Modern Modalities

Studies of the History of Modal Theories
from Medieval Nominalism to
Logical Positivism

S. Knuuttila

Editor

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INTRODUCTION

The word "modern" in the title of this book refers primarily to post-medieval discussions, but it also hints at those medieval modal theories which were considered modern in contradistinction to ancient conceptions and which in different ways influenced philosophical discussions during the early modern period. The medieval developments are investigated in the opening paper, 'The Foundations of Modality and Conceivability in Descartes and His Predecessors', by Lilli Alanen and Simo Knuuttila.

Boethius's works from the early sixth century belonged to the sources from which early medieval thinkers obtained their knowledge of ancient thought. They offered extensive discussions of traditional modal conceptions the basic forms of which were: (1) the paradigm of possibility as a potency striving to realize itself; (2) the "statistical" interpretation of modal notions where necessity means actuality in all relevant cases or omnitemporal actuality, possibility means actuality in some relevant cases or sometimes, and impossibility means omnitemporal non-actuality; and (3) the "logical" definition of possibility as something which, being assumed, results in nothing contradictory. Boethius accepted the Aristotelian view according to which total possibilities in the first sense must prove their mettle through actualization and possibilities in the third sense are assumed to be realized in our actual history. On these presumptions, all of the above-mentioned ancient paradigms imply the Principle of Plenitude according to which no genuine possibility remains unrealized. (For the many-faceted role of the Principle of Western thought, see A.O. Lovejoy, *The Great Chain of Being. A Study of the History of an Idea*, Harvard University Press, Cambridge, Mass. 1936, and S. Knuuttila (ed.), *Reforging the Great Chain of Being. Studies of the History of Modal Theories* (Synthese Historical Library 20), Dordrecht, Reidel 1981.)

Boethius sometimes says that there can be opposite diachro-

nic possibilities vis-à-vis future moments of time, but even in these cases unrealized alternatives cease to be possibilities when one of them is actualized. The idea of spelling out the meaning of modal notions with the help of synchronic alternative states of affairs hardly played any role in ancient thought; after having been suggested by some Patristic thinkers, it became a systematic part of modal thinking only in the twelfth century. It was realized that even if the traditional philosophical conceptions might be applicable to the phenomenal reality, possibilities of God, acting by choice, refer to alternative providential plans or histories. Although there were not many twelfth or thirteenth century figures who, like Gilbert of Poitiers or Robert Grosseteste, would have understood the theoretical significance of the idea of modality as referential multiplicity, the doctrine of special theological modalities motivated new kinds of discussions of the nature of natural necessities and the relations between the notions of possibility, conceivability, and knowability.

In ancient metaphysics, modality and intelligibility were considered real moments of being. A Christian variant of this doctrine can be found in such thirteenth century Parisian scholars as Thomas Aquinas, Bonaventura, and Henry of Ghent. They thought that God's infinite act of understanding contains the ideas of all conceivable kinds of beings. Ideas as possibilities have an ontological foundation, however, because God's act of thinking consists of understanding the infinite ways in which his essence could be imitated by finite beings. Because the ontological foundation of possibilities remains as such unknown to men, it is claimed that we usually cannot decide whether an alleged unrealized possibility really is a possibility or not.

In Duns Scotus's modal theory, the ontological foundation of thinkability is given up. The area of logical possibility is characterized as an infinite domain of thinkability which, without having any kind of existence, is objective in the sense that it would be identical in any omniscient intellect thinking about all thinkable things. This theory of the domain of possibility as an absolute precondition of all being and thinking was accepted by Ockham and many other medievals, and through Suárez's works it was commonly known in the seventeenth century, too. Another historically important feature of Scotus's modal theory is that it systematically developed the conception of modality

as referential multiplicity. The domain of possibility as an a priori area of conceptual consistency is partitioned into equivalence classes on the basis of relations of compossibility. One of them is the actual world.

Alanen and Knuuttila argue that Descartes's remarks about God's absolutely unlimited power should be understood as a theory directed against the classical view of the ontological foundation of modality as well as against the "modern" transcendental theory of modality and conceivability. His doctrine of eternal truths created *ex nihilo* is a constructivistic doctrine of rationality and intelligibility.

