas and (15) uses his proper name. In (16) and (17) we have a similar case except that here the difference concerns the use of two different but synonymous signs, ‘contribution’ and ‘donation.’ Is (15) the same text as (14) and (17) the same as (16). I believe most of us would want to answer negatively because the texts are not composed of the same signs, even if those signs have the same meaning. And, indeed, some scholars would find it objectionable if someone were systematically to exchange all instances of ‘Thomas Aquinas’ in their writings by ‘the Angelic Doctor.’ They might object that, although the referent of the term is the same, they chose ‘Thomas Aquinas’ and not ‘the Angelic Doctor’ because they wanted to look at Thomas as a philosopher rather than as a doctor of the Roman Church. Whether this makes sense or not is debatable. However, for our purposes what is important is that authors would object to the exchange of expressions.¹⁹ Similarly, authors would find objectionable the substitution of ‘contribution’ for ‘donation,’ even if they could not think of the reason they had in the first place for why they did not use the former term rather than the latter. Once the question is posed, however, they might say that they object to the exchange because of the differing features of the words, and so on. For example, in a poem, the sound difference between the two words may be important for the intended rhyme.

Still we might want to argue that the texts *mean* the same thing and thus there is no reason why (14) could not be regarded as the same as (15) and (16) as the same as (17). And indeed, as already noted above, they would be the same if texts were the same as their meanings. But if, as I have argued elsewhere, texts are not their meanings, but groups of signs selected, arranged and intended by authors to convey specific meanings to an audience in a certain context, then (14) and (15) cannot be the same, nor can (16) and (17).²⁰ The reason is that they are composed of different signs. That (14) and (15) or (16) and (17) may actually turn out to do the same job does not change the fact that they are different texts, just as some of the signs of which they are composed are different signs having the same meaning. Of course, the sameness of signs in turn depends on what the author regards as semantically significant, or is so in a particular context, as already noted earlier.

¹⁹ Most of the objections would be based on the fact that ‘Thomas Aquinas’ is a proper name, while ‘the Angelic Doctor’ could be construed as a definite description. But then it is questionable whether ‘the Angelic Doctor’ is really a definite description. See Saul Kripke, *Naming and Necessity* (Cambridge, MA: Harvard University Press, 1981), p. 26; also John Searle, *Speech Acts: An Essay in the Philosophy of Language* (Cambridge, England: Cambridge University Press, 1969), p. 173; and my *Individuality: An Essay on the Foundations of Metaphysics* (Albany, NY: State University of New York Press, 1988), pp. 227-29.

²⁰ See «Texts and Their Interpretation,» *Review of Metaphysics* 43 (1990): 496-500.

3. Conclusion

In conclusion, then, we have examined various conditions that appeared to be good candidates of the achronic sameness of texts, but we found that none of them taken by itself constitutes a sufficient condition of textual identity. Moreover, we found that the author, the audience and the context were related to the identity of texts only insofar as they affected meaning. Sameness of meaning incorporates, then, these conditions when they are pertinent and thus there is no need to list them as conditions separate from the sameness of meaning. That is not the case with the sameness of arrangement and sameness of sign composition. For we found that texts with the same meaning but composed of different signs, or of the same signs arranged differently, cannot be considered the same text. Thus arrangement and sign composition, although not sufficient conditions of textual sameness, may become independently necessary conditions of it. The reason is quite simple. Texts are mixed entities. They are artifacts with meaning. As such, their conditions of sameness must include conditions of artifactual sameness (arrangement and composition) and of meaning. It is all these conditions put together that constitute the necessary and sufficient conditions of their achronic sameness. We may formulate them thus:

A text X is achronically the same as a text Y if and only if (1) X has the same meaning as Y, (2) X and Y have the same syntactical arrangement (with the proviso noted in E), and (3) X and Y are composed of the same type signs.

The question that I set out to explore in this paper had to do with what makes texts the same, that is, with textual identity. For its answer, three types of sameness were distinguished: achronic, synchronic and diachronic. The latter two involve time and so are more restrictive; thus I concentrated on achronic sameness. After examining various possible views we reached the conclusion that there are three conditions which, taken together, constitute the necessary and sufficient conditions of the achronic sameness of texts and hence explain their identity: sameness of meaning, of syntactical arrangement and of type-sign composition. Going back to the example used at the beginning of the paper to introduce the problem of identity we can now understand how different copies of the text of Cervantes's *Don Quixote* are the same text, for they have the same meaning and they are composed of the same type signs arranged in the same way. Thus, in spite of the many differences that characterize them, they are still to be regarded as copies of the same text.

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RAÚL ORAYEN'S VIEWS ON PHILOSOPHY OF LOGIC

Lorenzo Peña

Raúl Orayen's book *Lógica, significado y ontología*¹ is a profound book, a thorough inquiry into several important issues in the philosophy of logic. Raúl Orayen is one of the outstanding analytical philosophers in the Spanish speaking world. As in his other publications, he displays a masterly reasoning power. No patched-up solutions in this book. Orayen is not going to let what he takes to be unsatisfactory treatments off the hook with vague considerations of their being able to cope "somehow or other" with such difficulties as beset them.

The book's general line may be taken to be the defence of some kind of intensional approach in philosophy of logic, with meanings playing a central role in implementing the notion of logical truth.

Orayen regards Quine as his main interlocutor. He is keen on keeping set theory as the general framework of our worldview, and cleaves to classical logic. Yet, precisely because Quine's thought has challenged the intensional notions he considers indispensable, several chapters are given over to discussing Quinean arguments. All in all it is fair to say that the book is further proof that Quine's contributions are at the very core of contemporary philosophy of language and philosophy of logic.

There is a major topic gone into through the book, which is logical form, validity and logical truth. As an outgrowth, Quine's operationalist view of language receives an extensive coverage and discussion. Then, the investigation into the notion of logical truth and validity leads to a critical assessment of the relevantist challenge to the classical conception. And finally — if perhaps a little cursorily — acknowledging the ontological assumptions of the classical first-order calculus raises the issue of how to deal with Meinongian approaches, especially Castañeda's. This last chapter, although short, is quite important and will be duly gone into in this review. On the other hand, I will not dwell on Orayen's discussion of the indeterminacy of translation thesis — a subject on which I broadly agree with him, if for partly different reasons.

¹ Mexico: Universidad Nacional Autónoma de México, 1989, 323 pp.

§1.— Truth-bearers, Logical Truth and Validity

Orayen's approach is dual. In natural language the primary truth-bearers are sentence-tokens. In formal or artificial languages they are sentence-types. Such a cleavage is so strong and even startling that the reader may straight away demand a sufficiently strong justification thereof. Orayen provides it.

In any natural language there are plenty of sentences (types) which cannot be given a general meaning once and for all, i.e. which are such that only their respective tokens can be ascribed meanings depending on the particular utterance context. If we are keen on ascribing truth to types, then we need to regard truth not as a property but as a relation, and one with a large number of places. So the sentence type 'John will be ready by tomorrow morning' will be true for a particular entity (probably a man) being in that case denoted by 'John', a particular task intended for which he is supposed to be ready, a particular day on which the sentence is uttered, and so on. If it is uttered on the sun, it cannot apparently be true since on stars there is no to-morrow and no morning — unless our planet's standards apply everywhere, or anything like that. Moreover, a sentence exactly like that one both in spelling and pronunciation may belong to a different language, wherein it may mean that cheese is a healthy food, e.g., which may be true or false according to the context. Not only is the number of arguments or places for the relation high, but moreover it seems variable. Well, perhaps that could be dealt with by letting a number of them feature in every sentence, even if trivially or vacuously so. Or they can all be packed into "the context". But all such solutions have difficulties of their own. At the same time, a number of sentence tokens lack definite truth value. Think of the just written sentence when no task is intended, or no entity with which the utterer or the listener are acquainted is named 'John' etc.

