

Olga Pombo

# Leibniz and the Problem of a Universal Language

11 Septembris 1678 + Analyt. Compositum n. 1.  
Ad institutionem ac demonstrationem Veritatum  
opus est Analyt. cogitationum: quodlibet fact. sensibile  
quod quia ~~est~~ Respondet analyt. characterum quibus  
ad significandas cogitationes utimur, hinc analyt.  
cogitationum possentis ~~mechanica~~ sensibilem  
reddere, ut velut quodam filo mechanicè dirigere, qua  
analysis characterum quiddam sensibile est analyt.  
autem characterum ~~est~~, cum characteribus quibuscum  
substituimus alios characteres, quos quo prioribus  
usque aequivalent, hoc uno tantum observato, ut  
per unum multos, per paucos plures ~~et~~ (qui  
tamen inter se non vincunt) substituamus. Utique  
enim constat etiam ~~est~~ cogitationes quo chara-  
cteribus substitutis ~~respondent~~ respondere, prioribus  
characteribus quo resolvendis proponatur significationi  
aequivalent. Hoc autem opus characterum facilius  
fit, quam si multos ad characteres respectu cogitationum  
ipsas aggrediamur; nam intellectus, nisi per quodam  
mechanice regendus esset, ob suam multiculturam, quod  
in ~~rebus~~ illis cogitationibus quo ~~per~~ nos imaginari  
non subjectus exhibent, ~~pro~~ proprios characteres.  
Porro cum scientia omnes, ~~est~~ quo demonstrabilibus  
constant, nihil aliud tradunt, quam ~~est~~ <sup>essentialem</sup>  
aequivalentia, ostendunt enim ~~est~~ in propositione  
aliqua necessaria tunc substitui predicatum in  
locum subjecti, et in omni unat. tibi propositione,  
etiam subjectum in locum predicati substitui posse,

• quilibet enim  
characteri certa  
respondet cogitati

Materialien zur Geschichte  
der Sprachwissenschaft  
und der Semiotik

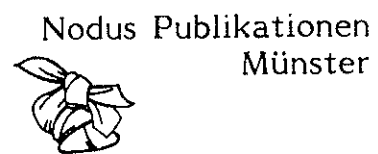
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Band 3

Leibniz and the Problem  
of a Universal Language

Olga Pombo

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To my parents  
with whom I have learned the pleasure  
of Universal Language



1. The following information is for your information only.

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## Abbreviations

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### ABBREVIATIONS

#### Works of Leibniz

- A Gottfried Wilhelm Leibniz. *Sämtliche Schriften und Briefe*. Hrsg. v. d. Preussischen <später: Deutschen> Akademie der Wissenschaften zu Berlin <später: der DDR>. Reihe I - VI. Darmstadt: Reichl <später: Leipzig; zuletzt: Berlin: Akademie-Verlag> 1923ff.
- B Jean Baruzi: *Leibniz avec de nombreux textes inédits*. Paris: Blond 1909.
- BH Eduard Bodemann: *Die Leibniz-Handschriften der Königlichen öffentlichen Bibliothek zu Hannover*. Hannover: Hahn 1889.  
<Reprint mit Ergänzungen und Register von G. Krönert, H. Lackmann sowie einem Vorwort von H.-H. Weimann, Hildesheim: Olms 1966.>
- C *Opuscules et fragments inédits de Leibniz. Extraits des manuscrits de la Bibliothèque royale de Hanovre par Louis Couturat*. Paris: Alcan 1903.
- CE *Illustris viri Guillelmi Leibnitii Collectanea Etymologica, Illustrationi linguarum, veteris Celticae, Germanicae, Gallicae, aliarumque inservientia cum praefatione Jo. Georgii Eccardi*. 1.2. Hannoverae, sumptibus N. Foersteri 1717.
- D *Gothofredi Guillelmi Leibnitii Opera Omnia, Nunc primum collecta, in Classes distributa, praefationibus & indicibus exornata, studio Ludovici Dutens*. Tomi 1-7. Genève, apud Fratres de Tournes 1768.
- E *God. Gull. Leibnitii Opera Philosophica que extant Latina Gallica Germanica omnia. Edita recognovit e temporum rationibus disposita pluribus ineditis auxit introductione Joannes Eduardus Erdmann*. 1. 2. Berolini, sumptibus G. Eichleri 1839-1840.
- FNL *Nouvelles lettres et opuscules inédits de Leibniz, précédés d'une introduction par <Louis> A<lexandre> Foucher de Careil*. Paris: Durand 1857.  
<Reprint Hildesheim, New York: Olms 1971>.
- GM *G. W. Leibniz. Mathematische Schriften hrsg. v. C. I. Gerhardt*. Band 1-7. Berlin/Halle 1849-1863.  
<Reprint Hildesheim: Olms 1962>.
- GP *Die philosophischen Schriften von Gottfried Wilhelm Leibniz*. Hrsg. v. C. I. Gerhardt. Berlin: Weidmann 1860-1890.  
<Reprint Hildesheim: Olms 1960-1961; 1978>.
- GR *G. W. Leibniz. Textes inédits d'après les manuscrits de la Bibliothèque provinciale de Hanovre publiés et annotés par Gaston Grua*. 1.2. Paris: Presses Universitaires de France 1948.

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- J Oeuvres philosophiques de Leibniz. Avec introduction et notes de Paul Janet. Paris: Alcan 1900.
- NE Nouveaux Essais sur l'entendement humain. <GP 5.39-509; A 6.6.39-527>.
- PU Unvorgreiffliche Gedancken, betreffend die Ausübung und Verbesserung der Teutschen Sprache. In: Paul Pietsch, Leibniz und die deutsche Sprache. Wissenschaftliche Beihefte des Allgemeinen Deutschen Sprachvereins. Vierte Reihe, Heft 30. Berlin: Berggold 1908, 327-356.
- SO G. W. Leibniz. Escritos de Filosofía Jurídica y Política. Ed. de Jaime Salas Ortueta. Madrid: Editoria Nacional 1984.
- UG Unvorgreiffliche Gedancken betreffend die Ausübung und Verbesserung der Teutschen Sprache. <D 6.2.6-51; CE 1.253-314; PU 327-356>.
- VE Gottfried Wilhelm Leibniz. Vorausedition zur Reihe VI - Philosophische Schriften - in der Ausgabe der Akademie der DDR. Bearbeitet von der Leibniz-Forschungsstelle der Universität Münster. Hrsg. v. Heinrich Schepers. Faszikel 1-5. Münster: Leibniz-Forschungsstelle der Westfälischen Wilhelms-Universität 1982-1986.

## Other Works

### René Descartes

- AT Oeuvres de Descartes. Publ. par Charles Adam, Paul Tannery. Paris: Cerf 1897.  
<Reprint Paris: Vrin 1964-1976>.

### Jacob Böhme

- AU Aurora, oder Morgenröthe im Aufgang; das ist: Die Wurtzel oder Mutter der Philosophiae, Astrologiae und Theologiae, aus rechtem Grunde; oder Beschreibung der Natur; Wie alles gewesen; und im Anfang worden ist: wie die Natur und Elementa creatürlich worden sind; auch von beyden Qualitäten, Bösen und Guten; woher alle Ding seinen Ursprung hat, und wie es ietzt stehet und wircket, und wie es am Ende dieser Zeit werden wird; auch wie Gottes und der Höllen Reich beschaffen ist, und wie die Menschen in jedes creatürlich wirken <1612>. In: Jacob Böhme, Sämtliche Schriften. Faksimile-Neudruck der Ausgabe von 1730. Hrsg. v. Will-Erich Peuckert. Erster Band. Stuttgart: Frommann 1955.
- SR De Signatura Rerum oder Von der Geburt und Bezeichnung aller Wesen: Wie alle Wesen aus einem Einigen Mysterio urständen, und wie sich dasselbe Mysterium von Ewigkeit in Ewigkeit immer in sich selber erbäre, und wie das Gute ins Böse, und das Böse ins Gute

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verwandelt werde. Item, Wie die äussere Cur des Leibes, aus der Kranckheit, durch seine Gleichheit wieder in das erste Wesen müsse geführt werden; was jedes Dinges Anfang, auch Zerbrechung und Heilung sey <1622>. In: Jacob Böhme, Sämtliche Schriften. Faksimile-Neudruck der Ausgabe von 1730. Hrsg. v. Will-Erich Peuckert. Sechster Band. Stuttgart: Frommann 1957.

- MM** **Mysterium Magnum, oder Erklärung über Das Erste Buch Mosis, Von der Offenbarung Göttlichen Worts durch die drey Principia Göttliches <1> Wesens, auch vom Ursprung der Welt und der Schöpfung <1622-23>.** In: Jacob Böhme, Sämtliche Schriften. Faksimile-Neudruck der Ausgabe von 1730. Hrsg. v. Will-Erich Peuckert. Siebenter u. Achter Band. Stuttgart: Frommann 1958.

### Thomas Hobbes

- L** **Leviathan.** Ed. by C. B. MacPherson. London: Penguin 1968 (Pelican Classics.).
- DH** **De Homine.** In: Bernard Gert, Thomas Hobbes. Man and Citizen. Harvester: Harvester Press/Humanities Press 1972.
- HN** **Human Nature or The Fundamental Elements of Pollicy.** In: F. Tönies, The Elements of Law Natural and Politic. London: Frankass 1969.
- De Corpore.** In: Thomas Hobbes Opera Philosophica quae Latina scripta. Ed. by Sir William Molesworth. Vol. 1. London 1939.

### Abbreviations in Alphabetical Order

<b>A</b>	-> Leibniz	<b>J</b>	-> Leibniz
<b>AT</b>	-> Descartes	<b>L</b>	-> Hobbes
<b>AU</b>	-> Böhme	<b>MM</b>	-> Böhme
<b>B</b>	-> Leibniz	<b>NE</b>	-> Leibniz
<b>BH</b>	-> Leibniz	<b>PU</b>	-> Leibniz
<b>C</b>	-> Leibniz	<b>SO</b>	-> Leibniz
<b>CE</b>	-> Leibniz	<b>SR</b>	-> Böhme
<b>D</b>	-> Leibniz	<b>UG</b>	-> Leibniz
<b>DH</b>	-> Hobbes	<b>VE</b>	-> Leibniz
<b>E</b>	-> Leibniz		
<b>FNL</b>	-> Leibniz		
<b>GM</b>	-> Leibniz		
<b>GP</b>	-> Leibniz		
<b>GR</b>	-> Leibniz		
<b>HN</b>	-> Hobbes		



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**Menti ipsi age novum Telescopium construa-  
mus, quod non sideribus tantum, sed et ip-  
sis intelligentiis nos prop<r>iores red-  
det, nec tantum corporum superficies re-  
praesentabit, sed et interiores rerum for-  
mas deteget.**

Leibniz (GP 7.14-15)



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In its widest sense, the idea of a Universal Language has involved various approaches and developments in the course of the centuries. The object of logical, linguistic and philosophical investigations as well as theological speculations and disputes, the theme of literary, utopian or poetic inspiration, a political project or a basis for the inscription of linguistic theories and discursive practices of a mystical or religious nature, the various projects rooted in this idea spring forth as multifarious imaginary, fantastic, or even pathological realizations of the desire for direct access to others and to the world through a medium that would ensure adequate and universally shared knowledge.

Having arisen in every case from an acute awareness of the limitations and imperfections of existing languages, which are blamed for the difficulties in communication and for the remaining shortcomings of discourse, all projects for a universal language present themselves as a means of overcoming the deficiencies and the scandalous diversity of the various tongues. A reflection of the unity of the human mind and a faithful translation of the multiplicity of its operations, a Universal Language is always conceived as a unified, unique and perfectly regular means of attaining adequate knowledge and full communication among human beings and between them and the world, so as to lead them back to the ideal, mythical situation which prevailed before Babel.

This is a timeless project, yet one to which, thanks to its disquieting sensitivity to the problems of language, that uncertain, troubled zone "où l'on peut espérer encore découvertes et aventures"<sup>1</sup> was deeply committed, and which, within the geographical confines of Europe, has the second half of the 17th century and the first decades of the 18th as its chronological limits.

However, it is undoubtedly with Leibniz that this project reaches its highest and most significant moment. With Leibniz it can truly be said to have attained its highest level of complexity and gained a greater consciousness of its own logical and epistemological implications, whilst simultaneously revealing its insurmountable aporias in the fragmentary and radically inconclusive nature of its many sketches and in the multitude of strategies and perspectives he employed to circumscribe it.