One of the difficulties in Descartes's theory is that when he makes God freely choose a Scotist approach to modalities, some modality seems to be there before it is introduced. Leibniz paid attention to this feature and maintained the view according to which logical or formal possibilities must precede God's thought and will. Leibniz's modal ideas are investigated by Jaakko Hintikka in the paper 'Was Leibniz's Deity an *Akrates*?' where the difference between Aristotle's and Leibniz's modal thought is delineated as follows. The Principle of Plenitude was adopted in the Aristotelian tradition because of the assumption that modalities can be characterized in statistical terms. Aristotle also speaks about conceptual modalities defined with the help of the notion of contradiction, but because the Aristotelian modal paradigm is an amalgamation of several thinking habits, the idea of statistical necessity (lawlikeness) goes inevitably together with conceptual necessity. Aristotle's univocal treatment of modality has its roots in the absence of any conception of alternative possible worlds in his thought. In Leibniz the idea of lawlikeness (physical or hypothetical necessity) is strictly detached from the core idea of metaphysical or conceptual necessities. There are in Leibniz's class of metaphysical necessities propositions which twentieth-century philosophers would not consider logical necessities, and so Leibniz (like his predecessors since Scotus and Ockham) could try to interpret physical or nomic necessities (e.g. essential features of contingent species) as hypothetical or conditional metaphysical necessities. But it is important to realize that there is nothing in Leibniz's conception of metaphysical necessity, codified in the idea of truth in all possible worlds, which relates it as such to lawlikeness in some one world.

In Leibniz's modal theory the conceptual element stays with metaphysical or conceptual modalities, and the nomic element belongs to the natural world-bound modalities which can be characterized with the help of the statistical model. Most of the philosophical problems of Leibniz's modal thought are concentrated in the third element, the dynamic aspect of reality traditionally referred to by the term "potency". In discussing this topic, Jaakko Hintikka shows that there are subtleties in Leibniz's thought which remained obscure to his early critics as well as to many later commentators. It has been asked, e.g., whether God can choose the best possible world freely, if no other choice is thinkable. Hintikka stresses that we should carefully attend to Leibniz's remark that the choice is not metaphysically but only morally necessary. Interesting light is shed on this remark through an analysis of Leibniz's new conception of rational decision-making where the theory of the vector character of forces is applied to human action. If an action is the result of a number of vector-like forces pulling the agent in different directions, it is possible that the right thought is fully present in the agent's mind but not as the only motivational factor. The resulting behaviour may differ from what is actually thought to be the best.

Leibniz strongly criticized the metaphysical approaches of Descartes, Hobbes, and Spinoza, who in his opinion equated possibility with what has been, is, or will be. Descartes accepted this statistical interpretation of modality only in his physics, but as for Hobbes and Spinoza, Leibniz correctly noted that their interpretation of the doctrine of sufficient reason without the idea of alternativeness led them to metaphysical determinism. As shown by Ilkka Patoluoto ('Hobbes's System of Modalities') Hobbes thought that possibilities as plenary powers are real only when actualized and that possibilities as thinkable effects of powers must sometimes be actualized. Similar formulations can be found in Spinoza. According to Hobbes and Spinoza, we sometimes call eternally unrealized things possibilities, because they are compatible with our partial knowledge of reality. As far as no principal distinction is drawn between logical and nomic necessities, unrealized epistemic possibilities are in fact impossibilities.

All of the above-mentioned modal paradigms found adherents in the eighteenth century, but there were also new theories

like Hume's psychological account and Kant's epistemic re-
duction of modality, both of which were critical towards the
doctrine of objective modalities. According to Jaakko Hintikka
and Heikki Kannisto, Kant could be said to apply the Cartesian
idea of created modalities in his theory of knowledge to the ef-
fect that the scope of phenomenal possibilities is accomplished
by ourselves, through the ways we structure and synthesize our
experience. In his *Critique of Pure Reason*, Kant argues that
the only modal paradigm applicable to the concepts of objects
created on the basis of our experiences is the statistical one.
Like Thomas Aquinas, he thought that unrealized noumenal possi-
bilities which might withdraw the Principle of Plenitude remain
beyond the realm of human understanding. ('Kant on "The Great
Chain of Being" or the Eventual Realization of All Possibilities:
A Comparative Study' in Knuuttila (ed.) 1981). It may be added
that Hume also says that necessity is a determination of the
mind to pass from an object to the idea of its usual attendant.
"As objects must either be conjoined or not, and as the mind
must either be determined or not to pass from one object to an-
other, it is impossible to admit of any medium betwixt chance
and an absolute necessity" (in *A Treatise of Human Nature* I,
sec. XIV).