Thus, Orayen chooses to ascribe truth mainly or primarily to some sentence tokens (which have been or will be actually uttered), individuated by their respective utterance context, and which he calls '*enunciations*'. The individuation conditions ensure that each sentence token belongs to a definite language, has a definite meaning and so definite truth conditions. Iff it has a truth value, it is an enunciation.

A context is taken to be a spatio-temporal zone. In order to avoid complications about a sentence token changing its truth value as it is being uttered, a durationless instant is taken to constitute the precise temporal component of the context, and it is the final instant of the utterance. Odd cases of the speaker's mastering two (or more) languages with identical sentence types belonging to both are solved by resorting to the speaker's "intention", and in case he himself is at a loss about it, by resorting to a disjunction of the separate meanings — and so of the different truth-values. No unuttered sentence is ascribed a truth value, as such an ascription would trigger a regress — we would thus be compelled to take truth to be a relation and go on and on with multiplying the number of places of that relation.

Now, is such a modest attribution of truth-values sufficient for a logical treatment of sentences of natural language? Orayen thinks so. For one thing, logical truth is primarily attributed to sentences in logical languages, that is in formal, artificial languages — and, as we are going to see, Orayen thinks that for

such languages truth-bearers are types, not tokens. For another, in so far as logical truth applies to natural language sentences, it does so through translation, and translation requires identity of meaning. So what can be said is that a natural-language pattern or sequence of sentences (of sentence tokens) is a valid reasoning iff it is a correct translation of a valid inference of a formal language. The synonymy link is decisive here. What about valid but unused inferences which could be uttered in a natural language? No worry! No need for them. We have our formalized languages to provide us with all our wherewithal. All we need to say is that, should there be a sequence of utterances in a natural language with the same meaning as a given valid inference of a formalized language, it would be a correct (valid) reasoning. Nothing else is required.

Thus Orayen has chosen the most economical solution as far as truth-bearers in natural language are concerned. Only a finite number of truth-bearers in fact. But obviously such a solution does not apply to formal languages. The simplest well-formedness rule, that to the effect that, if $\lceil p \rceil$ is a sentence, so is $\lceil \text{not } p \rceil$ would break down — a maximal length, whatever it may be, doubtlessly constraining our utterances past or future. Orayen's solution is to regard types as truth-bearers in formal languages.

Why not statements, propositions or the like? Orayen does not deny that there may be such entities, but he claims that resorting to them is not necessary. Moreover, while the existence of such entities is not only controversial but also fraught with obscurities, sentence types are entities whose existence is admittedly not obvious but whose structural features are clear, since they are isomorphic to their respective tokens, which are material entities whose constituent structure can be studied. Hence, such metaphysical conundrums as surround propositions and the like do not arise concerning sentence types.

Validity, as Orayen is concerned with, is mainly a matter of reasoning or inference. We need to ascribe validity to inference patterns in formalized languages, for they can be infinite in number. As for natural languages, an inference worded in one of them is indirectly ascribed validity in so much as it is synonymous with one of a formalized language which is so.

Orayen distinguishes formal validity from intuitive validity. The former is defined in terms of interpretation in the usual, Tarskian way. (The relationship between such a definition and that, much simpler, in terms of truth-preservation is gone into, the conditions under which both notions of formal validity coincide for a number of formal languages being carefully spelled out.) Intuitive validity is different. It consists in the impossibility of the premises being true and the conclusion false, in virtue of meaning-relations between the terms involved in those sentences. Orayen claims that neither concept of validity implies the other. An inference pattern can be formally valid without being intuitively valid, and the other way round. How is that possible?

That a reasoning can be intuitively valid without being formally valid is brought about by the existence of analytic truths which are not logical truths, namely such as involve meaning links — as e.g. the link between 'being a bachelor' and 'being unmarried' and so on. It is impossible for a man to be both a bachelor and married, so a reasoning from 'Kevin is a bachelor' to 'Kevin is

not married' is intuitively valid. Not formally valid, needless to say: no such inference is countenanced by any logical system whatsoever.

On the other hand, an inference can be formally and yet not intuitively valid. Such is the case when ontological implications of the classical first order quantificational calculus are involved. From 'There is no entity such and so' it can be classically concluded that there is some entity which is not such and so. Yet — according to Orayen — the former could be true and the latter false, if nothing existed at all (he assumes such a case to be possible).

Validity of sentences ensues on validity of inference patterns of either kind, through the connection provided by modus ponens and the deduction meta-theorem. Within the framework of a wide range of logical approaches the validity of an inference $p^1, p^2, \dots, p^n \vdash r$ is interdefinable with that of the sentence 'If p^1 and ... and p^n , then r '. (There are some problems here concerning rules to which such a meta-theorem is not generally thought to apply, like universal generalization and the Gödel rule [necessitation] in modal logic.)

Such is Orayen's account. The reader can appreciate to what extent it depends on an intensional approach, with meaning relations carrying an enormous weight not just in connecting natural and formal languages but also providing the link for intuitively valid inference patterns among different sentences of one and the same language.

Such an approach seems to me to be committed to an intensionalism which is enshrouded in obscurities and which in the end does not seem to yield even what it was expected to provide. Orayen himself admits as much, and then he patches up the approach with some minor corrections.

The most apparent source of dissatisfaction is the gulf Orayen digs between natural and formal languages. On that issue almost everybody will agree. Orayen himself does not espouse such a cleavage with a light heart, but as a price to pay in order to avoid enormous complications and uncertainties. Yet, the complications and uncertainties do not vanish with such an account. What is a context? We know that it is a uniquely determined spatial zone at an instant. But no criterion for uniquely determining the extension and length of the zone is offered. If I say 'It is cold here', what is the spatial zone to which my sentence is to apply? The room? A small cranny of the room? The building? The whole city? The country? (As I am writing in Canberra, the whole of Australia?) The Earth? The solar system? The galaxy? Well, perhaps other components of the context give us the clue. Yet, it is not possible then to have the elegant, simple concept of "context" Orayen puts forward, just a spatial zone at an instant. Contexts become more complex entities, perhaps sets or bunches of facts, or situations, or whatever. We cannot rest content with a general consideration that something like that is a context, of course. We need something more specific and enlightening.

Furthermore, instants are very problematic entities, and even if they exist, nothing happens at them. What is said to be true at an instant is best construed as an abbreviated way of saying what happens at all intervals around the instant. If sentence tokens can change their truth value along any of those intervals, taking an instant as the temporal component of the context does not solve the difficulty.

I am not happy either with Orayen's approach to validity. First and foremost, formal validity defined in terms of Tarskian satisfaction applies to some sorts of languages only. How is such an account to apply to combinatory logic for instance? Well, Orayen himself allows for the more appealing idea of truth-preservation to be equalled with Tarskian validity — under some particular circumstances — and with that I have no quarrel. Yet truth preservation is clearly not enough. The pattern «Tweety is a bird; hence Tweety is an animal» is truth-preserving. It is not Tarski-valid because under some interpretation of 'bird' or of 'animal' it is not truth preserving. And anyway it is no logically correct inference. It is a zoologically correct inference.

Which brings us to the issue of logical truth — the subject which features most centrally in Orayen's book. Orayen would want to find a nice, direct account of logical form, but he thinks none is available. Nothing is in fact to be found as regards what logical constants are, except that they are the ones logicians are interested in. We cannot say that a sentence's logical form is something like its underlying or deep structure. Views of that kind were for some time fashionable but whether or not they are correct is an empirical matter, and probably they are wrong. Nor can we say that logical constants are topic-neutral, since there are doxastic, deontic and temporal logics, and the logical vocabulary can be further expanded. Nor can we claim that, should there be no logical system, or no logicians, there would be logical forms and logical truth all the same, except in the sense that, since there are logicians, we, in our world with them and with logical systems, can say that even in worlds lacking both logicians and logical systems there are — relatively to us, so to speak — logical truths. Logical form and logical truth are constrained by logical vocabulary. And logical vocabulary is just a matter of what logicians do. Perhaps some particles are such that logicians had better include them in their vocabulary, but until and unless they do so, such particles don't belong to the logical vocabulary, and such truths as involve them essentially are not logical truths.

