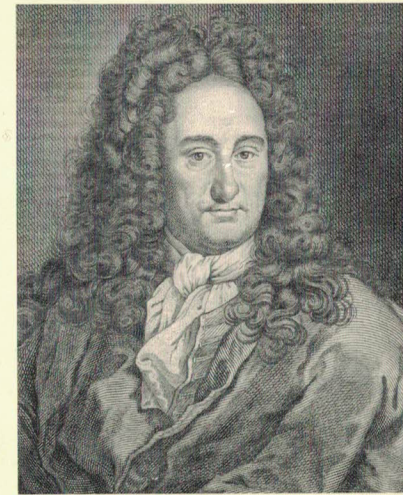VII. Internationaler Leibniz-Kongreß

# NIHIL SINE RATIONE

Mensch, Natur und Technik im Wirken von G.W. Leibniz
Schirmherrschaft: Der Regierende Bürgermeister von Berlin

Vorträge 3. Teil

herausgegeben von
Hans Poser

in Verbindung mit
Christoph Asmuth, Ursula Goldenbaum
und Wenchao Li

Berlin, 10. - 14. September 2001

'Markku Roinila (Helsinki)

# G. W. Leibniz's Theory of Rational Decision-Making and the Reunion of the Churches

In this paper I will first introduce G. W. Leibniz's theory of rational decision-making as presented by Nicholas Rescher and then apply it to the Reunion of the Churches and especially to the practical methodology of resolving the differences between the confessions.

G. W. Leibniz's Theory of Rational Decision is claimed by Nicholas Rescher to employ a kind of minimax-model familiar from modern economical theories. Rescher presents his theory in many occasions, but perhaps the most complete presentation is in his article "Leibniz on Creation and the Evaluation of Possible Worlds."[1] In the essay Rescher presents a theory of the choosing of the best of possible worlds, which has gained different responses from other Leibniz-scholars. Rescher sees Leibniz's God to use a minimax-principle in choosing the best of possible worlds, that is, he thought the world to be an optimum of two factors (variety of phenomena and simplicity of laws), which are in a state of mutual tension. The theory has been criticised heavily by David Blumenfeld,[2] but also developed further by Jaakko Hintikka, Simo Knuuttila, Jon Elster and Marc Parmentier.[3]

These commentators have found another uses for the minimax-model. In fact, the minimax-model can be used as a general model of rational decision under the conditions of uncertainty, both in ethical matters and in another fields. Applications of Leibniz's use of the theory can be found in controversial law cases and political controversies as well as in ethical questions. This "vectorial theory of rational decision-making", as Simo Knuuttila names it, is, however, studied so far very little and there is much more to be found.

Leibniz himself develops this vectorial theory in his writings concerning the analysis of situation. The theory remained incomplete, but it can be applied to many of his practical enterprises. Leibniz's geometry of situation, as he describes it in a letter to Huyguens, is his concept for vectorial analysis, which can be represented graphically in a system of co-ordinates. However, Leibniz's system as actually sketched by him shows that he did not really discover a primitive vector analysis, though he was clearly searching for something akin to it.[4]

"...We need still another analysis which is distinctly geometrical or linear and which will express *situation* [situs] directly as algebra expresses *magnitude* directly. And I believe that I have found the way and that we can represent figures and even machines and movements by characters, as algebra represents numbers or magnitudes."[5]

The geometry of situation, or *analysis situs*, as Leibniz calls it, can be extended to apply to God's choice of the best of possible worlds judging by the next passage:

"If it were completed in the way in which I think of it, one could carry out the description of a machine, no matter how complicated, in characters which would be merely the letters of the alphabet, and so provide the mind with a method of knowing the machine and all its parts, their motion and use, distinctly and easily without the use of any figures or models and without the need of imagination."[6]

Furthermore, although Leibniz does not develop it very far, it can easily be applied to ethical choice (which God's choice also is) and to many of his practical schemes.

