token-based semantics, claiming that what Socrates says (when he says "Socrates says something false") is false, but an outsider uttering the same sentence would speak the truth. The controversial part of Bradwardine's solution was his claim that when put forward by Socrates, the insoluble sentence signifies and asserts its own truth – and is false for that reason.

After Bradwardine, logicians closely scrutinized the relation of a proposition with the claim that the proposition is true. Do propositions signify their own truth? Is truth a thing such that it can be signified, as Richard Kilvington asks? Bradwardine's claim was that the truth of the sentence is signified only in special cases like in the insolubles, and Heytesbury developed the solution with the idea that one should never specify what the rejected insoluble sentence exactly signifies. As Heytesbury admits this really amounts only to advice how to deal with the paradox in an actual disputation; it is not a genuine solution. According to Heytesbury, no genuine solution has been found nor is any forthcoming. Interestingly enough, he did not seem to think that this would amount to a major problem to any logical system.

John Buridan extended Bradwardine's theory by claiming that all propositions assert their own truth, and offered a logically very elaborate solution to the insolubles without some of Bradwardine' problems, although it remains obscure how exactly the claim that all sentences assert their own truth should be understood. Given the later fame of Buridan's logic, it is natural that his high-quality solution was well-known later in the Renaissance, finding its way even to Miguel Cervantes' *Don Quijote*.

See also: ▶ John Buridan ▶ John Duns Scotus ▶ Richard Kilvington ▶ Thomas Bradwardine ▶ William Heytesbury ▶ William of Ockham

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Intension and Remission of Forms

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Abstract

From the time of Aristotle until the time of the Enlightenment, intension and remission of forms was mostly considered as a problem of change of a specific type of accidental forms (qualities). The problem appeared in various disciplines such as theology (the infusion of charity), philosophy of nature (changes in qualities), medicine (the problem of proportion of elements in the body and the compounding of drug effects), optics (the intensification of light), and methodology and mathematics (the representation of change). During the fourteenth century, the intension and remission of forms became one of the central issues of philosophical debate. Various theories offered by a group of Oxonian thinkers, the so-called Oxford Calculators, contributed to the development of mathematical physics. The most elaborate and influential theory of geometrical representation of the configurations of qualities and motion, however, was presented, by the French natural philosopher – Nicholas Oresme.

Like many other issues pondered over in the Middle Ages, the question of intension and remission of forms may also be traced back to Aristotle. Although he himself did not pay much attention to the problem, he raised the question whether such a virtue as justice or such a condition as health admits of more and less. In *Categories* (8.10b26–30), Aristotle says, "qualification admits more and less; for one thing is called more pale or less pale than another, and more just than another. Moreover, it itself sustains increase (for what is pale can still become paler) – not in all cases though, but in most." He does not specify whether one justice is justice more than another or whether one person is more just than another, that is, has more justice than another one. In other words, Aristotle does not decide whether a form (quality) increases or decreases in intensity or whether the subject, in which qualities inhere, is more or less qualified by different forms existing in it successively. On the other hand, in his *Physics* (5.2.226b) Aristotle defines alteration as a change or motion, which occurs between two extremes, that is, between two different intensities of the same quality. This particular paragraph from Aristotle's *Physics* was a starting point for intense discussions in the fourteenth century, when such terms as "latitude" and "degree" of forms played the main role.

The topic of intension and remission of forms first appeared in Latin West thanks to commentaries on *Categories* written by Neoplatonists – Porphyry and Boethius. In the thirteenth century, a commentary by another Neoplatonist – Simplicius, was introduced to the Latin speakers (Thomas Aquinas made a broad use of the Latin translation of Simplicius' commentary). The Neoplatonists were of the opinion that it was the subject and not the quality that admits of more or less and that qualities do not differ with respect to more or less.