What about logical truths in natural language? In the same way as for validity, logical truth is extended from formal to natural languages through meaning links: a sentence of natural language is a logical truth iff it has the same meaning as a logical truth of a formalized language.

No one is going to deny that such an approach is careful and prudent. Too prudent, to my mind. A new problem arises straight away: whom are we to call 'logicians'? This is no trivial issue, and in fact a generation ago such people as were professional academics dignified with the title of professors of logic for the most part taught a very different thing from what nowadays goes by the name of 'logic'. And the reign of classical logic may be short-lived, since new alternative systems are propounded with increasing vigour. Well, perhaps they all constitute logic. No denying that they share many features with classical logic. And what debar new, more daring deviant logicians, from constructing and proposing systems which, from the viewpoint of a classically minded logician, are not logics at all? So, e.g., formal systems which have been proposed as logics of comparatives, and essentially involve phrases like 'very', 'somewhat', 'more... than', 'less... than', 'to that extent that', 'fairly', 'rather', 'completely' and so on. Are they logics? Are those who work on them logicians? Some conservatively oriented professionals say no, since such systems lack the simple proof procedures of more

conventional logics. Should the dispute be solved on the basis of “profession consensus” or something of that ilk, doubtless the conservatives would win — for the time being. But are such procedures acceptable, rationally admissible? Don't they beg the question in favour of the more conservative, whatever the issue, whether in logic or in astronomy or in any other discipline whatever?

Most of all, a partly true, partly illuminating answer is better than no answer at all. The idea of topic-neutrality, or generality, is not free from defects, but is it as hopeless as Orayen thinks? Well, perhaps that is so if there are no degrees. But if generality admits of degrees, we can claim that everything the logicians is interested in is general, and very often more general than that in which he is not interested. Doxastic operators are perhaps less obviously general (and I know that in some vacuous, trivial sense, everything is totally general, namely any entity is such that p , for a true sentence ‘ p ’ whatever it may be). Despite all difficulties, such relations as are denoted by ‘and’, ‘or’, ‘less... that’, ‘to the same extent that’ etc. are clearly general while such as are denoted by ‘brother’, ‘gravitate’, ‘increasing the price’ etc. are particular. It seems to me that failure to realize such a point is ensuant upon an implicit *all or nothing* approach, which in turn is a sequel of classical two-valued logic.

So, I put an end to the digression on logical truth and come back to the subject of validity. I have contended that the Tarskian concept of validity is parochial. (Well, yes, via translation it can be extended to systems which do not lend themselves to Tarskian interpretation in a direct way; yet the very notion of translation is fraught with further difficulties as Orayen is perfectly aware.) The obvious connection between formal validity and logical truth which — despite problems surrounding rules such as necessitation — is, needless to say, indispensable entails that such problems as beset the notion and extension of logical truth also bear upon the notion and extension of formal validity.

Now, if we accept — with whatever provisos, qualifications and restrictions — the idea that logical constants are general — all in all the most general ones —, then a winsome notion of “formal” validity emerges: an inference pattern is “formally valid”, or logically correct, iff the result of linking the premises with conjunction (‘and’) and then linking such a conjunction with the conclusion through an ‘only if’ is a logical truth. (Some qualifications are needed in order to accommodate U.G. and the Gödel rule.) The source of the logical correction (or “formal validity” in Orayen's words) is generality. As Ferdinand Gonseth viewed it, logic is the physics of any object whatever. The difference between logically correct and zoologically correct inferences is not that the former alone are truth preserving. Perhaps the former alone are necessarily so, but I do not think we need the concept of necessity here. If we can grasp a useful notion of logical correction without resorting to the contentious (and not very clear) notion of necessity, all the better.

However, Orayen does not want to embark on such a metaphysical or ontological approach. It seems to me that his thought is closer to a view of logic and validity like that of the logical positivists. Other parts of his book, which defend analyticity — vs Quine — confirm that impression.

Orayen's view of formal validity and logical truths in natural language through translation functions subject to meaning-preservation constraints seems to

me unattractive. Meanings are so muddy! Moreover, as we are going to see later on — apropos Orayen's criticism of Quine's extensionalism — meaning-preservation, whatever it may be, turns out to be neither a necessary nor a sufficient condition of an adequate paraphrase.

I think there is a more appealing approach, and one Quine has developed and emphasized. Logic is not implemented in an artificial language. Nor are mathematics. We are to view mathematical and logical scripts as schematic representations of some delimited fragments of natural language.

Writing systems fall into several kinds. One of them is that of iconographic systems, which don't represent language but things or situations. Some people take mathematics to be written in an iconographic system. Yet there are cogent arguments to the contrary. Non-iconographic, or glottographic, systems represent language in a written form, but they can be of several kinds. Some of them are holistic, taking either sentences, or words, or other meaningful units as a whole. Some are not so — especially phonetically oriented scripts. Some are schematic: they do not represent sentences unit by unit, but in a sketchy way, which can be read in a variety of alternative ways. It seems very clear to me that mathematical scripts are of this latter kind. All those distinctions are of course a matter of degree. Yet, there are powerful reasons why mathematics (and set theory and logic) are best regarded as being written in such a way. The passage from pre-theoretical mathematical thought (as was obviously practised by our ancestors for hundreds of thousands of years — people also counted in the palaeolithic era, of course — and as is practiced by illiterate people worldwide) to formalized mathematics ceases to be a mysterious jump. (If mathematics was written in an iconographic system, there would be no passage, one thing would have nothing to do with the other.) Moreover, what about the reading of mathematical formulae in stilted mathematical-school English? Whether stilted or not, it is English. Orayen seems to view such utterances as not belonging to natural language. More generally, he regards utterances of regimented English as not-English. Well, they may have an "un-natural" ring in some sense, but they are part of that natural language, English. Orayen conceives of natural language as what is spoken "naturally" by... whom? Is parliamentary talk also unnatural — a different sort of artificial language? And talk by broadcasting professionals? And thieves' jargon? And children's speech? Well, it seems to me that with such strictures our view of natural language would be most unnaturally constrained and narrow.

On the other hand, logic does not concern itself with language. Logic is not a theory about language at all. The logician is not speaking about linguistic entities in particular. This is obscured because, when put in a first-order framework — which is reasonable, since higher-order calculus raises untractable philosophical difficulties —, the logician uses schemata, and in order carefully to specify his schemata he must describe sentences. Yet that is unessential. The logician's description is neutral towards different views of linguistic structures and linguistic entities. Any careful wording of medical science, sociology or biology would have to resort to similar procedures. Still nobody is going to claim that medical science or biology are concerned with sentences.

It seems to me unsafe to bridge formal-language types with natural-language enunciations (as truth bearers in general and as bearers of logical truth in

particular) through meaning equalities. Again, such meaning relations are so obscure and problematic that we had better do without them.

Do we need them? I do not think so. In fact we needn't say what entities the primary truth-bearers are. What is true (or a truth) is that Rome is in Italy. What is logically true is that, if Rome is in Italy, it is in Italy or the Earth is flat. A sentence is logically true to the extent that it says that p , and it is logically true that p . This is a schema, not a sentence. By "asserting" the schema we are in fact committing ourselves to asserting every substitution instance thereof which can be formulated with symbols we use and understand.

This, by the way, disposes of the so-called 'Strawson effect' which Orayen discusses at length. For one thing, as Orayen acknowledges, Quine's reply to Strawson — which resorts to reference only, with no appeal to meanings — suffices to avoid drawing false conclusions from true premises in virtue of logically correct rules. (The remaining difficulty about necessity being solved through an extensionalized treatment of modality, i.e. modal realism.) For another, usage of the syntactic "meta-language", so-called, is not part of what logic puts forward, but only of the logician's way of specifying what he has to say. The logician speaks about things, not words.