"I see the possibility of extending the characteristic to things which are not subject to sensory imagination. But this is so important and has so many implications that I cannot explain it here in a few words."[7]

Theologians as well as jurists were developing a calculus of reaching rational moral choices at that time. Leibniz's *analysis situs* was indeed preceded by Peter Richeri in the fifteenth century – according to Richeri, different people accept different probable propositions depending on how well they are acquainted with the intrinsic properties in the subjects which function as signs of inclinations towards holding the predicates.[8]

Leibniz was striving after a calculus, which could provide a way to make a rational choice under the conditions of uncertainty much the same way as merchants handle their account books:

"...The right decision to be made in a case where reasons have to be weighed against one another, many things are needed. That is much the way it is with merchants' account books. For in those one must not ignore any amount, each separate amount must be carefully ascertained, and they must be put in good order and then listed accurately. But some items are omitted, either because they escape one's mind or because one passes too quickly over them. And some are not given their correct values – as in the case of the book-keeper who carefully adds up the columns on each page but incorrectly computes the individual amounts of each line or entry before extending them into the column...if we are to make good use of the art of inference, we need an art of bringing things to mind, another of estimating probabilities, and, in addition, knowledge of how to evaluate goods and ills; and we need to be attentive, and, on top of all that, to have the patience to carry out calculations through. Finally, we need to be firmly and steadily resolved to act on our conclusions; and we need skills, methods, rules of thumb, and well-entrenched habits to make us true to our resolve later on, when the considerations which led us to it are no longer present to our minds."[9]

In judging good and evil, the method to which Leibniz points was alluded already in the Port Royal Logic – that is, the idea of computing an expected desirability by multiplying desirability by probability.[10] Leibniz formulates it in another place of *Nouveaux Essais*:

"The fact is that in this as in other assessments which are disparate and heterogeneous, having more than one dimension (so to speak), the magnitude of the thing in question is made up proportionately out of two estimates, as with a rectangle, where two things must be considered, namely its length and breadth."[11]

The components of the situation can be estimated quantitatively (by probabilistic methods) and illustrated by analytic geometry. The components are usually contradictory to each other and they can be joined with each other, thus outweighting a single strong component . This is evident in Leibniz's physics, where the forces have vector-like characters. For example, we can picture a substance as containing active force limited by passive force.

Next we shall look at one specific example, which Leibniz discussed in *Initia et Specimina Scientiae novae Generalis*. There Leibniz tries to evaluate happiness *"ex ductu bonitatis in durationem"*.

"If we are to discuss that properly, must we use mathematical operations and say that the whole of the good consists of its duration like a field (are) is measured by breadth and length."[12]

Latitudi-

Longitude

in Longitudinem ordinatim ductae

nes variae
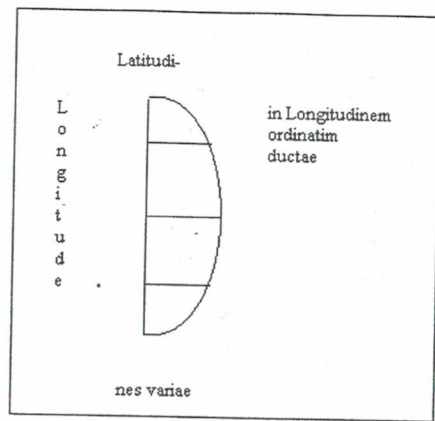
As the ordinates are the duration of good and the magnitude of good, we end up in the figure similar to that which is by Leibniz's hand above, where longitude x represents the time and ordinate y the happiness at each moment. The happiness is measured by the sum $\int y dx$ as follows (in modern style of presentation): [13]
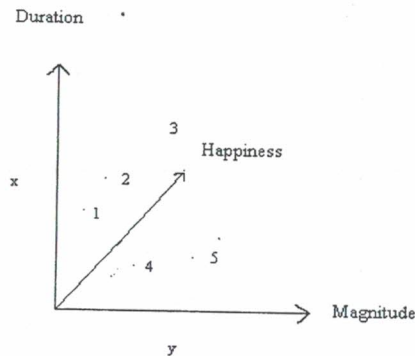


Happiness is thus an optimum between the duration of good and the magnitude of good. Leibniz's model is a variation of the one by which Rescher uses to illustrate the choice of the best of possible worlds by God. In other words, it is a minimax-model. We can easily picture how an individual agent considers different options and places different combinations on the map above. The options are evaluated by the methods of estimating probabilities.[14] For example, if we give numerical values

to components in question here, we can picture a point of 3 in magnitude and 2 in duration. Another point could be 4 in magnitude and 5 in duration etc. The option with the biggest sum should be the one, which brings about the greatest happiness. In this case, alternative #3 produces the greatest happiness of the five different possible combinations.