In their paper 'Hegel on Modalities and Monadology', Mar-
tin Kusch and Juha Manninen treat Hegel's modal theory which,
along with the psychological and probabilistic interpretations, be-
longs to the most influential new nineteenth century accounts
of the nature and meaning of modalities. In the detailed study,
special attention is paid to Hegel's attempt to reinterpret Leib-
nizian modal metaphysics by leaving out the idea of choice be-
tween alternatives. Hegel distinguished between formal, real,
and absolute modalities. While discussing real modalities, he
equated possibilities with sufficient reasons, interpreted as lim-
ited sequences of events preceding and necessitating things
which can be. Although things thus cannot be other than they
are, as actualizations of real possibilities they are not eternally
determined, because their possibilities *qua* identifiable preceding
conditions always have a historical beginning. From the point of
view of absolute modalities, which pertain to the totality of
the world process, all real possibilities are in a teleologically
necessary way posited by Spirit which explicates itself through
them. The Hegelian Spirit does not act by choice between alter-

natives. As an ungrounded ground it creates and actualizes all the possibilities which are needed for becoming acquainted with what is reasonable. Hegel's criticism of the formal modalities elucidates his reasons for deviating from the Leibnizian-Wolffian philosophy. Instead of considering logical possibilities as metaphysical starting points, Hegel regarded them as products of mind, abstracted or derived from the ontological process. He thought that although such an abstraction may be useful as a stage on thinking, formal modalities as such should not be granted any objective status.

The idea of real possibilities as moments of a teleological world process was included in other philosophical systems of German idealism, too. As shown in Pascal Engel's paper 'Plenitude and Contingency: Modal Concepts in Nineteenth Century French Philosophy', Félix Ravaisson represented in France a version of Schelling's transcendental idealism where the process of reality was understood as a gradual actualization of whatever can contribute to the final unity of the absolute being. Ravaisson was influenced by Maine de Biran who modified Hume's remarks about the psychological nature of modal notions into a metaphysical theory, according to which "necessity" and "possibility" refer to features of ultimate reality, adequately reflected in the conceptions of identity and effort of the self. These founders of French spiritualism opposed universal determinism, encouraged by Laplace's philosophy, but instead of questioning its acceptance of the Principle of Plenitude, they tried to argue for a spiritual and teleological core of reality.

In his positive philosophy, August Comte put forward a purely statistical interpretation of nomic modalities. Although he thought that the natural laws do not express logical necessities and that they can be changed, he was commonly considered a representative of metaphysical necessitarianism, the modal structure of which was criticized by A.A. Cournot, Charles Renouvier and Émile Boutroux. According to Cournot, there are objective contingencies in reality in the form of unpredictable coincidences of independent causal chains; mathematical probabilities could be used as measures of generic physical possibilities. Although Renouvier criticized this theory from the point of view of his neo-Kantian epistemology, he argued that our consciousness of the free choice between alternative diachronic possibilities and the finiteness of the causal explanations available to

us suggest that there are genuinely contingent events in the world. Boutroux, who was more influenced by Descartes than Kant, developed these ideas into metaphysical contingentism, according to which the general structures and laws of being should be understood as contingent moments of a creative process of reality.

The idea of objective unrealized possibilities, defended by the French contingentists, was attacked by Henri Bergson whose actualistic view of reality did not admit any synchronic or diachronic alternatives. As shown by Engel, Bergson's own theory of the actualization of all "virtualities" in time comes near to the old doctrine of necessary plenitude of being. It is characteristic of the period that the idea of objective modal structure is also given up in Léon Brunschwicg's spiritual idealism.