Since a sentence is true *to the extent that* (not just if), for some $\lceil p \rceil$, it says that p , and p , we need some account of "saying that". I think that a satisfactory account of that semantical relation involves positing facts, and that facts' existence is what really truth consists in. Yet I do not want to say that, short of a metaphysics of facts, no account of truth is available. Everything depends on the price to pay. If you are content with positing the semantical relation of *saying-that* as a primitive and with leaving its second relatum unaccounted for, then fine! (In fact I am — for our concerns at hand — propounding a minimalistic or deflationary concept of truth; such a concept is not sufficient for all purposes — witness Tarski's point about the third sentence in the leftmost book on the third shelf in my library being true; for our current purposes we needn't speak about sentences. Alternatively we could turn to something like Davidson's account of 'saying that'.)

Facts may be contentious, but I do not see that Orayen is right when he says that they are more obscure than sentence types.

On the other hand, facts can be treated in an extensional way: the fact that Abraham is a father can be taken to be the set of people he begets; and the fact that he begets Isaac can be taken to be a set that only comprises itself — the same being the case for all "intransient actions" and states. Begetting can be taken to be a function which maps Abraham into the function which maps Isaac into the state (or fact) of Isaac's being a son of Abraham. 'And' can denote a function which maps the fact that p into a function which maps the fact that q into the fact that p -and- q . (Rather than functions we could speak about quasi-functions, which may fail to map and which in some cases may yield a value even when no argument is provided.) Are facts in that sense unpalatable for the Quinean?

We can speak of types as a mere *façon de parler*, but if we are bent on taking type-talk literally, what are we supposed to countenance? Sentence-types have parts, constituent structure, don't they? So they are spatial objects, or temporal objects. Where and when are they? At every location where one of the

tokens exists? No, not so, for obvious reasons. How large is a type? For instance, a token of 'It is very hot' (in spoken English) lasts for, let us say, several seconds; very slowly said perhaps an hour. There is a minimal duration, not a maximal one — although more and more slowness impairs intelligibility to that point of rendering the utterance un-English. No such thing applies to types. Types are Platonic Forms. The Form of Bed is a perfect Bed, with a perfect Mattress, perfect Sheets and so on; and the perfect Length of a Bed. It is in the perfect Location. No need to dwell on the difficulties besetting such Things. Those surrounding types are exactly parallel.

Of course we can think of types as classes of tokens. But what about uninstantiated types?

I think Orayen had better resort to possible tokens. After all he countenances possibles — else his introduction of necessity into the notion of intuitive validity would amount to little. Possible utterances, possible tokens are concrete. A full account of them may lead us into something like David Lewis's modal realism. (I for one would be glad to embrace such a view, which after all extensionalizes the purportedly intensional modal contexts, and so regains for extensionalism the treasures and explanation power claimed for the notions of necessity and possibility.)

To sum up, I think there are alternatives to Orayen's views which are more congenial to the Quinean and which employ nothing to which Orayen seems to be necessarily averse. Those alternatives turn out to be much less dependent on intensional talk than Orayen wants to concede — modal talk being extensionalized through modal realism.

§2.— Orayen's Criticism of Quine's Extensionalism

Orayen subjects Quine's approach to two main objections, one dealing with the thesis of indeterminacy of translation, IT for short, the other with Quine's extensionalism. I agree — with some reservations — with Orayen's views on IT, so my comments will only focus on the other subject.

Orayen's main argument is that Quine's extensionalism threatens logical truth as applied to natural language. No need here to say why, since as much is obvious for the preceding section. Quine in his reply (pp. 293-7) concedes a lot to Orayen. But in fact a part of what he grants results not from extensionalism but from IT (and of reference). (Orayen seems to me to be so deeply concerned with meaning and intensionality that he regards IT mainly as a threat to meaning-links, as if reference links would be more secure, were IT right.)

Orayen's point is simple and clear. Logic is useless if it applies only to sentences in formalized languages, if therefore nobody can be claimed in ordinary or scientific talk to reason rightly or wrongly according to logical standards. What is directly a logical truth is, e.g., what is said in a formal language with the formula 'p or q if p'. That Marion is 46 or 47 if she is 46 is a logical truth only because such an English sentence is translated into one of a formal language with the same meaning. Failure to admit meaning relations — in particular, synonymy — ensues upon a breakdown of logical truth for natural language.

No logical teaching is interesting nor perhaps even possible if no paraphrase in natural language is available for formulae written in formal languages. But more seriously, it is not just teaching but the very purpose of the logical enterprise what is at stake.

Yet, Orayen acknowledges a difficulty for his account. Not all meaning-preserving paraphrases do. If a logic teacher tries to illustrate $\lceil p \text{ or } q \text{ if } p \rceil$ with examples, he cannot use e.g. $\lceil p \text{ or } q \text{ if: } p \text{ or } q \text{ and } p \rceil$ (for some particular $\lceil p \rceil$ and $\lceil q \rceil$) even though such a paraphrase would be truth preserving (in fact linking both through a biconditional is a logical truth).

Orayen's solution is to resort to a restricted notion of economic paraphrase. Roughly speaking, the adequate paraphrase has both to preserve meaning and to do so through what we can call the most literal translation available — or something like that.

Orayen has shown us that there is a way of modelling the general procedure of the logic teacher. He does not act arbitrarily. He does not choose his paraphrases in a random way. Something like the principle of economic meaning-preservation is doubtless employed. But what is really enacted here?

Not merely meaning. Orayen concedes that. Meaning and something else. What? Well, of course economic wording, or a maximal degree of literality, or something like that. Yet such a further constraint does not ensue upon meaning preservation. Its rationale is not meaning at all. In fact it seems very clear to me that its ground can only be of a pragmatic sort. But then why not say that *all* the linkage needed is just of a pragmatic sort?

Orayen's qualms could apply exactly in the same way to any other domain. They have nothing to do with logic in particular. You can say that medical truth, or architectural truth, is also threatened by extensionalism. Medical science would be useless if the physician could not put (some of) his considerations and advice in words other people can understand. Yet, are such words synonymous with those of a medical science treatise? Well, with so murky "entities" as meanings are, any claim on such an issue would be most dubious. What is certain is that without some both-ways transfer between ordinary talk and learned speech among professional physicians medical science would not have existed and would not be possible or helpful.

But do we need meanings? The physician uses his paraphrases in a very free way, as does the logic teacher or logic manual author. Yet there are some constraints. Those constraints seem to me pragmatic. What is implicitly required is that, to the extent that a sentence says that p , and it is medically (or architecturally, or logically) true that p , and putting such a fact in the words forming the sentence is — given the circumstances — adequate, the professional can convey his advice or his teaching by uttering that sentence.

In his reply to Orayen, Quine mentions the research currently developing which aims to implement mechanical translation from English to "logicalese" and conversely with no use of "meanings". Orayen's main objection to such a solution is that it is no good for the extensionalist, in so far as the very same project can be formulated only through intensional concepts.

I am by no means convinced that Orayen is right in this connection. Why is reference not enough? We define a logical vocabulary as the set { ‘and’, ‘or’, ‘to-the-extent-that’, ‘less’, ‘not’, ‘completely’, ‘some’, ‘exists’, ‘comprises’, ‘before-than’, ... }. Our underlying idea is generality. Then we pick up expressions of usual talk which we take as equal in reference with those ones, and we implement a recursive procedure for much more complicated cases wherein such splitting into units is not easy or is not feasible. (E.g., Orayen stresses that there is no mechanical way of knowing that ‘Sam and Jim are Australians’ is to be paraphrased as ‘Sam is an Australian and Jim is an Australian’, since no such paraphrase is feasible for ‘Sam and Jim are friends’.) Meaning — Orayen claims — has to be resorted to. Is that so? Well, it depends on what meanings are, but it seems to me clear that meanings “as such” are of little help. What we need is a recursive procedure which is built up on purely syntactic grounds, and which aims at reference. After all, what if the paraphrase preserves reference only, not meaning, whatever that may be? Logic would be none the worse for it, would it?)