An additional problem, which was raised later, concerned the possible changes of elementary forms of simple bodies: earth, water, air, and fire. While substantial forms such as the rational soul of a human being cannot admit more and less, because one human being cannot be more human than another, primary qualities of elements, that is, heat and cold and humidity and dryness can admit more and less. The adherents of this opinion were Arabic philosophers – al-Kindī and Avicenna. While Aristotle believed that an elementary form (a quality) of a simple body is always in its maximum degree, that is, fire is the hottest and earth is the coldest, Avicenna thought that an element's qualities can vary within a latitude, so they do not have to be in a maximum degree of a quality. Avicenna's conception is closely linked to Galen's medical theory. Galen, in his *Microtegni* Book II, was the first to introduce the term "latitude" to explain the states of health and illness. The latitude of health can be divided into three parts: the latitude of health, the latitude of neither health nor sickness, and the latitude of sickness. Thus, as Edith Sylla claims (Sylla 1973:227–228), the latitude of health can be represented by a line divided into three parts, with two extremes, one of the optimal state of health and the other of a serious illness, the middle part being neutral. Avicenna used the concept of "latitude" to introduce an idea of the human *complexio*, which is not a result of a proportion of elements in a body, but the result of intensities of variable qualities of elements. Averroes was in accord with Avicenna with regard to the theory of *complexio*, but rejected the idea that elementary bodies can have varying degrees of qualities. Averroes was convinced that whenever water is heated part of it is changed into air, because opposing qualities can coexist in the same subject (admixture theory).

In the twelfth century, the predominant view was based on the Aristotelian definition of substantial forms and held that the form is a simple and invariable essence of a substance. This view was represented, for instance, by the anonymous author of the *Liber de sex principiis* and by Peter Abelard. What admits more or less are qualities, which should be described as more or less "pure," for example, more or less white. Abelard claims that only habits and dispositions treated as accidents can admit more or less and can be compared. The essential parts of substances like, for example, human rationality or risibility, are not comparable and they cannot undergo intension or remission. The only motion which can be described as intense or remiss is the motion of alteration, since it occurs between two extremes, for example, between more and less white or between white and black. Peter Lombard introduced the problem of intension and remission of forms into the theological context. In his *Sentences* (lib. I, dist. 17, cap. 5), he raised the question whether charity of man increases or decreases. Lombard limits himself to a short statement that the Holy Spirit, that is, charity as such (*in se*), is immutable and does not admit of more or less, but in an individual human being (*in homine*) a charity can increase or decrease. Hence intension and remission depends on varying dispositions of a subject.

The thirteenth century saw a significant growth of interest in the problem of intension and remission. For Thomas Aquinas charity is a quality or an accident, and

▶   its being has to be in something. So that an essential increase of charity means nothing else but that it is yet more in its subject (. . .) Hence charity increases essentially, not by beginning anew, or ceasing to be in its subject, (. . .)

but by beginning to be more and more in its subject... (*Summa theologiae* II-II, q. 24, art. 4).

In Thomas' opinion, intension and remission can be examined from a point of view either of a specific form or the subject in which qualities inhere. Only corporal qualities, which are divisible in their essence, like health or motion can undergo intension and remission in their forms. Those qualities increase by the addition of parts. The indivisible qualities, like color or heat can undergo intension and remission only with respect to their subject. They do not increase by addition of parts, but by "the varying participation of a subject in a given, unchanged quality" (*Summa theologiae* I-II, q. 52, art. 1, 2). Therefore, intensive increase in quality results from the disposition of a subject for a species of a quality. This theory was also held by Giles of Rome.

Henry of Ghent presents a contrary opinion. He claims that intensive increase of a qualitative form takes place in its specific form (with no reference to its subject), which is not simple but a divisible extension (latitude). The quality has different intensive parts (degrees). Since any lesser degree contains potentially all greater degrees (except a maximum degree), the actual intension of quality is caused by an extraction of a new part from potentiality to act. Henry asserts that a quality has a potentiality for change "in virtue of its nature and essence," and not in the subject it belongs to.

The third opinion is associated with Godfrey of Fontaines. His theory is labeled as the "succession of forms theory" or recently as the "replacement theory" (Dumont 2009:41). Godfrey believes, against Aquinas and Ghent, that all specific forms are indivisible and invariable, and as such they cannot change in degree. Consequently, they cannot admit more or less in themselves. Since individual forms are numerically distinct, they are successively replaced in the subject.

The fourth theory was an addition theory, usually connected with the name of John Duns Scotus. In the opinion of M. Clagett (Clagett 1950:136) it was Richard Middleton who influenced Scotus' addition theory. Middleton claims that intensity or quantity of force (which he calls a virtual quantity of power) can be increased by addition in a manner similar to increase in quantity of mass (which he calls corporal quantity). Thus Middleton is convinced that the addition of one degree of a quantity of force to a preexisting one produces something greater in force. Scotus holds that any degree of a quality contains, as its homogeneous parts, lower degrees. Therefore, a change in degree can be explained by addition or subtraction of homogeneous parts of a quality. For example, if something gets hotter without gaining any additional extended parts, then the increase in heat is caused by addition of degrees of heat. The unquestionable value of Scotus' theory is its quantitative account of qualities, since some sort of numerical value can be assigned to qualitative intensities.