In her paper 'Frege and His German Contemporaries on Alethic Modalities' Leila Haaparanta asks why Frege, whose work on a universal language was essentially influenced by Leibniz, did not give modal concepts any place in his conceptual notation. It seems that the empiricist tradition and Kant's remarks on modality made many German logicians sympathetic towards a psychological interpretation of modal terms as referring to the modes of judgements (Sigwart, Wundt, Erdmann, Lipps, Schröder). It is somewhat surprising, however, that even if Frege heavily attacks psychologism in logic, he restricted modal notions to our knowledge just as psychologists did. In this respect he differed from some other logicists, e.g. Husserl, who located modality in the *a priori* essential structures of experience rather than in the phenomenological stuff of our mind. Frege insisted that his logical language is a material and universal language which speaks about objective reality; it is related to objects of experience and to the realm of ideal objects. Haaparanta shows that there are questions in connection with which Frege easily could have employed the theory of possible worlds. Frege excluded the *prima facie* natural idea, she argues, because he was convinced of Kant's view that modal structures do not belong to the reality which is accessible to us.

In spite of the great achievements of modern formal logic, theories of modalities remained in a backward state among the nineteenth century logicians. Ilkka Niiniluoto shows in his paper 'From Possibility to Probability: British Discussions on Modality

in the Nineteenth Century' that although the popularity of subjective and epistemic interpretations of modalities as such sheds some light to this state of affairs, many logicians thought, moreover, that the new research programme of probability theory will outdo and substitute traditional modal discussions. The epistemic interpretation of modality easily led to the idea of reducing modalities to epistemic probabilities. In his interpretation of probability as a long run frequency John Venn applied the reductionistic approach to statistically understood physical modalities, too. The propensity interpretation of probability, advocated later by Charles Peirce, is interesting in this context, because it associates probability with objective possibilities for which the Principle of Plenitude is false.

When the contemporary prominence of the idea that reality has a modal structure is compared with the scepticism of Frege and his contemporaries, it is natural to ask about the background of the new life of modal metaphysics. This question is touched in Hans Poser's paper 'The Failure of Logical Positivism to Cope with Problems of Modal Theory'. Logical positivism was an influential philosophical movement which wanted to deal only with what is empirically given and to do it only through an extensional logic. As such it was a kind of test case of making philosophy without modalities. As shown by Poser, there were topics (e.g. questions of conceivability, natural laws, and dispositional predicates) which proved to be very cumbersome in this approach. Contrary to its tenets, the attempt convinced philosophers that any extensional empiricism is doomed to failure by starting from presuppositions that are too restricted. This was in fact already realized in Wittgenstein's *Tractatus* which was often considered one of the basic works of the movement.

Hans Poser's paper originally appeared in German in *Studium Generale* 24 (1971), pp. 1522 - 1535. It is published with the permission of the publisher which is gratefully acknowledged. All other papers are previously unpublished.

Simo Knuuttila

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THE FOUNDATIONS OF MODALITY AND CONCEIVABILITY IN DESCARTES AND HIS PREDECESSORS

INTRODUCTION

Ancient philosophical worldviews commonly included the idea of an eternal structure of reality which was taken to be manifested in the invariant system of natural kinds, unchangeable natural tendencies, and circular operations of the cosmos. The philosophers thought, since Aristotle, that the terms "possibly" and "the possible" can be used of that which, being assumed, results in nothing contradictory. They also seem to have shared the view that possibilities are assumed to be realized in our actual history. Hence the denials of natural invariances, static or dynamic, were impossible and the statements asserting them necessary. The same was claimed about statements concerning the past and the present. One feature of this picture is the special status attributed to the so-called future contingents in ancient thought. It could be asked whether they specified an area where possibility and reality did not overlap. Anyway, the common metaphysical tenet was that the invariant and eternal structures and operations fixed the generic necessities and possibilities or, what was taken to be the same, what can or cannot be justifiedly assumed to be realized.[1]