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It is precisely this Leibnizian project for the constitution of a Universal Language, in all its multiple and diverse aspects, that is the object of the present study. With regard to the title chosen - *Leibniz and the Problem of a Universal Language* - if it does not exactly coincide with the boundaries of the object under study, this is because - as we shall see - not only is the very identity of Leibniz's project problematic both in its limits and in its specificity, but, also, in order to achieve its comprehensive elucidation it is necessary to integrate it into a sufficiently wide horizon to permit the disentangling of the multiple roots which crisscross it in every direction.

Fundamentally, three orders of difficulty arise regarding any attempt at a systematic exposition of this project, which is held by Leibniz to be one of the greatest goods the human species could aspire to, an invention that would contribute to the happiness of humanity<sup>2</sup> and the glory of God<sup>3</sup> and, like no other, could immortalize the name of its author.<sup>4</sup>

These difficulties are, in the first place, of a historico-contextual order, pertaining to: (a) practical access to that vast and heterogeneous movement towards the creation of a Universal Language which developed in Europe, especially from the 17th century onwards, and of which Leibniz's project is a part; (b) systematic examination of all the relevant material and registers as well as all the lines of research - which at times only appear to be marginal - that involve and constitute it (philological and etymological studies, genealogy and classification of languages, cabbalistic speculations, grammatical investigations, research on Chinese characters, hieroglyphs or translations, phenomena related to the acquisition, loss and teaching of language, and a host of others); (c) the clarification of the regime of myths, presuppositions, attitudes, feelings and intuitions that defines the contours of a particular intellectual climate; (d) the need to establish criteria for the ordering and systematic organization of the material thus obtained in order to conduct their exposition within the merely indicative limits laid down by this framework, without, however, deviating from the demands of rigour or the normative precept of a non-reductionist approach such as the one required by our central objective: the comprehensive integration of the Leibnizian project within the framework of contemporaneous research.

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Secondly, there are difficulties pertaining to the meaning and significance of Leibniz's project within the system of which it is one of the privileged centres, and to the place it can occupy in it as a consequence of a certain general theory of symbolism whose outlines should be known, whose limits understood, and whose scope with regard to the constitution and progress of knowledge determined; in other words, difficulties concerning the clarification of the semiological, gnoseological and metaphysical foundations of the project itself.

Finally, a third order of difficulties - less historical, or even systematic, than thematic and hermeneutic - concerns the project itself. How are the multiple and diverse investigations carried out by Leibniz with a view to establishing a Universal Language to be articulated? What relationship, what possible unity - if any - is there between the various projects sketched by Leibniz throughout his life? How are the heterogeneous strategies that he followed and, in different ways, developed, to be interpreted? And, for each one, how is it possible to systematize the plurality of perspectives adopted in each case, the antinomies which pervade the project itself, the divergent proposals, the various solutions that Leibniz tries out, and the contradictory theses that, at times, underlie them? And regarding the dispersion and radical fragmentation of the textual corpus on this subject bequeathed by the philosopher of Hanover, what is the procedure to be adopted?

To discover the actual scope of the idea of a Universal Language, within which Leibniz's project is contained and against the background of which alone its specificity can be determined; to understand its significance and judge its breadth within the Leibnizian system - especially the theory of symbolism; and to present the various strategies and perspectives adopted by Leibniz as systematically as possible are, therefore, the three main objectives of this study.

In the *first part*, in order to integrate, contextually and comprehensively, Leibniz's projects into the framework of his contemporaries' research, a survey is made of various works concerning the constitution of a Universal Language. In this context, we shall try to identify and characterize the most significant forms of realization of this projects, in order to bring

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out, by means of a brief comparative study, its most constant determinations.

Hence, within a non-historical, yet (as far as possible) systematic perspective, we shall refer to a few paradigmatic examples (Dalgarno, Wilkins, etc.) selected from among the innumerable projects for a Universal Language dating, mainly, from the 17th century, which, as a result of the demarcation between disciplines that characterizes the present stage of our knowledge, are today often seen as marginal to what we consider to constitute the proper field of philosophical thought, although back in the 17th century, such instances were still seen as integral part of the exuberant variety of manifestations of Baroque reason.

Given the diversity of the studies carried out, especially in the seventeenth century (works and projects that we propose to classify under the headings of primordial, imaginary, international and philosophical languages), the central aim of this first part will be to show the specificity of the philosophical projects among which Leibniz's project must be counted, without, however, losing sight of the breadth and diversity of registers that the idea of a Universal Language has covered. We believe, indeed, that this very diversity enfolds a set of objectives that Leibniz at least partly approaches or tries to combine: to construct/discover an instrument of universal communication which would be transparent and adequate, a faithful and rigorous translation of thought and its articulations and a vehicle to the knowledge of the world which, in some way, it would express in a relationship of signifying naturalness.

In fact, Leibniz's project appears to pursue three main objectives: logical (to build a linguistic system that would rigorously express thought and its articulations); semantic (to construct a system of characters that, by their own expressive naturalness, could be isomorphic with the reality they named - the paradigm seems to be the idea of the Adamic Language, especially as developed by J. Böhme, which justifies the special reference here made to the theory of *Natursprache*, and heuristic (a combinatory system that would open the road to the progress of knowledge - here, reference to Lull and Kircher has been considered necessary).

The need to carry out such a survey may also be justified by the fact

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that Leibniz himself intensely participated in all the intellectual movements of his day, not only on account of his enormous erudition and his unquenchable curiosity, but also due to his openness and accessibility regarding the works of his contemporaries, towards whom - as is well-known -<sup>5</sup> he always showed the most complete intellectual honesty, discussing ideas and paying homage to all those from whom he had taken the slightest material or suggestion.

In the *second part*, since Leibniz's project expresses not only the general interest of the 17th century in the idea of a Universal Language, but also a systematic exigency, we attempt to determine its meaning within the Leibnizian system itself and to specify the role that it could perform as a consequence of a special general theory of symbolism, whose contours we attempt to set up - that is, the attempt is made to understand the systematic reason that could explain Leibniz's enormous commitment to this project and, simultaneously, to discover the semiological, gnoseological and metaphysical grounds of the project itself. Thus, on the basis of his dispute with Descartes, we will present the main lines of Leibniz's conception of symbolism, in which, as we shall endeavour to show, the project for a Universal Language has its foundations as well as some of its principal limits. We shall see how it was in opposition to Descartes - an opposition that Leibniz actually clearly admitted - that the latter formulated the defence of the possibility of initiating the construction of an *a priori* Universal Language not, as the former would wish, after the analysis of the ideas had been fully effected, but in parallel with that analysis. It will also be shown how it is in the context of this debate, and against a backdrop of a different understanding of the reason for the success of the mathematical sciences, that Leibniz defends the need to overcome the subjectivity of the criterion of evidence by resorting to a sensory criterion, i.e., a symbolic and therefore objective one. Insofar as the formal grounding of thought is thus shifted to the symbolic plane, it now becomes important to understand the gnoseological status which Leibniz attributes to symbolism. This will be attempted on the basis of commentary on and analysis of some of the most significant texts on symbolism and blind thought. In a first stage, this commentary will enable us to become aware of the ambiguities and oscillations which characterize Leibniz's thinking on the question of the constitutive or merely auxiliary status of the sign; and in a second stage, to question the *raison d'être* of these ambiguities, taking account, on the one hand, of the limita-

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tions which the postulation of a non-symbolic kind of knowledge (whether divine or human) involves for symbolic thought itself, inasmuch as that knowledge is its basis and virtual limit; and, on the other hand, of the possibilities that non-symbolic knowledge opens up as an enabling condition of its own interpretation.

Finally, the *third part* starts out from the thesis that Leibniz's investigations on the *German Language*, the *Rational Grammar* and the *characteristica universalis* should be considered jointly and in their mutual articulations. In this sense, we will present, as completely and systematically as possible, what we consider to be Leibniz's three different approaches to the possibility of a Universal Language: the purification and perfecting of a natural language (German); the constitution of an *a posteriori* universal language on the basis of linguistic elements common to all natural languages (the *Rational Grammar*); and the explicit abandonment of natural languages in favour of the *a priori* construction of a new, entirely artificial, symbolic language (the *characteristica universalis*).

As we shall see, although these projects are quite distinct from each other, both in their regime of construction and in their underlying research methodologies (which explains why critics do not generally present them in their mutual articulation), Leibniz does not conceive them either sequentially or alternatively. On the contrary, they may even be considered to be three convergent and complementary strategies belonging to one single ambitious project: that of scrutinizing the *revelatory power* of human language and perfecting it through the construction of a new language that would be capable of functioning as an effective and true *organon* of rational enquiry. This project is directly grounded in what is, perhaps, the central thesis of Leibniz's semiology - human language does not disturb the knowledge of reality but, on the contrary, leads to its rational penetration (revelation), that is, it not only reflects but also promotes and clarifies human knowledge.<sup>6</sup>

Leibniz's main purpose appears, then, to be: to investigate the motivated origin of natural languages; to examine the mechanisms responsible for the *naturalness* of their vocabulary (especially in the case of German) and the deep structure underlying the grammatical particularities of the various languages (research into the constitution of a *Rational Grammar*); and to ap-

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ply those discoveries to the construction of a new philosophical language which would be endowed with a similar, or even higher, revelatory capacity, and which, for that reason, Leibniz requires to be *natural* or representative of the world that it is intended to disclose and directly speak.

Indeed, it is precisely through that representativity of the sign which Leibniz wants to appropriate for the future *a priori* universal language that, in our opinion, the revelatory power of natural languages, can, by artificial means, be not only revived but also improved (since it would be fundamentally graphic, the motivation of the future philosophical language could avoid the oscillations and the progressive extinguishment with which time and numerous human displacements have changed and darkened the original significations of natural languages and of their primordial - Adamic - roots).

The several models of representativity of the sign tried out by Leibniz with regard to the project of the *a priori* constitution of a new linguistic system - a project in which the formal coherence of the system was to play a primary role - reveal the great importance that he gives to that possibility by which he aimed to equal or even surpass the role played, in natural languages, by the popular onomatourge (the wise and illustrious onomatourge who will create a universal philosophical language must repeat the unconscious, instinctive and anonymous gesture of the popular onomatourge and surpass it in a deliberate and rational way). Thus, Leibniz's insistent efforts at obtaining such a representativity and the multiple and multifarious routes he tried to trace (which this study attempts to differentiate, identify, categorize and present systematically) are in fact a proof of his desire to preserve - beyond the operativity or functional capacity of the sign within the formal system - the system's very representativity or openness to the reality it is intended to speak.

If this study may be considered to make any contribution towards the understanding of the Leibnizian project for an Universal Language, it is precisely in terms of our defence of the need to articulate the various strategies pursued by Leibniz in the furtherance of this aim. Furthermore, if in their apparent diversity and divergence these strategies betray the unbounded scope of the project itself, it is perhaps in their precarious unity and in the recurrent insights that each of them offers into the other two that, we

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believe, there lies the true essence of this project; to reconcile the rigour of a formal language with the meaning that only natural languages possess, and thus to avoid both the meaninglessness of formal systems and the ambiguities of ordinary language.

Moreover, it is still the myth of a primordial (Adamic) language, radically open to the world because co-natural with it, that inwardly informs the Leibnizian project for a Universal Language. The most ancient of all linguistic myth here reveals itself in all its heuristic fertility.





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**Part I**

**On the Idea of a Universal Language**

**Chapter 1**

**Preliminary Considerations**

La meilleure Methode qu'il y a, c'est d'y  
faire le plus de comparaisons qu'on peut.  
Leibniz (GP 7.182)

1.1 Some Systems of Classification of Universal Languages

In a historical work devoted to the study of the different projects of universal languages, Couturat and Léau (1903) divide them into three main groups: the *a priori* ones, which suppose the invention of a totally new lexicon and a set of functional rules (philosophical projects are mostly of this kind); the *a posteriori* ones, those starting out from existing linguistic materials, lexical and syntactic, which they aim to combine, reformulate and/or perfect; and, finally, the *mixed ones* which combine elements of the two abovementioned types of procedures.

On the other hand, George Mounin (1958: 91/102) proposes the designation *pseudo-language* to cover any artificially created language that offers itself as a total reconstruction of the idealized model of spontaneous language, with all the semantic, morphological, syntactic and stylistic elements considered indispensable for the expression of current categories of thought. The major aim of these pseudo-languages is to be speakable and regular, and thus able to completely substitute the existing spontaneous languages. Mounin also proposes the designation *inter-language* for any artificial language which is common to people who speak several spontaneous languages and is accepted as a mere auxiliary means of communication.