Orayen concedes that meaning preservation is not a sufficient condition for a paraphrase to be adequate on two accounts. One is that a further requirement is needed — the one we have referred to as literalness or economy, which is pragmatically constrained. The other is that such paraphrases as depend on non-logical synonymies (‘unmarried’ and ‘bachelor’ and the like) are of course inadequate in this context. Again, why are we then supposed to need meanings? Why not just reference?

At some point, Orayen clearly says that meanings are necessary for what we can call epistemic reasons. A paraphrase of a logical truth is to count as a logical truth, too, iff we are entitled to be absolutely certain they have the same truth value, and our certainty is grounded on purely linguistic considerations. Yet later on he somehow retracts from such strong claims, taking a less optimistic view of certainty on such matters.

What is important for me here is to discern epistemic necessity, alethic necessity and logical truth. Not all necessary truths are logical truths (in virtue of Gödel’s theorem, if for no other reason). Not all necessary, not even all logical truths are epistemically obvious (otherwise no controversy would exist on such matters and no logical mistakes would be committed). Not everything that is obvious is either logically true or necessary, not even if its truth is learnt along with the acquisition of language, as is the case with «My name is So-and-So» or «Mum is my mother and Dad is my father». (The latter sentence is necessarily true or Kripke’s view of the essentiality of origins is wrong. But many other sentences which are “analytical” — in the modest sense of being learnt with the acquisition of language — are not even necessarily true.)

Yet I cannot deny that Orayen has a strong point here, even though, after Kripke’s arguments, many people now agree that obviousness, logicity and necessity are not coextensive. Logic seems to be somehow “special”. After all, Frege and Husserl claimed that, logic being “apodeictic”, no inductive and fallible approach to logical truth would be acceptable. We somehow feel that we need security in our logic. If logic itself is not that certain, what certainty is left?

Well, none. Or no complete and absolute certainty. If we ignore degrees, we are apt to reason in terms of *all or nothing*, and then we hanker after

[unblemished] certainty. We harbour security illusions. Gradualism cures us from such anxieties.

To sum up, we again have alternatives to Orayen's intuitionism which seem to me simple and free of any commitment to meanings, which are the mistiest and obscurest [pseudo] things in the philosophical marketplace. We can think of logic as developed directly in natural language schematically represented through symbolic notations, which do not constitute a separate language of their own. We can posit infinite unuttered sentence tokens which exist in possible worlds, each of them being some "part" of Reality. We can base the program of paraphrase on reference, syntax and pragmatics, with no appeal to meanings. And — more contentiously — we can fill in the gaps in our treatment by resorting to facts, which can be accounted in a combinatory way (following F. Fitch's steps, if not necessarily on the details), which is close to a set-theoretical approach in spirit, if not in its articulation.

It would be silly to claim that such alternatives as I am embracing are free from difficulties or that their superiority over Orayen's intensionalism is plain and uncontroversial. Far from it. After all probably more analytical philosophers would agree with Orayen than with the reviewer on such issues. If Orayen's views command such a widespread acceptance, something speaks for them. If the "apriorist" defense of analyticity, necessity, intimate connection between meaning and logical truth and validity, and so on, holds its ground despite Quine on the one hand, Kripke on the other hand, some deep source is bound to exist from which such attitudes re-emerge. All that I reluctantly concede. Yet such considerations must not be allowed to cloud the central point of the foregoing arguments, that we can do without "meanings" by resorting to other conceptual tools which seem to be, all in all, less problematic, less difficulty ridden.

§3.— Relevant Logic and disjunctive syllogism

There is perhaps a deep reason why Orayen is interested in relevant logic — RL for short. RL arises from a qualm concerning the classical relation of deducibility, namely, that such a relation depends on what exists, and so is not a priori. The ontological (or perhaps alethic) commitments are clear in the case of the quantificational calculus, but there is an implicit alethic commitment in the case of the sentential calculus. CL enforces rules such as VEQ (*Verum e quolibet*: $p \vdash q \supset p$) in virtue of which, from the fact that it is true that p , it follows that, if q , p ; and hence it follows that $\lceil p \rceil$ can be drawn as a conclusion from $\lceil q \rceil$, for any $\lceil q \rceil$. Admittedly such an inferability of $\lceil p \rceil$ from $\lceil q \rceil$ is contingent upon a previous assertion of $\lceil p \rceil$. All the same, CL countenances such a conditional inferability. Yes, we do not need it, but that is beside the point.

RL takes exception at such commitments. Nothing can be inferred from other things (assertions) in any way which depends on what happens to be true, whether necessarily or not. Inferability is a matter of meaning-connections which can be grasped entirely *a priori*, analytically, without resorting to knowledge of the empirical world or even of necessary truths. Logic, as the pure study of inferability, must be previous to the knowledge of truths. Valid inferences must not be just truth-preserving — not even just necessarily truth-preserving. They

must also preserve something else: meaning. The sense of the conclusion has to be included in that of the premises. (Or something like that.)

After the preceding sections of this critical notice, the reader can appreciate why Orayen is prone to find relevantist qualms congenial. After all, his own views of logic's nature are not far away from relevantist considerations. So, he canvasses the arguments of the "founding fathers" of relevantism, Anderson and Belnap — A&B for short — very carefully. (Perhaps he takes them too seriously.) In fact, such arguments do not carry us very far, except as witty illustrations of the general relevantist standard, namely that what happens to be true, whether contingently or necessarily, must not bear on what can be inferred from what, conditionally or not — the purely analytic, or meaning-grounded, link between premises and conclusion being destroyed by such dependence on truth. Yet, unlike the relevantists, Orayen keeps a lingering attachment to some sort of close connection between analyticity and necessity. That connection may remain short of full identity but anyway Orayen tends to think that only all necessary truths are analytical and *a priori*. No such belief is apparently shared by the relevantists, although A&B were not entirely clear on that issue — deep relevantism as developed by Richard Sylvan is far more consequential, claiming that relevance is an intensional but ultra-modal relation. The issue of the relation between necessity and analyticity in the original work of A&B is obscured by their adherence to S4 rather than S5.

Now, Orayen's attitude towards relevantist concerns is — as can be gathered from the above considerations — initially very sympathetic. The relevantists' central idea — that deducibility arises from an intimate, analytical meaning- or sense-relationship — is quite congenial to Orayen's own views. Thus, Orayen goes about discussing relevantist considerations very carefully. The relevantists' appeal to intuitions is to his liking. Yet, he finds a strong reason for not acquiescing to the relevantist rejection of all nonrelevant deductions, i.e. of such inferences as fail to comply with the standards of variable sharing and use-in-proof. The reason concerns Disjunctive Syllogism — DS for short —, which has to be rejected if no non-relevant inference is to be maintained — unless of course some other, commonly accepted, principle or rule is dropped, e.g. addition, or simplification; Orayen rightly rejects such moves, as do the relevantists themselves.

Let me summarize the way DS lends to nonrelevant deductions — following a much discussed argument of C.I. Lewis, which Orayen scrutinizes in length. From 'p and not-p' to infer 'p' and 'not-p'. From 'not-p' and 'p or q' to infer 'q' (in virtue of DS). Hence, from 'p and not-p' to infer 'q'. The last is the rule of Cornubia, usually called Pseudo-Scotus.

Orayen's recommendation amounts to weighing such claim on our intuitions as is possessed both by each step involved in Lewis's argument and by the rejection of those steps. He thinks that D.S. is so intuitively appealing that doing away with it would run against logic's vocation to capture intuitive deducibility connections.