Thus we find that Leibniz's theory of rational decision combines his ideas of analysis of situation, which is comparable to modern theories of vectorial analysis, and the new ideas of probability.

In this paper my aim is to apply the vectorial theory to the reunification of the Churches. Leibniz himself does not explicitly use the vectorial theory anywhere (so far as I know), but a few fragments suggest that he may have used the theory implicitly in trying to reconstruct a compromise which would satisfy the both parties in question.

Leibniz's answer to ecumenical problems was rational theology. Already as a 17-year old he suggested analysis as an answer to theological disagreements in his *Vita a semetipso breviter delineata*. In a sketch to *Demonstrationes catholicae* he saw his task as to bring together the Christian main points in such an easy form that all parties were able to accept it. Leibniz's attempt of reconstructing a rational theology did not succeed however, and he thought it could be formed in negations between ecclesticals during and after the reunion.[15] Instead, he concentrated on the practical side of the question, that is, the negotiations, which would lead to the reunion.

The high point in his attempts was reached when Rojas y Spinola, Bishop of Tina in Croatia and later of Neustad (Spinola acted as an agent of the Emperor and the Pope) arrived at Hanoverian court in 1677. Negotiations with Spinola were encouraging and Leibniz was deeply involved with them although he did not take part in the actual proceedings. He also wrote some memoirs himself in the name of Molanus (Abbot of Lockum),[16] who participated in the negotiations, like the fragment *Pour faciliter la réunion des Protestants avec les Romains catholiques*,[17] where he presented a very detailed proposition of the reunion and a time-table for its realization. It is useful to look at this memoir in details, since it helps us to understand Leibniz's views of the reunion of the Churches. It is also an excellent case study of Leibniz's view of rational decision-making.

In the beginning of the memoir Leibniz declares that the possibility of the reunion is dependent in the question of heresy[18] - the Protestants were not formally heretic, because the status had been cast upon them without consulting. The protestants were only materially heretic (a less serious case), which should be admitted by the Catholics.

Leibniz proceeds by presenting six concessions to be made by the Catholics[19] : 1) The Catholics should admit the Protestants to return permanently to the Roman Church. 2) The Catholics must not force the Protestants to hold catholic masses or to use a language that is not familiar to people in their Churches. They should also not be forced to introduce rites, which would cause alarm or inconveniences. 3) The Protestant priest and other ecclesticals should be allowed to marry, since it is already an established practice. 4) The Protestant priests should be allowed to practice their profession to the Catholics also - according to Leibniz this would cause no scandals if the sacraments and rules of the Catholics were honored. 5) All the lands and the property of the Protestants transformed in the Peace of Westphalia and other transactions should be returned. 6) When the Catholics have agreed to the terms here, all excommunications and anathemas should be abolished. A declaration should be issued which states that the Protestants are no longer heretic or schismatic.

Leibniz holds certain that the Pope could admit these terms: "...there is nothing in these points, which is contrary to the Divine justice and which the Pope could not allow..."[20]

The Protestants should also make some concessions and submit to the following five points sincerely[21]: 1) The Protestants should admit that the Bishop of Rome is the highest authority of the whole Christian world and the supreme patriarch in spiritual matters. They must also obey the canon law in spiritual matters 2) The Protestant priests are subject to their bishops, the bishops to their Archbishops and so forth according to the Catholic hierarchy. 3) The Protestants should recognize their fellow Catholics as brothers in Jesus Christ, cultivate actual unity with them and practice charity. The

Church should solve the controversies. 4) When the reunion is made, the Protestants should agree not only to maintain the peace and unity, but perfect it by all means available. 5) The Protestant priests should enter into solid and peaceful discussions, where the controversies and disagreements of the two doctrines are analyzed and which would establish the core of Christian faith to the posterity. If controversies are not solved, an ecumenical council should settle the question.