Both classifications take for their criteria the type of methodology used by the inventors of universal languages and the relationships that the new linguistic systems are to establish with the existing natural languages. Neither, therefore, given the procedures of linguistic analysis adopted by their authors, enables us to recognize the specificity of the philosophical projects. Moreover, these classifications, restricted as they are to the analysis of conscientiously and methodically produced work, fail to give an account of the variety of registers in which universal language has been conceived.

Todorov's classification, presented in an article on the theories and phenomena of sound symbolism respecting the different types of phonic creations that are external to the common lexicon (1972a: 446/62), is wider in scope. Todorov distinguishes the following types:

(1) *magical and religious languages* believed since ancient times to have

been spoken by the gods among themselves and/or to human beings. These magical and religious languages are usually presented as, at least, a partial reconstruction (with varying degrees of elaboration, extending from the simple collection of words or phonic sequences to the entire construction of a new linguistic system) of a divine, supernatural, primordial or pre-existent language. They are made up of a new lexicon built up from sound materials originating in onomatopoeic, interjectional, onomastic, rhythmical, melodic or ludic procedures, or else in the imitation or co-optation of foreign words;

(2) *Glossolalias*, individually and unconsciously created languages or pseudo-languages, which Todorov considers to be pathological phenomena consisting of regulated distortion of foreign or native words, only to be distinguished from the magical and religious languages by the observer's incredulity with regard to their supernatural character or origin;

(3) *universal languages*, conscious and deliberate creations of artificial languages made in order to facilitate communication among peoples; and

(4) *imaginary languages*, invented in literary fiction and allegedly spoken by the inhabitants of non-existent or fantastic countries.<sup>1</sup>

This classification has the merit of permitting the regrouping of such apparently disparate phenomena as the magic language of the Russian Sectarists, the Glossolalia of St. Hildegard of Bingen, Dalgarno's universal language or Rabelais' Lanternoys. However, as it is limited to the establishment of the differences and similarities among actually produced linguistic materials, it does not allow us to recognize the specificity of the philosophical projects - a failing also observable in the classifications of Couturat/Léau and Mounin.

## 1.2 A Proposal for Classification

Precisely because it is our aim to highlight the very specific nature of philosophical projects and, simultaneously, to refer especially to works connected in one way or another with Leibniz's project, we will distinguish four great categories of attempts to produce a universal language: primordial, imaginary, international and philosophical languages.

By the term *primordial languages* we mean those spontaneous, intuitive,

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unconscious or impulsive lexical productions that are frequently produced in a state of revelation. Declaring themselves as true languages (magical, divine or, in any case, supernatural), they present themselves as the reconstruction of a primitive (Adamic) language, common to all human beings (anterior to Babel), and also as an unequivocal expression of the adequate knowledge of the essential reality of the world and its beings. Their creation (or discovery) is an asocial, ahistorical process, the fruit of isolated (inspired) individuals or small groups (sects) of believers, devotees, disciples or initiates. Their main aim is not to facilitate universal communication but rather to earn the grace (or gift) of knowledge.

By *imaginary languages* we mean those productions of more or less elaborate and complete linguistic systems created in the field of literary fiction, of clearly utopian value and believed by their own inventors to be unrealizable. Because they reflect the linguistic thinking of the era, these consciously and critically built imaginary languages reveal the presence, in the collective imagination, of the myth of universal language, a myth which may attract or repel, but in both cases acts as a polarizer for the utopian discourse it gives rise to.

The designation *international languages* will be used to refer to the artificial linguistic systems which have been purposely created with the practical aim of facilitating and/or encouraging communication among peoples who speak different languages. Whether simple systems of codification or true constructions of complete and autonomous languages, these productions are usually formulated *a posteriori*, and tend to depend on the existing languages from which they were built or to which they are auxiliary. Their inventors, who may be moved by humanistic feelings or by pure proselytism,<sup>2</sup> or may, alternatively, subscribe to the theory of the progressive perfectibility of the various human languages,<sup>3</sup> believe that they are contributing towards human progress in carrying out a social task (whether commercial, political or cultural) of greater or lesser pragmatic value.

Finally, by *philosophical languages* we mean those constructions based on profound reflection which, in contrast to the projects of international languages, whose main aim is to establish a universal system of communication, seek to attain the same objective by intensifying their essentially cognitive goal; aiming at the correct expression of thought and the adequate

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knowledge of the world, their ultimate aim is to produce an equal, or even greater, ease of communication. Such projects, which are not limited to a linguistic analysis of concepts, seek to constitute a system of knowledge and ultimately, to reach the very system of things. In order to do this, they start out from a logical-semantic classification of concepts, before going on to the choice or attribution of signs whose combination and systematic arrangement would permit an adequate translation of the relationships among concepts, and thereby, among things themselves. Generally *a priori* and therefore independent of existing languages (their inventors are, so to speak, competing with God by giving rise to a language that could have been Adam's), they can nonetheless also be *a posteriori*, in which case they are built up from linguistic elements common to all languages, forming a universal semantic codification based on an univocal semiotic system, a neutral system or, as far as possible, one that is representative of the signified reality.

This classification, like all the others, obviously has its difficulties. Criss-crossings may occur. There are projects whose complex nature prevents a rigid classification into any one of the established categories. Its only virtue, if any, is that it permits the recognition of the very specific status of the philosophical projects, whilst allowing us to evaluate the extent of the impact of the idea of a universal language on the basis of the heterogeneous contexts and registers in which it has been conceived. We believe that this variety of undertakings contains a set of fundamental insights which are largely neglected today, but which can illuminate the system of ends pursued by all philosophical projects of a universal language.

**Chapter 2**

**Primordial Languages**

Car si nous avons la langue primitive dans sa pureté, ou assés conservée pour estre reconnoissable, il faudroit qu'il y parût les raisons des connexions soit physiques, soit d'une institution arbitraire, sage et digne du premier auteur.

Leibniz (NE 3.2.1)



### 2.1 Original Mythology and its Presuppositions

In a fascinating study devoted to the problem of translation as a means of access to the intimate nature of human language, George Steiner (1975: 48) estimates the number of languages spoken today or at any time in the past on our small planet<sup>1</sup> to be about ten thousand; a figure which, on account of the uneasiness it provokes, confirms the *raison d'être* of the mythologies of the original separation of tongues which, as Steiner also shows, every civilization creates.

To a certain extent, it is in fact the consciousness of the scandalous diversity of languages, and the ensuing heavy communicative and cognitive difficulties, that underlies that mythological body, of extremely ancient roots, on which all explanations of linguistic facts were based up to the middle of the 18th century,<sup>2</sup> it was only then that naturalist explanations took over from the mythological and theological ones that had hitherto governed linguistic phenomena. Such a mythology, denoting a deep meditation on the essence of human language, finds its most perfect form of expression in Biblical texts.<sup>3</sup> And it is here, fundamentally, that it organizes itself around two principal and paradigmatic events – the attribution of names by Adam, and the confusion of tongues at Babel; events which present themselves as complementary and interdependent, for if God confounded the language of men at Babel, this implies that up until then there had existed, necessarily, only one language. Conversely, if there was originally only one primordial tongue and today there is such a variety of languages, there must, equally, have been a moment of division and rupture.

These events, which were believed to have occurred in the remote, cosmogonic past of the human species, were dogmatically constituted as facts by the biblical narrative itself, and would for centuries provide the material for a theological interpretation of the origin and diversity of languages; moreover, such an interpretation is all the more firmly grounded, the more fixedly it is inserted within the metaphysical presuppositions that theological reason incorporates in itself and recovers for itself. In fact, if the issues pertaining to language are dependent on certain theological assumptions linked with particular biblical passages, that are continually and insistently commented upon, such *topoi*, as Jean-François Courtine argues

(1980: 373), "ne deviennent véritablement *topiques* qu'en fonction d'une interprétation philosophique déterminée ou d'une rigoureuse contrainte métaphysique". It follows, in Courtine's view, that they should not be considered as obstacles which have, for centuries, impeded a truly linguistic approach to language, but rather as elements of a global metaphysical configuration which may be seen as, in the last analysis, having determined the specific modes of thinking about language and its problems.<sup>4</sup>

There are two assumptions involved here: the first concerns the primacy of unity over multiplicity which, when applied to the existing diversity of languages, demands that they be channelled back into a moment of unity in which their truth would be rediscovered; the second assumption places this moment of unity and truth at the beginning of time and thus reinforces both the thesis of a primordial (Adamic) tongue and the idea of a subsequent separation of languages (at Babel).

Now in respect of both these assumptions, a complex theory of language had already been formulated in Graeco-Roman antiquity.

In Plato's *Cratylus*, in the context of a profound discussion of the aporia concerning the alternative theses—*physis*, two positions are (among others) affirmed which are of cardinal importance for this question: the rejection of the theory of the divine origin of names (438c ff.), and the affirmation of the need to resort to the study of the names originally bestowed by the onomatourge (391b ff.) in order to examine the name-thing relationship — two positions which gave rise to the subsequent thesis of the existence of an original Adamic tongue, and which perfectly anticipate the numerous studies of an etymological and comparative nature that were later undertaken with the aim of rediscovering the lost unity of the original language.<sup>5</sup> To these two presuppositions Judeo-Christian thought was to add only the notions of sin and punishment — if the single original language was perfect, the present diversity is a degeneration of supernatural origin and moral consequences, a divine chastisement inflicted upon human beings, the fallen descendants of Noah, on account of their sins; it is, then, tantamount to a third Fall and comparable, as such, to Adam's banishment from Eden and to the Great Flood.<sup>6</sup>

The fusion of the Platonic theory of language expounded in *Cratylus* with

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the dogmas of Genesis produced an interpretative tradition which, through successive deviations, distortions and reaffirmations, continued up to the sixteenth and seventeenth centuries. It was as early as the first century that Philo of Alexandria (+80?) initiated this process of fusion. From Philo to the Neoplatonists and from the latter to the early Church Fathers, including, in the meantime, such figures as Eusebius of Caesarea (264-338?), Gregory of Nyssa (332-398?), Eunomius (+392?), et al., this tradition traverses the entire medieval period, and has as its greatest exponents in the 16th and 17th centuries, Bibliander (1500-1564), Postel (1510-1581), Benito Perera (1535-1610), Comenius (1592-1671), Luther (1483-1546) and Jacob Böhme (1575-1624).<sup>7</sup> Within this tradition, Adam was usually endowed with the faculties of knowledge and the power of bestowing names that Plato had attributed to the onomaturgical sage; from the biblical narrative it preserved the idea of punishment that dominates the episode of Babel, which provides a convenient explanation for the problem of the diversity of languages that underlies the naturalness-convention alternative left open in *Cratylus*. It was therefore definitively established that Adam had conferred their original names on things, and that this original language was lost at Babel. What was not settled was whether the Adamic language was entirely the work of the first man himself or whether it was revealed to him by God;<sup>8</sup> whether 72 or 75 tongues appeared at Babel; whether or not Hebrew was the Adamic language;<sup>9</sup> and, last and of most interest for us, whether the Adamic language was lost forever or whether it could once more be recovered.

With regard to the latter issue, three solutions were proposed. The first was, essentially, developed amongst the Protestant theologians; it basically states that the original Adamic language is lost for once and for all, that no traces of it can ever be found, and that any attempts towards its reconstruction are therefore wholly unjustified.<sup>10</sup> Moreover, given the irremediable confusion of languages, what is necessary from this viewpoint, is the pragmatic and realistic approach of starting out from the present multilingual situation, of cultivating polyglottism and multiplying the number of translations; in brief, this perspective favoured the active exploration and the fruitful use of these imperfect tools of communication to which men are condemned to resort on account of their sins. Such, in outline, was the position of Luther and Calvin, for whom what mattered was the development of the communicative and translation possibilities between the various existing tongues so that they could be put to the service of evangelizing

the peoples. Luther, while considering that Hebrew had been excluded from the confusion of tongues (cf. note 9), nevertheless emphasized the fact that the divine punishment had brought about a division of minds, and that this entailed all manner of hostilities and dissensions that rendered communication impossible even through the Hebrew language.