Besides such a general appeal to its intuitive nature, i.e. to its direct obviousness — an appeal which only needs to be confirmed by some sort of statistical account of people's reactions, in particular of how logic students

respond to what they are taught — Orayen also musters a different consideration in support of DS, namely that to accept $\lceil p \text{ or } q \rceil$ commits one to accept, in some sense, that, if not- p , then q . In some sense. What conditional is involved is a different matter. In general Orayen does not believe that classical horseshoe captures the conditional of everyday language — whether subjunctive or even indicative. So, I take it that the conditional which he thinks is implicitly involved in justifying DS is some special conditional, like the one he thinks is used in mathematics. Yet, if it is a technical connective, belonging to a professional jargon, how is it that every natural language speaker is so committed each time he utters a disjunction? I suppose the answer is that we commit ourselves to claims which cannot be put into adequate words except on the basis of theory-implementation. (Perhaps we all commit ourselves in our use of numerals to very sophisticated, far-reaching and hard-to-prove theorems of number theory.)

Anyway, that separate argument — the invocation of an implicit conditional where the first disjunct, upon being negated, becomes the protasis, the second disjunct becoming the apodosis — is not necessary for Orayen's purposes. If DS is intuitively correct, that is enough.

But is it correct? Well, Orayen — unlike most writers on these issues — is extremely careful, and he hedges his sentences. He claims only that for some negation DS is valid, and hence so is Cornubia. And this I wholeheartedly concede. But what negation?

Orayen admits that there may be other negations, but he thinks that the usual negation in science and everyday speech is classical, and that DS and Cornubia are applicable to that negation. Well, my comment is that it depends on what the usual negation is assumed to be. If it is what is most frequently conveyed by a mere 'not', I disagree. If, however, it is what is meant by phrases like 'not... at all', 'by no means' or 'It completely fails to be the case that', then I am sure Orayen is right. As for when it expresses a negation weaker than the classical one, that is a difficult matter. I take it that in our spoken language we can use prosodic means unavailable in written English, some of which may be [part of] strong-negation markers — in addition to contextual factors.

The problem is whether such an exclusion as is admittedly conveyed by negation is always a strong or total exclusion, or if it can admit of degrees. If the former in the case, each utterance of 'Yes and no', 'I did and I didn't', 'He was and he wasn't', and so on, are either utterly illogical or else bad ways of putting a logically unobjectionable message. If, however, exclusion admits of degrees, what is espoused by 'not' may be non-total exclusion. Thus, $\lceil \text{not-}p \rceil$ may denote a state of affairs which does not bear to the state of affairs that p a relation of utter incompatibility, but instead one of not-necessarily-complete exclusion — partial exclusion. To the extent that $\lceil \text{not-}p \rceil$ is true, $\lceil p \rceil$ is not true, and the other way round.

Should such a suggestion be acceptable, we would have a clue to why and when DS is warranted. Only whenever negation is strong — whether a strengthening 'at all' or the like is explicit or only implicit — is DS applicable.

Such a motivation for discarding [unqualified] DS is of course entirely different from the relevantist qualms on this issue. Yet, some odd similarity emerges. If we espouse degrees of truth, we need a connective expressing

something like “to the extent that”, and a careful study of such a connective shows that it is bound to have at least all the properties of ‘ \rightarrow ’ in A&B’s relevant system **E** of entailment — and in fact some further properties, too, since **E**’s arrow is too weak. Likewise, upon such an approach we need some inference relation — not necessarily the only one — in virtue of which the conclusion is not less true than the falsest premise. Again, implementing such a relation bears a close similarity to A&B’s natural-deduction account of entailment (again with some important strengthenings).

So my provisional conclusion on this debate is that Orayen is right against the relevantist scruples, but only conditionally and qualifiedly so. DS obtains for some negation — strong negation — but not for every negation — Orayen concedes as much. I surmise that the most common use of negation is not that strong. And if a gradualistic approach to truth has real merit, the relevantist (or more exactly “entailmentalist”) enterprise, duly strengthened, is not as ill-advised as that, after all.

I’ll bring this discussion to a close by touching on a minor point. On p. 233 Orayen considers A&B’s claim that DS is applicable only whenever ‘ p or q ’ contains an “intensional” ‘or’ in virtue of which the disjunction in question can be paraphrased as «Were it not the case that p [it would be the case that] q ». Orayen elaborates on an illustration by E. Adams. From ‘Either Oswald killed Kennedy or somebody else did’ and ‘Oswald didn’t kill Kennedy’, we should conclude that someone else killed him. Yet — Orayen claims — we would’n draw from the premise the conclusion that, if Oswald had not killed Kennedy, somebody else would have done so — unless we think there was a conspiracy, or that Kennedy was fated to be killed by Destiny, or something like that. But is the appropriate subjunctive conditional rightly stated? Why not this other way: ‘Were it not the case that Oswald killed Kennedy, it would be the case that somebody else did it’?

Anyway, this comment is of quite secondary importance for my main purpose in this section, which was that of showing that, even if Orayen is right against the relevantist arguments, yet DS may need to be hedged.

§4.— Castañeda’s Guises

Orayen’s book’s last chapter (chp. VI, pp. 263ff) deals with problems of logic and existence. Orayen discusses Meinong’s original approach, Russell’s objection and one among the several neo-Meinongian approaches currently available, namely Castañeda’s guise theory.

Orayen’s main objection to Castañeda’s theory is that it leads to a wrong counting. One of the principles of Castañeda’s theory is that the expression «the entity that p » is the only entity which has only one characteristic, namely that of being such that p .

Indeed Castañeda distinguished several ways of having a property (several predication relations) and several [quasi]identity relations — identity proper, consubstantiation and consociation, the last one being left aside in the present discussion. A *guise*, something denoted by a definite description, internally has only such properties as are ascribed to it in (or by) the description, but externally

has all properties of any guises with which it is consubstantiated. Now, only existent entities are consubstantiated (with themselves and with other entities). (In order to overcome certain infelicities which stem from such an approach concerning non-existent entities — such as, e.g., that nothing could be ascribed to a nonexistent entity except what, word for word, served to characterize it in the first place — Castañeda resorts to consociation; as announced, that side of his approach lies beyond the scope of our present comments.)

There are serious problems about Castañeda's guise theory e.g. whether *the entity that is a horse, that flies, that eats rabbit-meat, that never sleeps* is the same (exactly the same entity) as *the horse that flies and eats rabbit-meat and never sleeps*. Also such problems — already discussed by a number of critics of guise theory — as arise concerning descriptions (“second-order descriptions” perhaps) which contain the technical terms which are used in the theory. Castañeda seems to be led to something like Frege's plight about *the concept [of being a] horse*. An ordinary entity, like the Eiffel Tower, is a system of guises (Castañeda sometimes calls it a *set* of guises and Orayen comments on that unfortunate application of the word; in fact, ‘system’ is, if vague, more appropriate here than ‘set’, although of course an axiomatic treatment has then to be propounded for “system theory”, in order for us to be able to assess what one is committed to when he regards an ordinary individual as a system of guises). One of those guises is *the tower built by Eiffel*; another one *the highest building in Paris* (or was it?), etc. Now, what about *the system of guises which has only all properties had by at least one of the guises consubstantiated with the Eiffel Tower*? Let us abbreviate that phrase as ‘ δ ’. If δ is one of the guises making up the [ordinary entity] Tour Eiffel, then a number of odd results ensue: δ internally has the property of being the ordinary entity Tour Eiffel, a system of guises; one of that system's components is the system itself, which badly calls for a treatment allowing non-well-founded systems; furthermore, δ internally has all the properties externally had by the Tour Eiffel. With more convoluted descriptions, worse would follow. A way out is to say that such descriptions do not describe what they seem to; but then what about the initial point, namely that each guise internally has the property which characterizes it?

Orayen's main objection to Castañeda's theory is closely related to the foregoing comment. Orayen's point is that guise theory leads to counting trouble. Thus if we know that at this tomb are the remains of the English writer who made methodism world-wide famous, the woman whose pen-name was ‘George Eliott’ and the author of *Silas Marner*, we say that only one entity is buried there, Mary Ann Evans. Yet Castañeda is bound to agree that there are three, an English writer, a woman and the author of *Silas Marner* — and infinitely many others of course.