Leibniz maintains that a majority of controversies are pseudo-problems because of the manner they are presented and that by careful analysis one often finds out that the differences are not real or that they can be left to a later moment, when the solution is easier to find.[22] This is evident, when Leibniz goes on to present a timetable for the reunion, which is to last for 30 years.

During the first decade the question of the mass and the Eucharist will be almost solved and the differences are only verbal. Also the controversy concerning the number of sacraments will be reduced to verbal level. The Protestants will allow the Catholic masses and the Catholics will allow the Protestant sermons, as long as there is no abuse towards the saints or no vernacular language will be used. The question of Eucharist will be performed within tolerant spirit.[23]

During the second decade some Catholic sacraments (the sacred oil, for example) will be introduced to the Protestants. The confirmation will be conserved in Protestant ceremonies, but also introduced to the Catholics.[24] The sacrament of marriage will be unified throughout Christendom.[25] One must also clarify some verbal misunderstandings between the parties (the question of the actual removal of evil by mass, regarded to be held by the Catholics, for example).[26]

As the third decade of the reunion starts, "there are no controversies about whether good deeds will affect the justification or the forgiveness of evil things."[27] The controversies of good deeds and their affection to one's "heavenly credit" will become only scholastic disputes.[28] The same holds for all former difficulties. In the last stage of the reunion the controversies have become only verbal and can be solved by continuous discussions between the leading theologians of both parties. Leibniz describes the problems of not real, but only verbal.[29]

This stage needs the rational theology, which Leibniz tried to develop in various fragments. We discussed above of *Vita a semetipso breviter delineata* and *Demonstrationes catholicae*, but more revealing in this sense are fragments called *Animadversiones in Schedam ex Batavis missam* (A VI, iv, 395), where Leibniz tries to define the essential principles of different Lutheran sects, such as the Arminians, the Socinians and the Anabaptists and reduce them to their essentials in order to find some common ground.[30] One important theme, which is also essential in another fragment, *Variae definitionis ecclesiae* (A VI, iv, 391), is the division between *Ecclesia invisibilis* and *Ecclesia visibilis* (visible and invisible Church), which in the correspondence with Landgrave Ernst von Hessen-Rheinfels was discussed as inner and outer Church. Leibniz divided in the Church an inner (the Church the way it should be) and an outer circle (the Church as it is to the public). Leibniz admitted the inner circle, but could not accept the fact, that a member of the outer circle would have to agree on certain errors in philosophy and sciences (Bruno and Galilei are especially lurking between the lines), although those things could be proven otherwise. Thus by defining different aspects of the Church he sough to reduce the outer to the inner Church or to find an optimum between them. The method used here follows Leibniz's vision of general science (*scientia generalis*), where by replacing propositions by definitions we approach the truths of reason. The method used in resolving verbal differences is similar to Leibniz's method in developing the universal language and especially his experiments with Latin.[31]

Let us return to Leibniz's memoir *Pour faciliter la réunion des Protestants avec les Romains catholiques*. It seems to apply the vectorial model of rational decision-making. We can see that the two main factors of the situation are, on the one hand, the dogmas and on the other hand, the uniformity of the Church. Illustrated in a simplified form, the optimum is as follows:
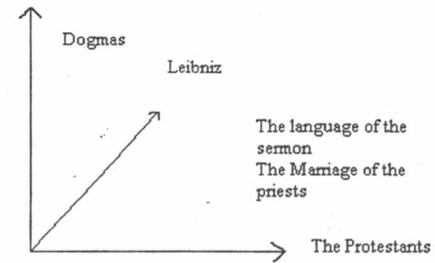


The points of difference will eventually be clarified and the final result is a compromise of competing opinions and doctrines. The Protestants should admit some of Catholic sacraments whereas the Catholics should tolerate the vernacular used in sermons and the marriage of the priests.

Spinola had in mind a general Church assembly, where the Protestants and the Catholics could negotiate of the Church reunion. The necessary preconditions for the success of such an undertaking would be that the Protestants would show their willingness to return to the Pope's subordination and that the Catholics would accept the Protestants as an equal party in the negotiations.[32] Various suggestions of different practical matters were presented and the general idea of these was that the Christians would be divided to old and new ones. New Christian priests were allowed to preach in vernacular and marry, even twice.[33] The Pope would announce a bull, which would end the Protestant's status of heresy.