In view of the above, the activity of translation was necessarily regarded as a theological and evangelical imperative, since only by resorting to it could the reconversion of human languages be effected. The translation of the Bible (carried out by Luther between 1522 and 1534) was thus an act of charity through which men hitherto locked in the dark depths of their particular tongues were given access to the universality of the evangelical message.<sup>11</sup>

In opposition to this view, a *second* tendency existed, according to which it was possible both to return to the original situation prior to Babel, and to recover the primordial Adamic language, whether *indirectly*, by seeking its traces in the various existing tongues, collecting instances of the correspondences, affinities and similarities between them, investigating their historical relationships, tracing out their lineages and filiations (hence the numerous etymological, comparative, genealogical and philological studies undertaken all over Europe, especially from the Renaissance on); or else *directly*, by examining the language which was believed to be its present heir, and scrutinizing the inner form of its words, the essential shape of its letters, the semantic dimension of its signs, and thereby trying to discover the secrets of creation (as in the cases of the Cabbala, Onomancy, Anagrammatism and all the occultist, emblematic and magical traditions).<sup>12</sup> —  
In both cases, a process of re-cognition is at work, an activity directed entirely towards the past, which does not provide any new linguistic materials whatsoever and which, for this reason, we do not propose to examine further in this study.

The same does not apply to the *third* type of solution, according to which it was possible, not only to recognize and recover the original language, but also to revive, resuscitate or rebuild this language of the past, in the present moment.

We have now come face to face with the productions which we earlier

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called primordial languages, that is to say, those more or less elaborate new linguistic systems which are the fruit of mystical or revelational experiences and are presented as capable of fulfilling the functions of the original tongue. Later we shall see how this same objective is pursued, although in different ways, by the philosophical projects and, in particular, by that of Leibniz. The difference in this respect is between the intuitive, spontaneist and emotive approach of the mystics and the enlightened, and the methodical and rational strategy of the builders of philosophical languages. Whilst the former, regarding themselves as vehicles of supernatural designs or guardians of the knowledge of the fundamental reality of the world and its creatures which they believe to be a gift, grace or inspiration of divine origin, discover (receive), in the intimacy of their own being, the voice of the original tongue, the latter take on themselves the task and responsibility of building, wholly from scratch and solely by their own means, a new linguistic instrument of analytic nature and unlimited cognitive powers. However, before we proceed to examine some of the most significant examples of primordial languages, it will be useful to characterize, in greater detail, the idea of the Adamic language which these productions attempt to reconstruct.

## 2.2 Characterization of the Adamic Language

It was in the speculative context of the general question of Adamic science, which traversed the whole of medieval theological thought and extended into the Renaissance via the interest that then surrounded Adam as primordial figure and human archetype,<sup>13</sup> that the Christian representation of the original language was consolidated.<sup>14</sup>

Such a representation is essentially concerned with the following aspects: the Adamic tongue, inasmuch as it is *perfect*, is *unique* and therefore *universal*. Bibliander unequivocally states: "Unicum autem initio fuisse in toto genere hominum sermonem communem, sicut unica est ratio" (1548: 36). Inasmuch as it is *perfect* the Adamic tongue is *natural* - "Illa perfectissima esset omnium, cujus verba rerum naturas explanarent" (1548: 31) - and therefore *adequate* or as Benito Pereyra says, "Convenienter ad naturam rei nomen fuisse inditum" (1593-94: 525).

Created in the image and likeness of God, Adam possessed from the first moment of his existence a universal and paradisiac science by means of which he knew the *raison d'être* of all things and the true nature of each particular being; for this reason he gave to each being a name that adequately expresses and specifies its essential properties.<sup>15</sup> As Benito Pereyra explicitly recognizes:

Adamum ab initio perfecta omnium animalium scientiam habuisse. Si enim ejusmodi scientia caruisset, imponere nomina convenientia naturis singulorum animalium nequequaquam potuisset. Praeclare enim in Cratylo Plato, enim qui primum omnium mortalium nomina rebus imposuit, sapientissimum fuisse affirmat. Quonian igitur hic locus magna vim habet ad demonstrandam et probandam excellentiam sapientiae quae fuit in Adamo.

Pereyra (1593-94: 369)

Adam comes close, then, to the wise legislator and onomatourge of Plato's *Cratylus*, who likewise (*Cratylus* 388e, 389a), determines the name on the basis of his knowledge of the essential nature of the object.<sup>16</sup>

The Adamic language is thus *transparent*, each name being the translation - into its own linguistic material - of the ideal form of the named object, of which Adam has perfect knowledge. Finally, through the analogy between the creative character of the Divine Word (emphasized, above all, throughout Genesis I and in John I.1-3) and the Adamic institution of names (Genesis II.19-20), the Adamic language was also conceived as a mode of appropriation, by means of which Adam repeated the divine gesture of creation through the Word, and was thereafter consecrated king and master of all creatures. As Benito Pereyra also states: "Haec nominum impositio declarat imperium et potestatem primi hominis in animantes" (1593-94: 525). Naming is knowing and subjecting.

In the mutual interrelation of its elements, this characterization of the Adamic language as fundamentally universal and natural is supported by a conception of human language according to which it is essentially a nomenclature, a collection of names (labels) that establishes a one-to-one, word-by-word relationship with all the objects of human experience. It is actually in view of this supposed direct correspondence between each name and the reality it signifies that it is possible to defend the naturalness of the constitution of the name itself. From this conception of language as a nomenclature, it can also be inferred that, since each name is natural, it must

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be immediately comprehensible, as its meaning derives, not from its insertion into a system or its relation to other names but, rather, from its direct correspondence to the signified reality.

Each word, thus endowed with automatic existence, is conceived, on this model, as a concrete entity, and hence, in the limit case, as a proper name, seen as even more natural to the extent that its referent is revealed precisely in it and through it. As Todorov says:

Le phantasme du langage primitif est celui, en même temps, de l'évanouissement du langage, puisque les choses prennent la place des signes et que l'écart introduit par le signe entre l'homme et le monde est enfin réduit.

Todorov (1972b: 301)

It is because language allows the world to speak itself through it that language is able to speak the world; and it is sufficient for each name to speak the reality it signifies, for language to be able to speak the world. In other words, in order to guarantee the congruence between reality and language, a one-to-one correspondence between the two is postulated.

### 2.3 Glossolalias

It is precisely the paradigm of a primal language, as characterized above, that is at the root of the heterogenous set of linguistic practices we have termed primordial languages, those spontaneous phonic and lexical productions which are exterior and marginal to existing languages, and therefore appear, not as just another language or as one more language among many, but rather as *The Language* in all its original purity and transparency.

Such is the case of the mysterious phenomenon called glossolalia - a language or pseudo-language unconsciously produced by a subject who believes him or herself to be the mouthpiece of supernatural, divine, or spiritual forces, which is supposed directly to reveal thought and things in their utmost truth, and is therefore presented as immediately accessible and hence universally communicable.

Glossolalia (which even seems to constitute one of the components of shamanism and witchcraft in archaic societies and also crops up in certain rituals of Graeco-Roman culture - in oracular divination, for instance) is an age-old phenomenon which, although expressly condemned by St. Paul (see *Corinthians*, I.13-14) played an important role in the early Christian tradition.<sup>17</sup>

Invariably, in a heretical, spiritualist, or pathological form, it is found to reappear over the history of Western civilization, with total disregard for its progress.<sup>18</sup> On the other hand, xenoglossia (the miraculous knowledge by a subject of an existing language that he or she did not learn but somehow finds him or herself able to speak), proceeding directly from a particular interpretation of the biblical account of the miracle of the Pentecostal gift of tongues (see Acts II.3,4), was only condemned much later by the established powers of the Roman Catholic Church, and meanwhile prospered legitimately throughout the whole of the Middle Ages (St. Anthony of Padua (1195-1231) and St. Francis of Assisi (1182-1226) are reputed to have been xenoglossists), and even gave rise to the foundation of the Pentecostal Church.<sup>19</sup>

In its manifold aspects, the phenomenon has attracted the attention of theologians,<sup>20</sup> psychiatrists, psychoanalysts and linguists like Flournoy (1900), Victor Henry (1901) and Jakobson (1966). In studying the linguistic production of the Russian Orthodox sect of Khlysty, the latter even advances the hypothesis of the existence of a universal glossolalic competence (1966: 640), in this respect agreeing with Flournoy, who sees the processes of lexical construction used by the famous medium H  l  ne Smith as a relic of a general function, common to all human beings, which he considers to lie at the origin of language itself, on both the phylogenetic and the ontogenetic levels.<sup>21</sup> On the other hand, it may be argued, following Yaguello (1984) and Compagnon (1979), that it is because glossolalia is not strictly speaking a means of linguistic communication that it can become a form of primary communication, close to the eruption of feelings and the energy transfer that characterizes the expression of enthusiasm and the translation of the ineffable. From a less speculative standpoint, Todorov (1972a: 445-446) characterizes glossolalia as a mere language disability, resulting from the regulated deformation of foreign and native words.<sup>22</sup> The glossolalia of St. Hildegard of Bingen (1098-1180) for example, would thus simply be a combination

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of Latin and German.

Whether an authentic gift or a revelatory inspiration of high religious value, a mere spiritualist practice, a pathological symptom or the manifestation of a true linguistic competence repressed in the majority of socially adjusted human beings and irrupting only in a few exceptionally gifted minds, glossolalia is always experienced as an inspired, original Word, a very ancient language, long-forgotten, yet nevertheless true, transparent and adequate, and, in its immediacy and naturalness, capable of disclosing and dis-covering the secrets of the world.

#### 2.4 Jacob Böhme

##### The Concept of *Natursprache* and its Three Levels

The work of Jacob Böhme (1575-1624), too, might be interpreted as a complex theorization founded on a deep mystical experience and on its author's recognized competence in linguistic practices akin to the phenomena of glossolalia and xenoglossia. In fact, according to Böhme's biographer, Hogenicht, the former was endowed with the gift of understanding the meaning of the words of any language, purely on the basis of their sonorous and articulatory mechanisms.<sup>23</sup>

However, there is a vital difference between Böhme's gift (or illumination) and the strictly linguistic competence required for understanding the various existing tongues. The difference lies in the knowledge of the Language of Nature - *Natursprache*. Although Hogenicht's description only refers to one of the various levels at which, as we shall see, this concept is dealt with by Böhme, it is precisely in the knowledge of *Natursprache* that the gift lies which he, Böhme, considers himself to possess:

Und ist eben die Sprache der gantzen Natur, aber es kan sie nicht ein ieder: denn es ist ein Geheimniß, *Mysterium*, welches mir von Gnaden GOTTes ist mitgetheiliet worden von dem Geiste, der Lust zu mir hat.

(AU 20.91)

The concept of *Natursprache*, which is one of the very keynotes of Böhme's thought and explicit theme of his main writings, appears then as a part of a complex hierarchy of concepts comprising three different levels.

Böhme starts out from a conception of the creative character of the Divine Word, seen already as an objectification, embodiment, or secondary manifestation of the Divinity itself.<sup>24</sup> The origin of all created beings, the Divine Word dwells within each creature (SR 8.49) and determines its inner form or *Gestalt* which, in turn, is expressed, outwardly and analogically, in the *Signatur* or outer form. As Böhme says:

Als der innern Gestalt Begierde hat sich äusserlich gemacht, und stehet das Innere im Aeusseren, das Innere hält das Aeussere vor sich als einen Spiegel, darinnen es sich in der Eigenschaft der Gebärdung aller Gestalt besiehet; das Aussere ist seine *Signatur*.  
(SR 9.3)

On a *first level* then *Natursprache* is the ensemble of signatures or the language of things themselves.

Und das ist die Natur-Sprache, daraus jedes Ding aus seiner Eigenschaft redet, und sich immer selber offenbaret, und darstellt, worzu es gut und nütz sey, dann ein jedes Ding offenbaret seiner Mutter, die die Essentz und den Willen zur Gestalt also gibt.  
(SR 1.17)

It is the knowledge of this language of divine origin which is inscribed in all creatures that enables man to reach the essence of each particular created being and, in so doing, to attain the Essence of essences - the Divine Essence itself.<sup>25</sup>

Nevertheless, at this level, the Language of Nature does not yet have a sonorous dimension; as Böhme says, "die *Signatur* stehet in der Essentz, und ist gleichwie eine Laute die da stille stehet, die ist ja stumm und unverstanden" (SR 1.5) like the strings of a violin which only the plucking of adroit fingers can render capable of fully producing the sounds corresponding to their own virtues (cf. SR 1.5).

It was only when Adam, with his superior knowledge and paradisiac science, bestowed names upon things in accordance with the essence, form, and properties of each one that the Language of Nature gained its sonorous dimension

<daß> er <Adam> aller Creaturen Eigenschaft gewust hat, und hat allen Creaturen Namen gegeben aus ihrer Essentz, Form und Eigenschaft, er hat die Natur-Sprache verstanden, als das geoffenbarte

und geformte Wort in aller Essents, denn daraus ist ieder Creatur der Name entstanden.