In the fourteenth century there were three dominant theories explaining the problem: admixture, succession, and addition ones. The last of them had many adherents, such as William of Ockham, Joannes de Bassolis, Henry of Harclay, Peter Auriol, John Baconthorpe, Thomas Wylton, and Gregory of Rimini.

The main admirer of the succession theory was Walter Burley. According to Burley, there are two types of forms: indivisible (e.g., the maximum degree of hot, 3 ft in length), and divisible ones, which have latitude of degrees (e.g., heat and cold, whiteness and blackness). The former are destroyed by any change of degree, while the latter remain in the same species even if their degrees change. Burley's succession theory is founded on an analogy between motion of alteration and local motion. In local motion – says Burley – the moved body occupies a different place in any instant of time; in motion of alteration, a totally new and indivisible degree of form is induced in each moment and the whole preceding form is destroyed. Thus the whole process of intension or remission can be described as replacement of successive forms. In such a process, a whole series of new, distinct forms is involved. Since any change of degree causes a change in an individual existing quality, latitude of degrees is relevant only to species of forms and not to an individual form. "The latitude itself" – as Sylla points out (Sylla 1973:234) – "while it describes the range within which the degrees of the species may fall, has no separate existence aside from the individuals of the species."

The succession theory has much in common with the addition theory; both, like Aquinas' theory, accept the notion that it is not an individual quality that increases or decreases intensively, but a subject in which qualities inhere is qualified more or less thanks to the latitude of a specific qualitative form. Both theories also take a Scotist view that a change of the degree of a quality leads to a change of an individual quality. The addition theory has also something in common with the admixture theory, namely, they both accept the notion that qualitative forms are intensively divisible.

In the fourteenth century, the admixture theory was held by Michael of Massa, Walter Charlton, John Buridan, and Roger Swineshead, one of the Oxford Calculators, among others. Swineshead maintains that two contrary qualities of the same pair, like coldness and heat, can exist

simultaneously with various intensity in the same subject. The sum of degrees of intensity of both qualities, however, must be constant. Thus in the qualitative change such as heating, when heat increases, coldness simultaneously decreases in the same degree. A qualitative change is then a process of "freeing from admixture" of the opposite quality. While explaining his theory, Roger makes a broad use of the concept of abstract latitudes for measuring alteration and local motion. He talks about latitude of quality and latitudes of motion of alteration of different types which, in modern terms, correspond to latitude of acceleration and deceleration.

Most of the Oxford Calculators, such as Thomas Bradwardine, William Heytesbury, John Dumbleton, and Richard Swineshead were enthusiasts of the addition theory. John Dumbleton and Richard Swineshead broadly discussed issues of possible "measurement" of such a quality as speed in different types of motion by using a conception of latitudes and degrees significantly different from those employed by earlier Oxford Calculators. In the addition theory, qualities may be treated quantitatively, so the fundamental question was how to measure the alteration in the intensity of qualitative forms or the alteration of speed in local motion. Dumbleton and Swineshead believe that latitude and degree are identical and that they are both divisible. In their opinion, any degree of a quality contains all the more remiss degrees. For both philosophers, a latitude is a homogenous continuum, which can be presented as a line, on which the only differences are differences in length. This theory provides – as Sylla points out – "a better physical basis for quantification of qualities because the latitude corresponds to the intensity or degree of a quality at a point of the body or in an instant of time and not only to some variation of the quality over its extension or over time. (. . .) The latitude of velocity is imagined as a line (. . .). Equal parts of the latitude of velocity correspond to equal differences of velocity" (Sylla 1973:263).

The theory of latitude of forms was fully developed by Nicholas Oresme, for whom latitudes are an intensive measure of particular qualities. Oresme's configuration theory allows him to build a representation of different types of qualitative changes by geometrical figures. He distinguishes between the *longitudo* which represents time, and *latitudo* which represents speed of motion. When units measuring the *longitudo* and *latitudo* vary, they form figures of different shapes. He shows that geometrical properties of such figures correspond to a property of the form itself when the property remains constant, while the units measuring the *longitudo* and *latitudo* vary.