The reception of the negations in Hanover was encouraging, but other German theologians were not impressed by this plan. The Pope and the cardinal collegium thought best to leave the issue at rest.[34] According to Jordan, the reunification of the confessions was at this time closer to realization than ever before or after.[35]

---

NOTES

[1] In *Leibniz's Metaphysics of Nature: A Group of Essays*.

[2] See "Perfection and Happiness in the Best Possible World" in *The Cambridge Companion to Leibniz*, pp. 382-410.

[3] Hintikka, Was Leibniz's Deity an Akrates?, Knuuttila, Old and New in Leibniz's View of Rational Decision, Elster, *Leibniz et la formation de l'esprit capitaliste*, ch. IV and Parmentier, Concepts juridiques et probabilistes chez Leibniz.

[4] Crowe, *A History of Vector Analysis*, p. 3-4.

[5] "...nous faut encor une autre analyse proprement geometrique ou lineaire, qui nous exprime directement situm, comme l'Algebre exprime magnitudinem. Et je croy d'en avoir le moyen, et qu'on pourroit representer des figures et mesme des machines et mouvemens en caracteres, comme l'Algebre exprime magnitudem."GM II, p. 19, Loemker, p. 249.

[6] "Si elle estoit achevée de la maniere que je la conçois, on pourroit faire en caracteres, qui ne seront que des lettres de l'Alphabet, la description d'une machine quelque composée qu'elle pourroit estre,

ce qui donneroit moyen à l'esprit de la connoistre distinctement et facilement avec toutes les pieces et meme avec leur usage et mouvement sans se servir de figures ny de modelles et sans gener l'imagination..." GM II, p. 21, Loemker, p. 250; Leibniz returns to the metaphora of a machine in Mon. §64 : "So each organic body belonging to a living being is a kind of divine machine or natural automaton infinitely surpassing all artificial automata. For a machine made by human art is not a machine in each of its parts; for exemple, the tooth of a brass wheel has parts or fragments which are not artificial so far as we are concerned, and which do not have the characyer of a machine, in that they fit the use which the wheel was intended. But the machines of nature, living bodies, are still machines in their smallest parts, into infinity. It is this that makes the difference between nature and art, that is, between the divine art and ours." Loemker, p. 649.

[7] (A letter to Huyguens, supplement) Loemker, p. 253.

[8] Quoted in Knuuttila, *Old and New in Leibniz's View of Rational Decision*, p. 340.

[9] "...il faut bien de  choses pour se prendre comme il faut, lorsqu'il s'agit de la balance des raisons; et c'est à peu près comme dans les livres de compte des marchands. Car il n'y faut negliger aucune somme, il faut bien estimer chaque somme à part, il faut les bien arranger, et il faut enfin en faire une collection exacte. Mais on y neglige plusieurs chefs, soit en ne s'avisant pas d'y penser, soit en passant legerement là dessus; et on ne donne point à chacun sa juste valeur, semblable à ce teneur de livres de compte qui avoit soin de bien calculer les colonnes de chaque page, mais qui calculoit très mal les sommes particulieres de chaque ligne ou poste avant que de les mettre dans la colonne...Ainsi il nous faidroit encor l'art de s'aviser et celuy d'estimer les probabilités et de plis la connoissance de la valeur des biens et des maux, pour bien employer l'art des consequences: et il nous faidroit encor de l'attention et de la patience après tout cela, pour pousser jusqu'à la conclusion." NE II, xxi, §67, GP V, p. 192.

[10] Knuuttila, *Old and New in Leibniz's View of Rational Decision*, p. 340.

[11] "La verité est, qu'icy comme en d'autres estimes disparates et heterogenes et pour ainsi dire de plus d'une dimension, la grandeur de ce dont il s'agit, est en raison composée de l'une et l'autre estimation, et comme un rectangle; où il y a deux considerations, savoir celle de la longeur et celle de la largeur." NE II, xxi, §66, GP V, p. 191.

[12] "Darnach eigentlich davon zu reden, muss man auff Mathematisch damit verfahren und sagen, die ganze gröse der guthe entstehe daraus man die güthe in daure führe (ex ductu bonitatis in durationem) wie bei den Messfünstlern die Feldgrössen (Areae) aus der führung der Breiten in die Länge (ex ductu latitudinum in longitudinem). GP VII, p. 115.