(MM 19.22)

Hence, the Adamic language constitutes a *second level*, a human transposition (into the domain of the audible) of the Language of Nature, seen as an immediate and mute signification of the real. An adequate and unique language, it was the only one spoken by all human beings and used by them both to comprehend the world and to understand each other.

Die einige Zunge war die Natur-Sprache, daraus redeten sie alle, denn sie hatten sie in einer Form, und verstunden in der Sprache den *Sensum*.

(MM 35.48)

But at Babel, humanity lost, not only the Adamic language but, more important, the intelligence of the Language of Nature which the former reproduced:

als sich aber derselbe Baum der einigen Zungen in seinen Eigenschaften und Kräften zertheilte <...>, so hörte die Natur-Sprache, daraus Adam allen Dingen Namen gegeben, <...>, auf.

(MM 35.12)

Only a very few illuminated individuals - among whom Böhme included himself - were, he believed, still capable of immediate access to the Language of Nature.

Nevertheless, in the sensualistic component of the various post-Babel languages - a component that Böhme calls *Sensualistische Sprache* - it is possible to retrieve the Language of Nature. Because man is made in the image and likeness of God and his spirit "ist gleichwie die ganze Natur selber" (AU 19.75), the vernacular languages he has created, in some sense replicate the divine act of creation by the Word: on the one hand, because the articulatory mechanisms underlying the various human languages (the passages of the spirit through the lips, teeth, tongue and other speech organs) *reproduce* in their form, even if tenuously and obscurely, the very form of the divine creation/nomination;<sup>26</sup> and on the other hand, because the letters, syllables, and words of any one of the human tongues are, in their content, an expression of the human spirit exhaled by them and because this spirit replicates the Divine Spirit, allowing us to understand "die Geister der Buchstaben" (MM 36.75).

We have now come to a *third level* of the *Language of Nature*, which is no longer either the language of the *signatura rerum* or its Adamic transposition, but rather, as we have seen, the sensualistic dimension of the various human tongues, the *Sensualistische Sprache*. All at once the *raison d'être* of the sonorousness of their words and the origin of the meaning of their letters, the *Sensualistische Sprache* legitimates and permits the hermeneutic task of disclosing the secrets concealed in ordinary languages. In this connection, especially in *Aurora, oder Morgenröthe im Aufgang* (1612), Böhme dedicates himself to the describing and interpreting the subtle articulatory movements that lie at the basis of the pronunciation and sonority of words, syllables and letters, trying to scrutinize their secret wisdom. For instance,

Das Wort GOTT fasset sich mitten oben auf der Zungen, und stösset aus dem Hertzen dahin, und lasset das Maul offen, und bleibet auf seinem königlichen Sessel sitzen, und schallet aus sich und in sich <...>. Das bedeutet, als GOTT Himmel und Erden, darzu alle Creaturen geschaffen hat, daß Er gleichwol in seinem Göttlichen, ewigen, allmächtigen Sitze ist blieben, und von dem nie abgewichen, und daß Er allein Alles ist. Der letzte Druck bedeutet die Schärfe seines Geistes, damit Er augenblicklich alles ausrichtet in seinem gantzen *Corpus*.

(AU 18.60-61)

Hence, even in ordinary languages, in their components on the level of the signifier, latent teachings are contained, although the precise understanding of the sensualistic dimension of language has been lost by the majority of people; men use crude outer forms, "äusserliche grobe Form" (MM 35.58), "und verstunden nicht das Wort GOTTES in ihrer eigenen Sensualischen Zungen" (MM 35.68).<sup>27</sup>

Now in any language, even in one's own mother tongue<sup>28</sup> it is possible for an illuminated spirit to recognize the Language of Nature at this third level, that is to say, as *Sensualistische Sprache*:

Denn verstehe nur deine Mutter-Sprache recht, du hast so tieffen Grund darinnen als in der Hebräischen oder Lateinische.

(AU 8.73)<sup>29</sup>

In conclusion it may be argued that Böhme's theory of *Natursprache* contains three different meanings which, although not clearly thematized with regard to their differences and their inner articulations, nevertheless re-

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veal an implicit hierarchical organization.<sup>30</sup> The Adamic language, as we have seen, is already the human transposition of an ultimate divine language which is inscribed in things themselves and constitutes them as directly significative. But it was lost at Babel, and, today, men can only avail themselves of the vernacular languages they have created for themselves, in which, notwithstanding, there remains latent in their sensualistic component (sonority, proportion, quality and shape) a close relationship of co-naturalness with the things of the world they signify.

At the first level, therefore, the concept of *Natursprache*, considered in its most radical sense as the immediate and absolute signification of things themselves, represents the limit case of a language that completely does without any kind of strictly linguistic mediation; at the second level - that of the Adamic language - this mediation makes its appearance, although the total adequateness between name and thing, which it postulates, neutralizes the consequences of the rupture that mediation always implies. Finally, at the third level, mediation is at last installed in all its thickness and opacity, so that it is now only possible to recognize the proximity of language to the world on the level of the signifier.

On the other hand, in each of these conceptions, Böhme continues and recovers different traditions and fuses them into a doctrine which - notwithstanding some very obscure areas - does reveal a notable unity in pursuing convergent solutions for the enigmatic problems of signification. As Kayser shows (1972: 351ff.), what makes Jacob Böhme one of the greatest exponents of the interest his era dedicated to questions of language, and, in particular, to the question of its (Adamic) origin and nature (or naturalness), is the fact that by synthesising Paracelsus's doctrine of the signature,<sup>31</sup> the traditional theological representations of the Adamic language<sup>32</sup> and the Cabbalistic speculations on language,<sup>33</sup> he was able to construct, at the confluence of all three, a singular, powerful theorization which redefined, in naturalistic terms, the theological thesis of the Adamic language, and decisively relocated, at deeper level, the very problems that this thesis had tried to formulate. According to Kayser (1972: 359) the Böhmeian term *Natursprache* is indeed the German equivalent to the Greek *physei*, yet this does not mean that Böhme had immediate knowledge of the ideas of antiquity.

Hence, Böhme's importance in this context lies in the fact that his work

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presents one of the most detailed, profound and influential formulation of the idea of an Adamic language. Moreover, Böhme's work was known by Leibniz, who explicitly refers to it at several instances - sometimes even in complimentary terms.<sup>34</sup>

## 2.5 Leibniz, Böhme and the Idea of Adamic Language

Fundamentally, it is around the thesis of the Adamic language, its status and the possible ways in which it might be retrieved that points of continuity and rupture between Leibniz and Böhme can be established.

Leibniz does not give his views on the debate concerning the divine Adamic origin of language. As he says:

Primigeniam ortam protoplastis usurpatam, quidam fluxisse putant ab institutio Dei, alii ab Adamo, viro divinitus illustrato excogitatam, tunc cum nomina animalibus imposuisse traditur.

(C 151; VE 3.497)

Nevertheless, he admits the existence of an original tongue and - in agreement with Böhme - believes that it is not Hebrew (see note 9) but that it can be rediscovered, even though it is practically lost,<sup>35</sup> on the basis of the vernacular languages - German in particular -<sup>36</sup> given that, in his view, vernacular languages show the characteristic naturalness of the original language since they derive from a set of natural (onomatopoetic) naming procedures still preserved in man.<sup>37</sup>

Thus, without establishing or acknowledging any distinction between the three levels of the Böhmeian conception of *Natursprache* already referred to above, Leibniz retains both the concept of the Adamic language as the original and adequate tongue (Böhme's second level), and the concept of natural language, designating the deep physical proximity and structural similarity that were typical of the original language and can still be found in vernacular languages today (Böhme's third level).

However, Leibniz differs from Böhme, not only with regard to his conception of the relationship between vernacular languages and the original tongue, but also with regard to the method to be used for the recovery of

the Adamic language, as well as the new status he confers on it by taking it as the model for the philosophical language which he aims to construct.

Whereas for Böhme, as has been shown, vernacular languages contain on their signifying surface a sensualistic dimension (*Sensualistische Sprache*) that allows them to be immediately deciphered by an illuminated subject, Leibniz considers the relationship between the original language and the vernacular ones to be genealogical, that is to say, a relationship between a long-lost root and its present offshoots in which traces or archaic fragments of the original tongue are still to be found. As Leibniz says:

il me semble en effet que presque toutes les langues ne sont que des variations, souvent bien embrouillés, des mêmes *racines*, mais qu'il est difficile de reconnaître, à moins que de *comparer beaucoup de langues ensemble*.

(D 5.2.186)<sup>38</sup>

It thus follows that, with regard to the *method* - the crucial point of rupture between the two thinkers - the route advocated by Leibniz towards the retrieval of the Adamic tongue, that is, towards discovering the common roots of the various natural languages, is indeed very different from that proposed by Böhme. As seen above, Böhme's method is founded on the passive withdrawal of a subject who receives a certain special gift or illumination into his own being; Leibniz, on the contrary, advocates the undertaking of laborious etymological, comparative and philological studies - projects to which he himself dedicated a considerable amount of effort and intellectual activity in.<sup>39</sup>

In line with the German mystical tradition (Eckhart (1260-1327), Seuse (1295-1366), Tauler (1300-1361)) which stresses the immediately experiential character of knowledge, and considers the only means of access to such knowledge to be the Divine grace or illumination that determines mystical experience itself, Böhme as we have seen, consistently maintained that only an illuminated spirit could gain access to the Language of Nature and, through that, to true knowledge itself. Indeed, it is the awareness of his own illuminated condition and the higher knowledge thereby obtained that underlies Böhme's constant opposition to formal, verbalistic knowledge;<sup>40</sup> this also explains why he was so torn between his pedagogic desire to communicate his miraculous knowledge<sup>41</sup> and his awareness of its unutterable, and therefore incommunicable, quality.<sup>42</sup>

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Now it is precisely this awareness of being one of the elect and illuminated - with all its corollaries - that Leibniz cannot accept. In his *Dialogus inter theologum et misosophum*, dated 1677-79, in answer to the misosophist who admits that he has always appreciated the modesty of those who believe humbly without prior examination, the theologian (through whom Leibniz expounds his own views) eloquently answers as follows:

Crede mihi illos saepe qui serio ita loquuntur esse aut valde simplices (quibus Deus, cum fecerint quod in se est, nihilo minus veram fidem dare potest), aut esse meros Hypocritas Atheosque occultos <...>. Nullus major inimicus est religionis et pietatis quam qui fidem rationi contrariam asserit, quod eam apud cordatos prostituere est.

(GR 1.22-23)

In fact, for Böhme, man - in spite of being the child of God, created in his image and likeness - cannot by himself, with his weak human powers alone, penetrate the secrets of the world; he must, therefore, through asceticism and purification of body and soul, make himself worthy of the divine grace which alone can enable him to attain supreme wisdom.<sup>43</sup>

For Leibniz, on the contrary, God never denies anyone the grace that will allow them to do what they really want to do - "Sufficientem Volenti Gratiam nemini negare dicendum est" (GP 6.455).<sup>44</sup> On the other hand, since "la lumière de la Raison n'est par moins un don de Dieu que celle de la Revelation" (GP 6.67), and Reason is, ultimately, governed by the same principles in God and man alike,<sup>45</sup> it is through the "patient" work of understanding,<sup>46</sup> through the shared activity of reasoning,<sup>47</sup> through the development of sciences<sup>48</sup> and through the striving to demonstrate even the most deep-seated truths of faith that man must deepen his relationship with the truth.

What we have here then, is the theme of "Piété éclairée" (B 146) or Leibniz's anti-fideism, as clearly presented, for example,<sup>49</sup> in the following passage of the *Dialogus inter theologum et misosophum*, where Leibniz writes:

Fateor multos, singulari Dei benignitate omnium sese captui accommodante, veram fidem tenere sine ullis rationibus persuadentibus; et hos salvos esse posse: misera tamen esset religio nostra si argumentis careret, nec Mahumetanae aut paganae praestaret <...>. Sed dixi Tibi revelationes et miracula per rationem examinanda esse. <...>. non tamen possumus fidei fundamenta tenera ac tueri sine rationibus.