This thinking habit was entertained by those mid-thirteenth century Aristotelian arts masters at the University of Paris who labelled eternally unrealized generic possibilities as incomprehensible when confronted with a trend of thought according to which the meaning of modal notions should primarily be spelled out by considering several alternative histories simultaneously. The proponents of the latter view had argued that many of the natural invariances and all past and present finite beings could have been other than they are in the sense that their variants are included in unrealized designs of the world. The controversies in Paris are historically interesting because they reflect a conflict between the classical ideas of conceivability and an

1

early version of the modern view that the notions of intelligibil-
ity or thinkability are not necessarily bound to any given onto-
logical shape of the world. The new approach emerged from the
idea of an omnipotent God acting by choice, which in the
twelfth century led thinkers like Gilbert of Poitiers to use
modal notions as tools for treating the referential multiplicity
of terms and sentences with respect to imaginable worlds and
histories.

The doctrine of creative contingency, also recurrent in medi-
eval Arab and Jewish thought, did not lead to any general refu-
tation of the extensionally orientated uses of modal terms.
Even thinkers operating with the notion of alternative providen-
tial plans could hesitate to refer to the contents of unrealized
absolute possibilities. When divine possibilities were interpreted
as being determined by God's essence or by archetypal patterns
existing eternally in God's intellect, it could be thought that
our limited knowledge of the supernatural matters prevents us
from knowing which of the unrealized predications are actually
realizable. Many theologians used this model of absolute possibil-
ities having an ontological foundation which largely remains
beyond the boundaries of human knowledge.

The emergence of the theory of modality as referential mul-
tiplicity in medieval theology and philosophy is discussed in Sec-
tion 3 of this paper. The main features of ancient modal para-
digms are delineated through an analysis of the modal thinking
of Boethius, the influential sixth century commentator on Aris-
totle and one of the founders of scholasticism. The further de-
velopment of the intensional modal theory in the fourteenth cen-
tury is examined in Section 4. It is argued that John Duns Sco-
tus was the first to realize that modal language as a whole
can and should be rearranged on the basis of the idea of alter-
native models. This program virtually involved a secularization
of modalities to the effect that the domain of logical possibil-
ity, structured by logical necessities and divided into different
classes of compossible states of affairs, is taken as an a priori
area of conceivability. Scotus and Ockham thought that necess-
ary and possible truths are prior to any intellect, divine or
human, although they or their correlates as such are not actual
or existent in any sense. Any predication which does not con-
tain contradiction is logically possible, and in so far as ex-
amples of unreal beings are analytically formed, any intellect

can know whether they are possible or not. According to this view, necessary truths are neither realistic nor constructivistic, but some kinds of absolute preconditions of thinking for every intellect. Possible truths similarly define the area of absolute conceivability.

In Section 1 we shall discuss Suárez's theory of eternal or necessary truths derived from the modern doctrine mentioned above. Section 1 also serves as an introduction to our theme, because Suárez offers a short survey of some medieval theories. Section 2 deals with Descartes's view of the origin of necessity and possibility, which was formulated in opposition to Suárez's theory. According to Descartes, God has chosen necessary truths to be true by a free act of will. Scotus, Ockham, and Suárez had different answers to the question whether conceptual necessities as objects of divine intellect are produced in intentional being, but they all thought that necessary truths cannot be other than they are, independently of who is thinking about them. This, we argue, was what Descartes wanted to deny. He was opposed both to the modern idea of absolute conceivability and to the classical realist view of thinkability. His doctrine of eternal truths as created *ex nihilo* should be understood as a constructivist theory of intelligibility and rationality. Descartes's claim that the area of conceivability is freely set by God and that it could therefore have been different from what it is does not imply any contradiction, because according to his view notions or propositions chosen to be necessary or possible are in themselves modally indifferent.

1. SUÁREZ'S THEORY OF NECESSARY TRUTHS

Francisco Suárez's *Disputationes metaphysicae* I - II (Salamanca 1597) had a great influence on the seventeenth century discussions of metaphysics.[2] The work contained several more or less detailed discussions of scholastic themes, and so it also contributed to the fact that certain questions of scholastic philosophy remained living topics in the modern period.[3] In the disputation XXXI (*vol.* II, pp. 224 - 312) Suárez offers a long survey of opinions pertaining to the question about the relation between essence and existence. Suárez first lists some traditional arguments for the so-called real distinction between es-