[13] Couturat, *La logique de Leibniz*, p. 564-65.

[14] On estimating probabilities, see Parmentier, *Concepts juridiques et probabilistes chez Leibniz*.

[15] Leibniz never lost his hope in the project - in 1683-90, for example, he wrote a fragment called *Rationale fidei catholicae*.

[16] Gerhardt Walter van den Muelen (1633-1722).

[17] AC II, p. 172f. This was one of the key points in Leibniz's later correspondence with Bossuet.

[18] Ibid. p. 174.

[19] Ibid., p. 176-77.

[20] "...il n'y a rien dans ces points qui soit contraire au droict divin et que le Pape ne puisse permettre..."Ibid., p. 178.

[21] Ibid., p. 179-80.

[22] Ibid., p. 184.  This view follows his general method of analysis of contingent truths, which is to be performed within general science (scientia generalis). Leibniz was also interested in developing a theory of probability, which would help estimating contingent truths: "We need a new logic in order to know degrees of probability, since this is necessary in judging the proofs of matters of fact and morals, where there are unusually good reasons on both sides and we are concerned only to know

on which side to tip the scales. But the art of weighing probabilities is not yet even partly explained, though it would be of great importance in legal matters and even in the management of business." (A letter to Johann Friedrich 1679) A II, i, p. 489. The theory of probability is, as we saw, a component of Leibniz's theory of rational decision.

[23] AC II, p. 184-85.

[24] Ibid., p. 186.

[25] Ibid., p. 187.

[26] Ibid., p. 188.

[27] "...il n'y a plus de controverse si les bonnes oeuvres méritent la justification ou la rémission des péchés." Ibid., p. 189.

[28] Ibid., p. 189.

[29] Ibid., p. 189-90.

[30] Leibniz's tried to harmonize religion with reason and in this respect his opponents were to be found rather among the Socinians than among the Catholics. A VI, iv, p. LXXIII.

[31] See fragments *Lingua rationalis, Variae declinationes inutiles..., Grammatica cogitationes in Opuscules* in O, p. 280-286.

[32] Jordan, *The Reunion of the Churches*, p. 49.

[33] Ibid., p. 54.

[34] Ibid., p. 62-63.

[35] Ibid., p. 122.

## LITERATURE

Couturat, Louis, *La logique de Leibniz d'après des documents inédits*. Olms, Hildesheim 1961 (1901).

Crowe, Michael J., A History of Vector Analysis. The Evolution of the Idea of a Vectorial System. Dover, New York, 1967.

Elster, *Leibniz et la formation de l'esprit capitaliste*. Montaigne, Paris 1975.

Hintikka, Jaakko, Was Leibniz's Deity an Akrates? In *Modern Modalities* (ed. Simo Knuuttila). Kluwer, Dordrecht 1988.

Jolley, Nicholas (ed.), *The Cambridge Companion to Leibniz*. Cambridge University Press, Cambridge, 1995.

Jordan, G. J., *The Reunion of the Churches. A Study of G. W. Leibnitz and his Great Attempt*. Constable & Co., London 1927.

Knuuttila, Simo, Old and New in Lebniz's View of Rational Decision. In *Meeting of the Minds : The Relations Between Medieval and Classical Modern European Philosophy* (ed. Stephen F. Brown). Brepols, 1998.

Leibniz, Gottfried Wilhelm, *Leibnizens mathematische Schriften* (hrsg. von G. I. Gerhardt). Bd. II. Halle, Schmidt, 1860.

Leibniz, Gottfried Wilhelm, *Oeuvres*. (Edited by Foucher de Careil). Olms, Hildesheim 1969 (1859-75).

Leibniz, Gottfried Wilhelm, *Philosophical papers and letters*. (Edited by Leroy Loemker) Reidel, Dordrecht 1969.

Leibniz, Gottfried Wilhelm, *Philosophischen schriften* (Edited by C. I. Gerhardt). Olms, Hildesheim 1960 (1875-90).

Parmentier, Marc, Concepts juridiques et probabilistes chez Leibniz. In *Revue d'histoire des sciences* 44 (1993).