(GR 1.20-22; VE 1.3-5)



However, one should not conclude from this that Leibniz's thought totally rejects the mystical dimension of human experience. On the contrary, it is even possible to interpret Leibniz's thought, in its totality, as the product of the reconciliation of the truths of faith and religious feeling with the demands of the most enlightened reason.<sup>80</sup> Yet, as Leibniz says in his letter to Morel of May 4, 1698, what is important is not to impose further limits upon man, but, on the contrary, to extend his capabilities:

Il y a partout des limites dans la créature, comme il y a partout des points dans la ligne. Cependant la créature est quelque chose de plus que des limites, car elle a reçu quelque perfection ou vertu de Dieu; comme la ligne est autre chose que des points. Car dans le fond, le point (*terminus lineae*) n'est que la négation du progrès ultérieure de ce qu'il termine.

(B 346)

We can thus perfectly understand the following passage where he possibly alludes to Böhme:

Lingua Adamica vel certe vis ejus, quam quidam se nosse et in nominibus ab Adamo impositis essentias rerum intueri posse contendunt, nobis certa ignota est.

(GP 7.205)

We can also understand why Leibniz's most consequent linguistic project was to consist, not of the retrospective recovery (by mystical, intuitive or even etymological means) of the original Adamic tongue, but of its attempted rational and prospective reconstruction, through the systematic exploration of the speakable and through the gradual explication of what may be implicit in the universe of meaning that structures reason and its language.

Far from nostalgically decriing the progressive corruption or decadence of vernacular languages and their increasing remoteness from the original Adamic language, or trying to restore them to their original naturalness, what Leibniz will actively and explicitly undertake is the construction of a new philosophical language that would embody, in the future, the characteristics of the Adamic language of the past.<sup>81</sup> We believe that it is in this sense that one should interpret the following passage where, alongside the esoteric formulations typical of the mystical and speculative tradition, Leibniz clearly identifies the project of constructing a new philosophical

language with the ideas of the Adamic tongue and Böhme's *Natursprache*.

Jam inde a Pythagora persuasi fuerunt homines, maxima in numeris my-  
sterica latere. <...> Sed cum vera arcani clavis ignoraretur, lapsi  
sunt curiosiores in futilia et superstitiosa, unde nata est Cabbala  
quaedam vulgaris a vera longe remota <...>. Interea insita mansit  
hominibus opinio posse mirifica inveniri numeris, characteribusque  
et lingua quadam nova quam aliqui Adamicam, Jacobus Bohemus, *Die  
Natur-Sprache*, vocat.

(GP 7.184; VE 4.669)<sup>52</sup>

So, if there is in Leibniz an active interest in the language of the past, that is, if Leibniz dedicates himself to investigating the traces of the primordial natural language that can still be found in contemporary languages, this is fundamentally, as we shall see, in order to understand the wisdom contained in their mechanisms and, subsequently, to be able to use this knowledge in the construction of a new and philosophical language, of a similarly motivated nature.

It may be concluded that what Leibniz essentially retains from Böhme is the ideal conception of an Adamic language, whose naturalness, transparency, universality and total adequacy he converts into a paradigm which is to serve both as the foundation and guideline of his subsequent logical-linguistic research. For, if the Adamic language ever existed - and it must have, since universal harmony also implies "l'harmonie des langues" (D 5.545),<sup>54</sup> that is, their fundamental kinship as different expressions of and perspectives on the world - then the project of a universal and philosophical language itself emerges as more firmly, historically and metaphysically grounded.

Lost forever, yet still recognizable amidst the ruins of Babel and beneath the successive layers time had deposited over them; rediscovered in the inner texture of the alphabet which presided over the nominalist mechanism of creation, or else intuitively or rationally reconstructed, the Adamic language represented, at all events, the paradigmatic moment, the pole of attraction and fascination around which deep reflections on the fundamental nature of human language were organized.

In truth, this regulating idea, characterized by the co-existence and intimate articulation of the most mythic of all myths (the myth of origins) and the most rational of all projects (that of encompassing the areas of

being and knowledge in their entirety by means of a universally shareable rationality), contains within its precise boundaries fundamental insights which today are largely forgotten or left out of the debate, but which in Leibniz's century still polarized the attention of the greatest minds. The idea of an Adamic language and the mythical accounts of it indeed contained a retrospective projection, not only of the desire to overcome the uneasiness, the anxiety and the sense of punishment and condemnation arising from the confusion of Babel (that is, the feelings of dissent and revolt provoked by the difficulties surrounding communication and knowledge that result from the diversity of languages), but also of a profound awareness of the innermost, metaphysical nature of human language; there, indeed, lies the suspicion that the Word says far more than what it says, that language is more than a mere social institution, more than a code; that something within it or in its distant past, radically reveals the truth of the world and that, in its texture, there lies concealed a wisdom that is by no means arbitrary or contingent.<sup>54</sup>

**Chapter 3**

**Imaginary Languages**

b.c.d.f.g.h.l.m.n.  
1.2.3.4.5.6.7.8.9.

erit bodifalemu seu mubodilefa  
8 1 3 7 4      8 1 3 7 4  
Leibniz (C 278)

3.1 Emergence of Imaginary Languages  
and their Characterization

In the domain of fiction and literary creation, beyond the simple poetic recourse to the systematic invention of neologisms,<sup>1</sup> we also find several instances of the creation of complete languages, either the total invention of the writer (as in the case of the Australian language of Foigny, *Les aventures de Jacques Sadeur dans la découverte et le voyage de la Terre Australe*, 1676), or resulting from the lexical deformation of one or more existing languages (as in the case of Rabelais's Lanternois, constructed through anagrammatical processes and metastasis, on the basis of English, Latin and German words),<sup>2</sup> and the language of the Severambos created by the grammarian Denis de Vairasse (*Histoire des Séverambes qui habitent une partie du troisième continent, communément appelé Terre Australe*, 1677).

Imaginary languages are fundamentally utopian in nature; the first cases appear in the Renaissance,<sup>3</sup> and concretely, in Thomas More's *Utopia* (1516). Indeed, this text already contains some of the more constant characteristics of later instances: the fifty-four spacious and magnificent cities of the island of Utopia are "identical in language, traditions, customs, and laws" (1516: 61); furthermore, that language is "copious in vocabulary, pleasant to the ear and very faithful exponent of thought" (1516: 90).<sup>4</sup>

However, it was in the 17th century that the movement to create imaginary languages gained greater prominence and importance. If, as Copernicus and Galileo maintained, our planet is not the centre of the universe, the age old theory of a plurality of worlds, just as capable as ours of being inhabited by individuals with equal needs of communication and knowledge, gains greater consistency and viability. On the other hand, the old myth of the *Terra Australis*, located at different periods in different parts of the globe as Europe progressively discovered the latter,<sup>5</sup> provided fertile soil for the imaginary location of unknown and fantastic peoples and languages - which came to seem all the more credible the more numerous and exotic were the unsuspected recently discovered languages like Chinese and Mexican, or the incomprehensible languages of African people which navigators, travelers and missionaries constantly brought news of. Thus it is that in the 17th century the Moon, the Sun and the *Terra Australis* are the preferential

sites selected by the utopian creators of imaginary languages. This is the case of Francis Godwin, *The Man in the Moon* (1638) and of Cyrano de Bergerac, *Les états et empires de la lune* (1649) and *Les états et empires du soleil* (1652), for the case of the moon and the sun, and Foigny (1676), Vairasse (1677) and Simon Tyssot de Patot, *Voyages et aventures de Jacques Massé* (1710), for the *Terra Australis*.<sup>6</sup>

In all of these cases, it is a question of ideal languages spoken by ideal people living in ideal societies, whether terrestrial (but sufficiently remote to preserve their purity) or extra-terrestrial and therefore free from any influence, contamination or corruption. These are, besides, benevolent utopias, still far from the sceptical, corrosive irony of, for example, Swift, who also invented an imaginary "language of things" which finally realizes - in an absurd and negative way - the ideal of transparency pursued by all universal languages: Words themselves are erased in the face of things.<sup>7</sup> We are here also still far from the pessimistic utopias that would appear from the 19th century with, e.g., the *Coming Race* by Bulwer-Lytton (1871), *1984* by George Orwell (1948) or *Babel 17* by Samuel Delany (1966),<sup>8</sup> and subsequently with the invention of universal, extra-terrestrial and even inter-galactic languages,<sup>9</sup> which are no longer seen as instruments of communication and progress but as weapons of subjection and manipulation.

### 3.2 Imaginary Languages and Linguistic Theories

#### Some Examples

In every case, today as in the 17th century, the inventors of imaginary languages mirror the concerns and reflect the knowledge and research of their contemporaries on the problems of language. With regard to our own time, it is possible to draw a parallel between, for instance, the linguistic hypothesis of Sapir-Whorf,<sup>10</sup> according to which thought is modelled and rigidly conditioned by the structure of the language in which it is constituted and expressed, and the conception of language underlying Orwell's *1984*; for if thought is conditioned by language, its control by an arbitrary power would permit the manipulation of subjects. Hence language would be the most powerful means of ideological and political domination.<sup>11</sup>

Back in the 17th century, too, the utopian inventors of imaginary langua-

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ges participated in the general interest surrounding the innumerable investigations in the direction of constructing a universal language, sometimes echoing them and, at other times, even inspiring them.

For example, the imaginary language of Francis Godwin (*The Man in the Moon*, 1638), prompted by the various cryptographies of his day (it consists of the substitution of musical notes for the letters of the alphabet), seems to have exerted its fascination over the subsequent work of Wilkins (*Mercury or the Secret and Swift Messenger, Shewing how a Man May with Privacy and Speed Communicate his Thoughts to a Friend at a Distance*, 1641),<sup>12</sup> and, through him, over Leibniz who also raised the hypothesis of a universal language of a musical nature.<sup>13</sup> This hypothesis would be explored by Mersenne in his *Traité de l'Harmonie Universelle* (1637), and later by Jean François Sudre who, in 1817, was to propose yet another universal musical language (Solresol)<sup>14</sup> similarly based on the seven notes of the G scale. Similarly, the imaginary language invented by Vairasse (who also wrote a *Grammaire méthodique* inspired by the Port-Royal school) is built on the model of rigid prescription for the ordering and disciplining of language that characterized the normative grammaticism of the *Grammaire Générale et Raisonné* (1660) of Arnauld and Lancelot. Indeed, in the language of the Severambes, instituted by the political leader Severias, there reigns a perfect regularity: the gender, number and degree of nouns is always clearly indicated, verbal inflection does not present a single exception, etc.<sup>15</sup> At the same time, Vairasse echoes the comparative and rationalist methodology of the Port-Royal grammarians, which is based on the thesis of the structural universality of the various natural languages. Vairasse writes of the despot, legislator and onomatourge Severias, who knew a great many of the existing tongues: "dans le dessein donc d'en composer une très parfaite, il tira de toutes celles qu'il savoit, ce qu'elles avoient de beau et utile, et rejeta ce qu'elles avoient d'incommode et de vicieux";<sup>16</sup> that is to say, he was able to locate their rational universality.

Likewise, in the case of the Australian language imagined by Foigny in 1676, we find a surprising proximity to the various philosophical projects of the time, particularly to the universal language proposed 15 years earlier by Dalgarno in his *Ars signorum, vulgo character universalis et lingua philosophica*, 1661. Like Dalgarno, Foigny starts from the basis of a classification of elements, and then assigns to each one - vowels to elementary

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substances and consonants to qualities - so that, through the combination of its letters, each name may translate the composition and qualities of the thing it signifies.

Here, once more, we are face to face with the greatest ambition of the seventeenth-century philosophical projects for a universal language, especially of that of Leibniz - to construct a system of real, autarkic characters,<sup>17</sup> from which it might be possible to deduce, through the analysis of their elements, all the properties of the concepts they represented, in such a way that, as Leibniz says in his letter to Oldenburg (1676), "Ipsi cujusque rei nomen clavis erit omnium quae de ea dici, cogitari, fieri cum ratione debeant" (GP 7.13). Precisely that same year, Foigny, giving free rein to his imagination, wrote of the language of his imaginary people of the *Terra Australis*:

L'avantage de cette façon de parler est qu'on devient philosophe en apprenant les premiers mots qu'on prononce et qu'on ne peut nommer aucune chose en ce pays, qu'on n'explique sa nature en même tems".<sup>18</sup>

It is obvious that, in terms of concrete realization, the philosophical language of Foigny's "Australians" is extremely poor.<sup>19</sup> This is not because it would be impossible to obtain, from the combinatory play of the letters of the alphabet, a number of signifying combinations that would be sufficient to translate the multiplicity of concepts involved in the expression of thought - in a famous fragment entitled *De l'horizon de la doctrine humaine* (C 96), starting out from the twenty-four letters of the alphabet and applying the art of combination to determine the number of possible truths and falsehoods, Leibniz estimates the maximum limit of possible enunciations at 10 raised to the power of 7300.000.000.000<sup>20</sup>, a figure which widely exceeds the sum of existing words in even the richest natural languages - but because the inventoring and categorizing of the simple matricial elements either supposes (as Descartes argued) the prior total realization of true philosophy,<sup>21</sup> or implies the immense task (attempted by Leibniz) of attempting to construct, in parallel and correlatively, the universal language and the knowledge of the world which it would translate and simultaneously help to construct.<sup>22</sup> Foigny only glimpsed the immeasurable nature of such a project, and when he conceived its imaginary realization in the impossible, unknown *Terra Australis*, he was perhaps unwittingly compromising the very



utopian character of his utopia.