Although Oresme's achievement in quantification of qualitative changes is undeniable, it is not the result of his acceptance of the addition theory. Oresme develops his own theory of intension and remission of forms, which Kirschner calls the "succession-of-*conditiones*-theory" (Kirschner 2000:274). According to this theory, in every moment of intension or remission there is a new *tale esse*, that is, a new condition or mode of a substance, which is called a quality. The quantity of the substance is its *tantum esse*, that is, a mode of being so and so large. In the process of intension or remission, a substance has a new *tale esse* in every moment, but not a new accidental form, as Burley held. Oresme claims that since a substance has a different mode in every moment, it cannot be properly said that the quality is intensified. Such an expression is used only for the sake of brevity of speech.

Recent research shows that contrary to the claims of many earlier historians of science, many different theories, besides the addition theory, led to the development of a system for measuring and quantifying qualities and motions of alteration and local motion in the fourteenth century. There is no doubt that Oxford Calculators' and Oresme's theories of quantitative approach to qualities, such as the Mean Speed Theorem, gave an impulse for the proper theories of motion, which were the significant accomplishments of seventeenth-century natural philosophers, such as Descartes or Galileo. The Mean Speed Theorem states that a uniformly accelerated motion corresponds to its mean degree of speed, which means that a given latitude of motion uniformly gained in a given time always makes a mobile traverse a space equal to that which would be traversed if the body moved with the middle degree of the latitude for the whole time. The first, arithmetical, proof of this theorem was presented by William Heytesbury. The most original geometrical proof and elaborated application of the mean-degree measure of speed in motion was formulated by Oresme. The theorem was later used by Galileo in his proof of the theory of accelerate motion. The problem of intension and remission of forms was extensively debated in the fifteenth and sixteenth centuries in many fields of scientific inquiry. Funkenstein sees also an influence of *latitudo formarum* notion on Leibniz and Kant (Funkenstein 1986:352).

See also: ▶ al-Fārābī, Abū Naṣr ▶ Giles of Rome ▶ Godfrey of Fontaines ▶ Ibn Sīnā, Abū ʿAlī (Avicenna) ▶ John, Duns Scotus ▶ Michael of Massa ▶ Nicholas Oresme ▶ Oxford Calculators ▶ Peter Abelard ▶ Peter Lombard ▶ Thomas Aquinas ▶ Walter Burley ▶ Walter Chatton ▶ William Heytesbury ▶ William of Ockham

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Intention, Primary and Secondary

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Abstract

The term "intention" was introduced into the philosophical vocabulary, with the meaning we nowadays attribute

to it, during the twelfth century as the term used to translate each of two Arabic words. In most cases, medieval philosophers use "intention" as synonymous with "concept," so that the answer that a philosopher gives to the question of an intention's ontological status follows from his resolution of the nature of a concept. Some philosophers take intentions as distinct from the acts of cognition that originate them, while some others prefer to equate intentions to those acts. The distinction between first and second intentions traces back to Avicenna, who speaks of logic as a science dealing with second intentions as applied to first intentions. Roughly speaking, first intentions are concepts of extramental things (for example, man), while second intentions are concepts of concepts (for example, species). During the thirteenth century, such a distinction is paired up with the grammatical distinction between names of first and second imposition (such as "man" and "name," respectively), which has its roots in Priscian, while later on the distinction between first and second intentions overlaps with that between abstract and concrete intentions. By "concrete intentions" most medieval philosophers refer to things *qua* cognized, while by "abstract intentions" they either refer to the mind's cognitive acts of cognizing things or to the cognitive relation things bear to the mind. Thus, at the beginning of fourteenth century the picture is more complicated and raises different questions according to whether first or second intentions are discussed. High medieval philosophers focus on these different kinds of intentions and deal with two major issues: first, the foundation of first and second intentions and second, the order of causality and predication holding between first and second intentions.

The concrete term "intention" (*intentio*) makes its appearance in the western philosophy, with the philosophical meaning we nowadays attribute to it, during the twelfth century, as translating each of two Arabic words (*ma'na*, *ma'qul*). The abstract term "intentionality," instead, is employed only at the end of thirteenth century. At the beginning of fourteenth century, we encounter the first treatises expressly devoted to intentions (*Treatises on First and Second Intentions*), such as those of the Dominican Theologian Hervaeus Natalis (c. 1315) and the Franciscan Theologian Gerard Odonis (c. 1320).

Most medieval philosophers use the term "intention" simply as synonymous with the term "concept," while they use "intentionality" to indicate the symmetrical or asymmetrical relationship that the mind, immediately or through an intention, bears to the external world. Generally speaking, an intention is seen as the conceptual