Castañeda's initial reply to that problem was the converse to our just considered way-out to the problem of «the system of guises such that...», viz. that sometimes an ordinary definite description does not denote the guise it would normally denote, but the system the guise is a member (or a “part”) of, i.e. the system of all the guises consubstantiated with the guise in question. Orayen (p. 282) points to two difficulties with such a solution. First its *ad-hoc*-ness. Second, and more seriously, what about the descriptions ‘the system of guises consubstantial with the woman whose pen-name was ‘George Eliott’ and ‘the system of

guises consubstantiated with the author of *Silas Marner*? According to guise theory they denote different guises. Which brings us back to our previous concern over descriptions which use the very same technical terms the theory avails itself of. But, if it is true that those descriptions denote different entities (guises — in fact none of them denotes a system of guises!), then the very same clarification sentence ‘Sometimes the description ‘the author of *Silas Marner*’ denotes the system of guises consubstantiated with the author of *Silas Marner*’ is a sentence that says something different from what it was meant to, and in fact sometimes surely false according to Castañeda’s lights. Thus the clarification cannot be uttered within guise theory with the intended meaning — as Frege could not say within his own framework that the concept of being a horse is what is denoted by the verbal phrase ‘is a horse’.

Castañeda, in his reply, contained in Orayen’s book (pp. 303-5), devises a procedure through which he ensures that for any property P there is an equivalence class, A, of guises which picks up just one guise out of a system of mutually consubstantiated guises with [externally] property P.

Incidentally, it seems to me there is a slip in Castañeda’s formulation of condition (ii): if what he wanted — as Orayen says, in footnote, 23, p. 285 — was to ensure that A comprises only one guise of each system of mutually consubstantiated guises which are P, then a protasis is missing to the effect that the guises are different; namely, Castañeda’s condition (ii) is ‘ $\forall g^1, g^2 (g^1 \in A \& g^2 \in A \supset \neg C^*(g^1, g^2))$ ’; I think that either he was using Hintikka-like exclusive quantifiers, or he meant ‘ $\forall g^1, g^2 (g^1 \neq g^2 \& g^1 \in A \& g^2 \in A \supset \neg C^*(g^1, g^2))$ ’, i.e. no two different consubstantiated guises are members of A — in other words ‘ $\neg \exists g^1, g^2 (g^1 \neq g^2 \& g^1 \in A \& g^2 \in A \& C^*(g^1, g^2))$ ’. A different problem is that there is an implicit appeal to something like the axiom of choice here. A detailed axiomatization of system theory is needed in order for us to see what is afield.

Through such a device, we may ask how many entities belong to such a class A and [externally] have a separate property Q. By so doing we’ll solve the counting problem in an obvious way. The answer will obviously be: one.

Orayen’s objection (pp. 285-6) is that such a device yields the correct and expected counting result, but paying the price of debarring us from naming what is thus counted. We know that there is only one entity which is the entity belonging to the class A of guises meeting Castañeda’s three requirements and externally having the property of writing *Felix Holt*. But such an entity is a guise, which internally has the property of belonging to the class A of guises meeting Castañeda’s three requirements and externally having the property of writing *Felix Holt*. Now, by counting guises we wanted to count guise systems — that was the very purpose of devising the A classes in the first place. Can we name those systems? No, we cannot. Each phrase we may happen to coin for the purpose turns out to denote a guise.

There is a *coda* to Castañeda’s reply that Orayen refrains from going into. Castañeda points to an enrichment of the formal language in which guise theory is formulated, consisting in the addition of a new sort of variables ranging over guise systems. A categorial predicate ‘M’ can also be added, which — although Castañeda does not dwell on specifics here — would be such that for any new variable, ‘m’, ‘ $m \in M$ ’ (or ‘Mm’) would be “analytic” — or something like that

—, whereas apparently — since predicate 'M' is categorial — for any variable of a different sort, 'x', 'x ∈ M' (or 'Mx') would be ill-formed.

Again, such a solution shares all the ineffability problems known to afflict type-theory and many-sorted languages. Nothing really new. The *concept-horse* trouble is still with us. Pluricategorial ontologies are ineffable, all of them. So simple a sentence as 'guises are not systems of guises', which Castañeda's reshuffled theory obviously intends to espouse, cannot be said within the theory. Any new reshuffling will entail similar problems one stage up.

§5.— Conclusion

There are of course lots of extremely interesting discussions in Orayen's book which I have abstained from commenting on, out of a sense of space limitations. The reader has realized that my line is not Orayen's. Yet I have read only a few books as thought-provoking as this one. If you are not indifferent to the problems of philosophy of logic, read it. Apparently, an English translation is in prospect. Meanwhile, that may be a good opportunity to study Spanish.

The main merit in a book is the author's. Nevertheless, let me also praise the publisher, the National University of Mexico, which deservedly has acquired a high reputation for the excellent work in analytical philosophy which is done there — of which this book is a telling example.²

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² I am very thankful to Raúl Orayen for his comments on a previous version of this paper and to J.J.C. Smart for his kind help in making its style less unEnglish.

NEWS AND ANNOUNCEMENTS

The Editorial Cabinet of *SORITES* is sad to report the untimely death of Prof. Miguel Sanchez-Mazas, Editor of *THEORIA* (Spain), who passed away on Saturday the 6th of May 1995, because of a heart failure. Miguel Sanchez-Mazas had been born in Peschiera, Italy, in 1925. His main fields of research were philosophy, the theory of law, mathematics and logic. His political activities lead to his being compelled to become an exile in Switzerland for more than two decades — despite the fact that his father had been a minister under Franco's regime. As a Leibniz scholar, a worker in the field of deontic and juridical logic, an outstanding academic and a promoter of analytical philosophy in Spain, Miguel Sanchez-Mazas will be remembered with mourning, gratitude and affection by a great many people in many countries where his work came to be known and appreciated.



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(2.2) When WP5.1 format is not available and we have been unable to use the original file, a good ideal is for the author to have their doc converted to a .html file (there are lots of HTML editors and document-to-HTML converters from a great many formats — PC-Write, [La]TeX, MS-Word and Windows-Word etc). We expect HTML files to bear the extension '.htm'.²

(2.3) Another solution is to use [stripped and extended] ASCII format, which means: text files (not binary ones) written using any printable ASCII characters of Code-page 437 (USA or default), i.e. any character except ASCII_00 through ASCII_31; with CRs (carriage returns) only between

¹ Unfortunately we cannot yet handle TeX or LaTeX files. The converters we've tried have proved useless.

² **The following information is mainly due to Ian Graham. We have abridged some relevant parts of his document and added the item concerning LaTeX.**

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HoTMetaL for Windows is a commercial HTML editor, but a free implementation is available via anonymous FTP. There may also be Mac (and other) versions. SoftQuad (who makes HoTMetaL) has their own Web server with up-to-date information. There are several anonymous ftp sources of the HoTMetaL executable. One is in gatekeeper.dec.com, while another is the NCSA ftp archive.

PC-Write-HTML-Editing-Macros, a package for editing HTML docs with the PC-Write editor, is available at: <ftp://www.ucc.ie/pub/pcw4.zip>.

HTML Assistant is an MS Windows text editor with extensions to assist in the creation of HTML hypertext docs to be viewed by World Wide Web browsers like Cello and Mosaic. FTP-available from <ftp.cs.dal.ca/htmlasst/>.

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PSTOHTML (PostScript-to-HTML Converter) is a Perl-script package for converting postscript-to-html, and also for converting PostScript to plain text. If you have perl on your PC, then you can run this. Users of this code need a postscript interpreter, e.g.