From the above, it may be concluded that the activity of inventing imaginary languages runs remarkably close to the movements that tend towards the construction of a universal language, which they (marginally) anticipate, accompany or simply reflect.

Starting out from the awareness of the limitations and imperfections of natural languages – even though this awareness is not the result of an analytic reflection on the origin and nature of these shortcomings, and, equally, does not imply the systematic critique of the pretensions of natural languages (procedures that characterize philosophical investigation in this domain) – the utopian inventors of imaginary languages nevertheless point to the same objectives as those of the philosophical projects: univocality, clarity, stability, elimination of redundancy, regularity, harmony and elegance.

Particular in the 17th century and in accordance with the constant requirements of all the philosophical projects, imaginary languages aimed to be universal, adequate tools of communication that could be immediately understood and rapidly learnt,<sup>23</sup> while faithfully translating thought.<sup>24</sup> As adequate routes towards a total knowledge of the things of the world, whose nature and properties they were somehow to reflect,<sup>25</sup> these imaginary languages would also be endowed with that "naturalness" which, as we shall see below, constitutes the paradigmatic model for the most significant philosophical projects of the era and is at the very core of the Leibnizian project of a *characteristica realis*.

Nevertheless, in claiming such a "naturalness" for themselves, are not the "imaginary" languages refusing their own unreality? And is the unreality of the imaginary languages not already compromised by the emptiness of their universality? It may be asked whether we are not faced with one of those subtle, imperceptible displacements in which fiction slides wholly and silently towards what we call the real.<sup>26</sup>

**Chapter 4**

**International Languages**

Il se forment aussi des langues par le commerce des differens peuples, soit en mêlant indifferemment des langues voisines, soit comme il arrive le plus souvent en prenant l'une pour base.

Leibniz (NE 3.2.1)

4.1 The Decline in the Prestige of Latin  
and the Emergence of Natural Languages

It was also in the 17th century that the idea of constructing an international language emerged with particular insistence, especially since it was then that Latin, which for nearly a thousand years had been the international language of scholars, theologians, politicians and diplomats all over Europe, began to lose ground under the assault of the vernacular languages that gained strength with the founding of nation-states, the consolidation of their frontiers, etc.

As is well known, Latin was the privileged vehicle of knowledge and power throughout the Middle Ages.<sup>1</sup> Its dissemination coincided with the universalists pretensions of the Roman Church, of which it was the compliant instrument, and its prestige as the noble language of the Christian message<sup>2</sup> only later came to be challenged by Hebrew, and later by Greek, as a result of the reformers' doctrine of free examination and the Renaissance tendency to return to the original sources of classical culture.<sup>3</sup> Humanism itself, in its attempt to restore the initial purity of Latin language, condemned all the alterations ensuing from its day-to-day use during the Middle Ages, and may thus have compromised its viability and permanence as a language of culture.<sup>4</sup>

In parallel with this, the development of printing and the innumerable narratives of major voyages<sup>5</sup> helped to increase awareness of the irreducible diversity of natural languages and to stimulate a movement of enormous curiosity about language and intense linguistic activity. A variety of foreign language grammars and dictionaries appeared, especially multilingual ones, establishing correspondencies among several different languages. This is the case of the *Dictionary* of Ambrogio de Calepino, which (in the Basel edition of 1590) compares eleven different languages; and of the *Pantaglossia* of Nicholas Claudio de Peiresc (1580-1637), where samples of some forty exotic languages are collected.

In addition, philological, comparative and etymological studies were undertaken. Attempts were made to define the criteria for ordering and classifying the abundance of materials recently obtained. Particularly famous are

the bizarre etymologies proposed by Goropius Becanus (1518-1572) (which Leibniz refers to ironically (NE 3.2.1)), and the no less curious typological classification of languages made by Joseph Justus Scaliger who, in *Diatriba de Europeanum linguis* (1599), distinguishes four language families (Roman, Greek, Germanic and Slavic) according to the terms used for the word God (respectively *Deus*, *Theos*, *Gott* and *Bog*).<sup>6</sup>

In this context, and as a result of the needs arising from the development of international contacts on the political, economic, scientific and religious levels, a variety of different works appeared with the aim of constructing universal communication systems which would be capable of replacing Latin and of overcoming the divergences between natural languages.

#### 4.2 Secret Writing, Pasigraphies, and A Posteriori International Languages

In addition to the authentically philosophical projects, which we will consider further on, and which also emerged within this general framework, a great many other works, of differing influence and importance, could equally be mentioned. We will only summarize what we consider to be their three main orientations.

(A) A first group would compromise projects which may be placed at the confluence of the neoplatonic and hermetic traditions and the fascination exerted by the Egyptian hieroglyphus<sup>7</sup> which, while not yet deciphered, were already the object of numerous cryptographic and hermeneutic investigations, and, generally, of all the multiple speculations of a symbolic character which, as is well known, were characteristic of the Baroque period. The principal aim of these projects was to construct secret writing systems, characterized by their ciphered notation and the esoteric dimension of the knowledge they were intended to transmit. Constructed not only as means to, but also as sources of knowledge of the signified realities, such polygraphic writing systems would permit, through the direct contemplation of their signs, and therefore independently of the languages spoken by the initiated subjects - and this is what enables us to include them in the category of universal languages - the acquisition and transmission of certain kinds of secret knowledge.

Particularly significant were the investigations of the Jesuit sage Athanase Kircher (1602-1680) concerning the possibility of constructing such a writing system on the model of the Egyptian hieroglyphs, to which he denied any properly scriptural function, seeking for them not just a cryptographic decipherment but a symbolic and esoteric interpretation.<sup>8</sup> This is also the case of stenography, which was devised at the end of the 15th century by Johann Trithemius (1426-1516), Paracelsus's mentor. Initially regarded as an art of opening one's thought to one's correspondents by means of secret writing, it only later, with the work of the London merchant Francis Lodowick (1619-1694),<sup>9</sup> came to acquire its present utilitarian character - that of a mere auxiliary technique of simplification and abbreviation, rather than an autonomous writing system. In the context of these symbolic speculations, one may also refer to the importance attributed in the period to certain mysterious images, considered as symbolic objects of contemplation capable of transmitting moral and religious teachings. Such is the case of the *Table of Cebes* made available in 1655 by Gilles Boileau, and the *Moral Sphere* of Erhard Weigel (1625-1699), Leibniz's most respected teacher at Jena.<sup>10</sup> It is interesting to note that this interest in secret writing even finds an echo in Leibniz, especially in the texts prior to or contemporary with his stay in Paris,<sup>11</sup> where, in 1667, he became a member of the Rosicrucian Society of Nürnberg, of which he was the Secretary up to 1670.<sup>12</sup> Nevertheless, Leibniz's subsequent texts - which unquestionably constitute his most significant work - defend, on the contrary, the immediate accessibility, the transparency and the instantly learnable qualities of the universal language to be constructed (see, e.g., C 174 od 277).

(B) Secondly, there were the projects (perhaps those that attained the greatest popularity at the time) that took up the Chinese writing as a model,<sup>13</sup> especially the aspect of its independence vis-à-vis spoken languages, which renders it a means of communication common to many Oriental peoples regardless of their diverse, and in some cases mutually incomprehensible, dialects;<sup>14</sup> these projects attempted to build systems of written notation designed to be independent of pronunciation and to enable effective, easy communication among peoples of different languages.

These projects differ from those described above in their clearly practical objectives and their requirement of accessibility; after the constitu-

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tion of a system of codification through which direct correspondences between each of the different words in the different languages were established, it would be possible for anyone, independently of their native tongue, to read and understand any text thus codified.

The idea pursued here is that of pasigraphy, which was later to be the object of numerous works,<sup>15</sup> for instance, that of Maimieux (1797). It is defined by the 19th century Larousse Encyclopaedia as "l'art d'écrire dans un seul idiome qu'on sait, de manière à être lu et compris dans toute autre idiome qu'on ignore, pourvu que le lecteur sache sa propre langue et connaisse cette écriture."

Among the innumerable works of this kind one must note those of the English school of Baroque pasigraphers, William Bedel (1571-1642), Cave Beck (1623-1706?), *The Universal Character, By which all the Nations in the World may understand one anothers Conceptions* (1657), Henry Edmundson, *The Natural Language of Languages in a vocabulary contrived and built upon analogy* (1658), Edward Somerset, *A century of the Names and Scantlings of such inventions as at present I can call to mind to have tried and perfected* (1663), and especially those of the German Johann J. Becher (1635-1682), *Character pro notitia linguarum universali* (1661), as well as some of the investigations carried out by Kircher, especially his *Polygraphia nova et universalis ex combinatoria arte detecta* (1663).<sup>16</sup>

Starting out with the attribution of a number to each word of the Latin dictionary, and the arrangement of the dictionaries of several languages in such a way that each word was accompanied by the number attributed to its Latin counterpart, Becher's project aimed at enabling the translation, into any language, of a text written only with numerical signs, provided the reader had access to the key-dictionary for his own language.<sup>17</sup> In its improved form, Kircher's project consisted of the preparation of two polyglot dictionaries (Latin, Italian, French and German), each organized according to the two modalities of its subsequent communicative use - emission and reception.<sup>18</sup> Kircher's project already supposes some important changes, especially the constitution of a set of additional signs to mark inflectional differences, and a rough draft of concept classification which brings it close to his later works and to the philosophical projects in which the latter may be included, and which, as we shall see, always imply a categorization.<sup>19</sup>

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In any case it is not exactly a question of constructing a new language, but rather establishing systems of correspondence among the lexical elements of various existing tongues; this means that these projects were no more than systems of written codification, which are totally artificial and arbitrary, and are therefore best classified as what we would today call special and technical languages,<sup>20</sup> rather than as universal languages. Notwithstanding, directly inspired by the programmatic proposals of Francis Bacon in *The Advancement of Learning* (1605) and *De Augmentis Scientiarum* (1623), their authors tried to construct effective, exemplary communication systems which, by avoiding misunderstandings, irregularities, etc., might contribute towards the development of trade and knowledge as well as to the diffusion of true religion.<sup>21</sup>

However, while attempting to devise a system of *real characters* which, like the Chinese, might express "neither letters nor words, but things and notions" (Bacon 1605: 6.1.439), and through which "any book written in characters of this kind can be read off by each nation in their own language" (Bacon 1605: 6.1.439), Bacon is forced to conclude that the project is unrealizable, in view of the great number of signs that it would require, given his starting postulate that to each thing or concept there must correspond a character. Now it was precisely in opposition to this Baconian prerequisite (which, by determining the nature of all the abovementioned projects, simultaneously defined their limits) that the truly philosophical projects were to define themselves.<sup>22</sup>

(C) Lastly, the third group comprises the *a posteriori* attempts to construct a universal language, i.e., to reform and regulate an existing language, or to combine several existing languages. In this category may be included those projects, still embryonic in the 17th century, with which Leibniz was nevertheless familiar, and to which he refers in the *Nouveaux Essais* as follows:

Il se forment aussi des langues par le commerce des differens peuples, soit en mêlant indifféremment des langues voisines, soit comme il arrive le plus souvent en prenant l'une pour base, qu'on estrople et qu'on altere, qu'on mêle et qu'on corrompt en negligéant et changeant ce qu'elle observe, et même en y entant d'autres mots.  
(GP 5.258; A 6.6.279)

Leibniz refers to the instance of a *lingua franca* circulating in Mediterranean countries, the result of the spontaneous deformation of Italian which, however, despite its being artificial cannot be included in the ensemble of the projects for a universal language; he also mentions another language spoken by an Armenian Dominican whom he met in Paris in 1674, which consisted of a simplified version of Latin - "une espece de *Lingua Franca*, faite du Latin, que je trouvoy asses intelligible, quoyque qu'il n'y eût ny cas ny temps ny autres flexions" (GP 5.258; A 6.6.279) - and the universal language of R. P. Labbé, which also had a Latin basis - "qui est plus aisée et a moins de sujétion que nostre Latin, mais qui est plus reguliere que la lingua Franca" (GP 5.258; A 6.6.279).<sup>23</sup>

As will be shown,<sup>24</sup> it was Leibniz himself who undertook the most profound and advanced studies of the 17th century in the direction of the construction of an *a posteriori* universal language, to be based especially on Latin, even though this project (which endeavours to create a rational grammar - conceived as a necessary expression of thought and as the deep logical structure underlying the syntactic forms of the various existing languages - and therefore relies on elaborate logical and comparative research) belongs altogether to the realm of the philosophical projects.