LaTeX2HTML is a Perl program that converts documents written in LaTeX into the HTML format. It handles equations, tables, figures, footnotes, lists and bibliographies. It translates accented and special characters to the equivalent ISO-LATIN-1 character set whenever possible. The actual code is located at <http://cbl.leeds.ac.uk/nikos/tex2html/latex2html.tar> or <http://cbl.leeds.ac.uk/nikos/tex2html/latex2html.tar-gz>. The author is Nikos Drakos, <nikos@cbl.leeds.ac.uk>, <http://cbl.leeds.ac.uk/nikos/personal.html>.

paragraphs — not as end-lines. Such files will here be called ‘ASCII files’. We expect them to bear the extension ‘.ASC’.

(2.4) Another alternative (which is in itself worse, but which nevertheless may be more practical in certain cases) is to use the DOS text format, with no character outside the range from ASCII_32 through ASCII_126, no hyphenation, a CR at the end of each line and two CRs separating paragraphs. Such files will be here called ‘text files’; we expect them to bear a ‘.txt’ extension.

(3) In cases (2.2) and (2.4) the contributor can include their paper into an e_mail message sent to one of our editorial inbox (sorites@olmo.csic.es)

(4) Before sending us their file the contributor is advised to compress it — except in case they are sending us a text file through procedure (3) above. Compression reduces disk-storage and shortens transmission time. We can extract and expand files archived or compressed with Diet, ARJ (both warmly recommended), Tar, Arc, Zip (or PKZip), GZip, Compress (i.e. .Z files), LHA, Zoo, RaR, and some versions of the MAC archivers PackIT and StuffIT.

(5) The most expedient way for contributors to send us their submitted paper is through anonymous FTP. At your host’s prompt, you enter ‘FTP olmo.CSIC.es’; when you are prompted for your username, you answer ‘FTP’ or ‘anonymous’; when you are next prompted for your password, you answer with your e_mail address; once connected, you enter ‘cd pub/sorites/incoming’, then ‘binary’, and then ‘put xxx’ — where xxx is the file containing your submitted paper and a covering letter. (If the file is an archive, the extension must reveal the archiving utility employed: ‘.gz’, ‘.Arj’, ‘.RAR’, etc. (DIETed files needn’t bear any special denomination or mark; they will always be automatically recognized by our reading software.)

(6) Whenever a paper is submitted, its author must send us a covering letter as an e_mail message addressed to one of our editorial inboxes.

(7) If a contributor cannot upload their file through anonymous FTP, they can avail themselves of one of the following alternatives.

(7.1) If the file is a ‘.htm’ or a ‘.txt’ file (i.e. in cases (2.2) and (2.4)), simply include it into a e_mail message.

(7.2) In other cases, an 8-to-7 bits converter has to be used, upon which the result can also be included into an e_mail message. 8-to-7 bits convertors «translate» any file (even a binary file) into a text file with short lines which can be e-mailed. There are several useful 8-to-7 convertors, the most popular one being UUnCODE, which is a public domain software available for many different operative systems (Unix, OS/2, DOS etc). Another extremely good such convertor, very easy to use, is Mike Albert’s ASCIIZE.³ We can also decode back into their binary original formats files encoded into an e-mailable ASCII format by other 8-to-7 bits convertors, such as: TxtBin, PopMail, NuPop, or University of Minnesota’s BINHEX, which is available both for PC and for Macintosh computers. Whatever the 8-to-7 bits encoder used, large files had better be

³ Mike Albert’s address is P. O. Box 535, Bedford, MA 01730, USA.

previously archived with Arj, Diet or any other compressor, the thus obtained archive becoming the input for an 8-to-7 bits convertor.⁴

(7.3) An alternative possibility for contributors whose submitted papers are WordPerfect 5.1 or WordPerfect 6 docs is for them to use a quite different 8-to-7 bits convertor, namely the one provided by the utility Convert.Exe included into the WordPerfect 5.1 package. (WordPerfect corporation also sells other enhanced versions of the convertor. WordPerfect 6.0 has incorporated a powerful conversion utility.) A separate e_mail message is mandatory in this case informing us of the procedure. The result of such a conversion is a 'kermit-format' file.⁵

(8) You also can submit your manuscript in an electronic form mailing a diskette to the Editor (Prof. Lorenzo Peña, CSIC, Institute of Philosophy, Pinar 25, E—28006 Madrid, Spain); diskettes will not be returned, and regular-mail correspondence will be kept to a minimum.

(9) Such submitted papers as are neither WordPerfect 5.1 files nor files in HTML format require some preparation.

(9.1) Ours is not a logic journal, but of course one of the glories of analytical philosophy is its rigour, which it partly owes to auxiliary use of symbolic notation in order to avoid ambiguities, make matters of scope clear or render arguments perspicuous. ASCII translations of symbolic notation are problematic, especially in cases of nonclassical logics, which may use sundry negations, disjunctions, conjunctions, conditionals, implications and also different universal and particular quantifiers (e.g. existentially and nonexistentially committed quantifiers, a familiar dichotomy in Meinongian circles). While using WordPerfect 5.1 you can represent a huge variety of such nuances, it is impossible to express them within the narrow framework of text or even ASCII files (i.e. even when the 224 printable [extended] ASCII characters can be used). Still, for some limited purposes, a translation of sorts can be attempted. You are free to choose your representation, but the following translation is — for the time being — a reasonable one: '(x)' for universal quantifier, '(Ex)' for existential quantifier; '&' for conjunction; 'V' for disjunction; '->' for implication (if needed — something stronger than the mere 'if ... then'); 'C' for conditional; '=>' for an alternative (still stronger?) implication; '_pos_' for a possibility operator; '_nec_' for a necessity operator.

⁴ For the time being, and as a service to our readers and contributors, we have a directory called 'soft' hanging from our directory sorites at the node olmo.csic.es. The directory contains some of the non-commercial software we are referring to, such as archivers or 8-to-7 encoders (or 7-to-8 decoders).

⁵ In the case of WordPerfect 5.1, the procedure is as follows. Suppose you have a file called 'dilemmas.wp5' in your directory c:\articles, and you want to submit it to **SORITES**. At your DOS prompt you change to your directory c:\articles. We assume your WordPerfect files are in directory c:\WP51. At the DOS prompt you give the command '\wp51\convert'; when prompted you reply 'dilemmas.wp5' as your input file whatever you want as the output file — suppose your answer is 'dilemmas.ker'; when prompted for a kind of conversion you choose 1, then 6. Then you launch your communications program, log into your local host, upload your file c:\articles\dilemmas.ker using any available transmission protocol (such as Kermit, e.g.). And, last, you enter your e_mail service, start an e_mail to sorites@olmo.csic.es and include your just uploaded dilemmas.ker file into the body of the message. (What command serves to that effect depends on the e_mail software available; consult your local host administrators.)

With WordPerfect 6 the conversion to kermit format is simple and straightforward: you only have to save your paper as a 'kermit (7 bits transfer)' file.

(9.2) In ASCII or text files all notes must be end-notes, not foot-notes. Reference to them within the paper's body may be given in the form '\n/', where n is the note's number (the note itself beginning with '\n/', too, of course). No headings, footings, or page-breaks. In such files, bold or italic must be replaced by underscores as follows: the italicized phrase '*for that reason*' must be represented as '_for that reason_' (NOT: '_for_that_reason_'). A dash is represented by a sequence of a blank space, two hyphens, and another blank space.⁶

⁶ Those devices are temporary only. Later on we'll strongly advise and encourage those of our contributors who can use neither WordPerfect format nor one of the other word-processor formats our converters can handle automatically to resort to HTML, with certain conventions in order to represent Greek characters as well as logical and set-theoretic symbols.

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¹ The reader may find an excellent discussion of copyright-related issues in a FAQ paper (available for anonymous FTP from rtfm.mit.edu [18.70.0.209] /pub/usernet/news.answers/law/Copyright-FAQ). The paper is entitled «Frequently Asked Questions about Copyright (V. 1.1.3)», 1994, by Terry Carroll. We have borrowed a number of considerations from that helpful document.

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