#### 4.3 The Future of International Languages

Although it was less significant in the 17th century, it was nonetheless this third type of *a posteriori* projects that would prove to be of greater and more lasting importance for the future of the movement in favour of the creation of universal languages. In parallel with the subsequent development of philosophical and etymological studies, which would continue to reveal new affinities among the roots of the different languages, and with the increasing naturalism of the emergent theories of the origin and nature of language, which tended to detach themselves from the religious postulates concerning the primal Adamic tongue, and gradually to turn towards mechanistic,<sup>25</sup> sensualistic,<sup>26</sup> and even evolutionary explanations,<sup>27</sup> it was almost always on the basis of already established linguistic materials that, in the 18th century, projects for universal languages would be defined. This was for instance, the case of the 18th century British philologist, Rowland Jones (1722-1774),<sup>28</sup> who defended the primordial character of the Celtic



language, whose purest descendant would be English, and thus proposed the foundation of a universal language<sup>29</sup> on the basis of the latter tongue, and of the "citoyen" Delormel, who, in 1795, published a *Projet d'une langue universelle présenté à la Convention Nationale* (to be based on French).

Likewise, in the second half of the 19th century, when the great, unprecedented flowering of artificial languages occurred<sup>30</sup> - under the impulse of the recently-created comparative grammar,<sup>31</sup> which was the result of the discovery of Sanskrit at the end of the 18th century,<sup>32</sup> and under the pressure exerted by the increasing needs created by the development of international contacts - it was also *a posteriori* (allowing for a few exceptions<sup>33</sup>) that the majority of these projects were constituted. In fact, of the five-hundred or so projects listed by Couturat and Léau in their monumental *Histoire de la langue universelle* (1903) most of which are posterior to 1850, the great majority are formed from living languages,<sup>34</sup> from Indo-European roots,<sup>35</sup> or from Latin,<sup>36</sup> which had maintained, over the centuries, its privileged status as universal language.<sup>37</sup>

However, most of these are not really universal languages - or pseudolanguages, as Mounin prefers to call them (1958: 94ff.) - but merely auxiliary ones; they are interlanguages<sup>38</sup> that directly respond to the pragmatic requirements of commercial and political relations between states. The one salient exception is Esperanto, the only artificial language that indeed managed to outlive its inventor.<sup>39</sup>

The scholars and philosophers of the 17th and 18th centuries abandoned the field to the merely curious, or else to well-meaning enthusiasts. Even though a few logicians like Couturat and Peano,<sup>40</sup> the inventors of Ido (1894) and Interlingua (1910) respectively, and a few linguists (like Jespersen, Sapir, Cohen, Martinet or Ogden and Richards)<sup>41</sup> took an interest in the project, it was, in the end politicians and businessmen<sup>42</sup> who culled the humble fruits<sup>43</sup> of this immense logophilia,<sup>44</sup> made up of an indefinite mixture of enthusiasm and nostalgia - an exigency of rationality and, at the same time, a prodigious creation of the imagination - a will to retrace discourses back to the unity and harmony of a total communication with the world and human beings, but also a linguistic practice that subverted and undermined the established order of language and its codes.

Victimized by language itself and by its own rules of development, which point towards a growing complexity and dispersion, the creators of international languages always found themselves divided by the most violent quarrels and rivalries. For the most part, these languages never came to be spoken or used, or, if they were, it was only by their own inventors. And so it was that, at the beginning of the present century, faced with the ever-increasing number of international languages and the obvious impossibility of reaching a consensus, Couturat and Léau proposed that the International Association of Academies be responsible for the choice of *the* Universal Language, and that it take the necessary steps to ensure its teaching and dissemination. Subsequently, the League of Nations would also endeavour, equally unsuccessfully, to choose *the* Universal Language. But it was only at the time of the Second World War that this unsolved / unsolvable project would, in practice, finally be abandoned.<sup>43</sup>

In spite of their aim of enclosing the entire universe of utterance within the transparency of their constructions, the logophile inventors of languages, devotees of order, simplicity and regularity, were always confronted with the towering, all-pervasive image of the mighty Tower of Babel, their object of fascination, the age-old figure of all languages.



**Chapter 5**

**Philosophical Languages**

Ex instituto rem fluxisse, non potest dici, nisi de Linguis quibusdam artificialibus <...> qualem Daigarnus, Wilkinsius allique confixere.

Leibniz (C 151; VE 3.497)

5.1 Contextual Elements.

The *Mathesis Universalis*

It was within the global context on the numerous projects of the seventeenth century which attempted the construction of the universal systems of communication - international languages - that the first philosophical projects appeared. However, beyond the contextual elements already referred to - the decline of Latin, the awareness of the irreducibility of the various ordinary languages, the large-scale development of international contacts, etc.<sup>1</sup> - still other elements must be invoked in the order to define the specificity of the problems which these philosophical projects aimed to solve.

Fundamentally, one must take into consideration the situation created by the rapid expansion and diversification of scientific knowledge, from which two important consequences arose. Firstly, an awareness arose of the inadequacy of ordinary languages to express both the representation of the universe, as deepened and refined by modern science, and the logical categories of thought underlying scientific progress itself.

In face of the ambiguity, irregularity and instability of the various ordinary languages - imperfections which render their use for scientific ends impossible - the project for the construction of a universal language was consolidated. The aim was that, beyond any merely communicative aim, language might adequately express thought and its articulations, provide a rigorous symbolism capable of translating all actual and possible knowledge, and generally fulfil an essentially cognitive function. In this sense, the projects for the construction of a philosophical language tended to be conceived independently of the existing languages, which were perceived as inadequate and illogical, that is, those projects were essentially a priori in their tendency.<sup>2</sup>

Secondly, as a result of the expansion and diversification of knowledge, there was an ever-stronger revival of the old ideal of a single universal science that might, in a concerted and exhaustive way, reorientate this diversified knowledge, rediscover the unity underlying the multiplicity of sciences and reflect the unity of the world in the envisaged unity of science.

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Now this ideal of a *mathesis universalis*, as a configuration that attempts to effect the reordering and integrative synthesis of the new forms of intelligibility of the real,<sup>3</sup> implies, as its constitutive and founding requirement, the construction of a *lingua universalis* which, by guaranteeing the transverse communication of knowledge, could translate the unity of the world.

The paradigm is furnished by mathematics, inasmuch as the latter is a symbolic system of universal applicability and, simultaneously, the order of the world and the very structure of creation. It is not simply a matter of taking up mathematics as a model for the organization of the disciplines, that is, of extending its field of application (both as an axiomatic-deductive system founded on the evidence of its own axioms, and as a formal, rigorous method of demonstration and exposition) to the totality of human knowledge; but, rather, of seeing in it the paradigm of a language that might represent the world because it is isomorphous with its structure, since the world is itself mathematically ordered and structured.<sup>4</sup> In this sense the ideal of a universal language appears not so much as a mere extension of mathematical procedures, but as a deeper development of them: as a language underlying the very mathematical disciplines,<sup>5</sup> which operates on categories of universal applicability whose combination might lead to the development and exposition of the entire system of knowledge and of the nature of the world and things.<sup>6</sup>

## 5.2 Specificity of the Philosophical Projects

It was in this context that there arose, in rapid succession, the various projects for the construction of a universal language, which, in spite of their diversity, exhibit certain basic similarities, both in their underlying thought and their principles of construction.

Their starting point is that there exists a finite number of hierarchically structured concepts (linked by relations of inclusion and subordination) which can be reduced to a small number of basic concepts, i.e., of simple, primary ideas. A universal language should therefore consist of the construction of a sign-system which, through the fixing of a code (the at-

tribution of a character to each elementary idea) and the definition of a grammar (fixed rules governing the use and combination of the characters), would permit the adequate translation of the natural hierarchy of concepts, and through it, of the system of things themselves. It is not, therefore, as Bacon demanded,<sup>7</sup> a matter of attributing a character to each possible idea, but rather, in accordance with the indications formulated by Descartes,<sup>8</sup> of determining the small number of basic ideas to which all others can be reduced, and of combining an equally limited number of characters (each corresponding to one, and only one, of the basic ideas), thereby reconstructing the whole system of knowledge.<sup>9</sup> Thus, prior to the attribution and selection of the characteristic signs, all the philosophical projects begin with a more or less elaborate logico-semantic classification of concepts.

Inasmuch as such a system is built up from basic elements and their articulation, variation and combination, it not only involves an inventory of concepts, but itself becomes a form of intrinsic mechanism of knowledge, a philosophical calculative apparatus that might develop all present and future knowledge. As we shall see, it is Leibniz who clearly does away with all the heuristic consequences arising from the very project of the construction of a philosophical language.<sup>10</sup> Nonetheless, these consequences define the limit towards which all the philosophical projects tend, the logical result of the presuppositions on which they are based.

### 5.3 Bacon and Comenius

It was Bacon (1561-1626) who, in *The Advancement of Learning* (1605), first formulated a programme for the construction of a philosophical language which would make it possible to overcome the deficiencies and imperfections of natural languages. Such a language should consist of a system of "real characters" which Bacon presents, on the one hand, as purely conventional, and, on the other, in contrast to the alphabetical language and following the pattern of Chinese ideograms, as necessarily representing "neither letters nor words, but things and notions" (1605: 6.1.439).

Faithful to his desire to eliminate all obstacles (linguistic or otherwise) between human beings and things, Bacon therefore proposed the constitution of an artificial language whose characters, directly representing

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things and notions, could be read and understood by speakers of different languages.

Bacon's principal aim was indeed the facilitation of communication<sup>11</sup> - especially scientific - which perhaps explains why his most direct followers in this area were the English pasigraphists of the Baroque period.

However, Bacon also points towards the constitution of a philosophical grammar - a model set of rules that would bring together, combine and perfect the common properties of the grammars of the various ordinary languages. In his own words:

<...> if some one well seen in a great number of tongues, learned as well as vulgar, would handle the various properties of languages; showing in what points each excelled, in what it failed. For so not only may languages be enriched by mutual exchanges, but the several beauties of each may be combined <...> into a most beautiful image and excellent model of speech itself, for the right expressing of the meanings of the mind.

(1605: 6.1.421-422)

Proposing the constitution of such a grammar, which would be capable of correctly expressing the normal articulations of thought, Bacon seems to have also foreseen the possible cognitive use of a universal language. However, as a result of his instrumental conception of language,<sup>12</sup> he was ultimately led to neglect its real cognitive importance. This did not, however, in any way prevent his proposals for the constitution of a universal language from having an enormous influence on English intellectual life in the second half of the 17th century.<sup>13</sup>

The very influence of Comenius on the development of interest in England in the question of a universal language is even more explicable and decisive<sup>14</sup> given the coincidence between the theses of both concerning the necessity of a language that would be clear, precise, accessible and capable of permitting adequate communication - whether scientific (in the case of Bacon) or religious (in the case of Comenius).

It is indeed within the framework of his apologetic and reforming concerns, that the pedagogue and Pansophist Comenius (1592-1671) points towards the constitution of a universal language (Panglottia). In *Via Lucis vestigata et vestiganda* (1668), for instance, Comenius demands the elimination of



the imperfections and controversies which hamper the knowledge and the defence of the truths of faith and which, in his view, are the result of the disorder reigning within and between languages, and then underlies the advantages of a universal language that would be easy to learn, since it would be intimately connected to the knowledge of things themselves, whose nature would necessarily and faithfully translate.<sup>15</sup>

Even if, in terms of concrete realization, Comenius primarily undertakes the facilitation and clarification of the learning of Latin. – We refer to the didactic works *Janua linguarum reserata* (1631) *Methodus novissima linguarum* (1648) and *Orbis Sensualium pictus* (1654) among others, all works which have often been translated and reissued in modern times – the fact is that, beyond Latin, as Steiner says (1975: 200): "lies the promise of a perfect philosophical language in which nothing false can be expressed and whose syntax will, necessarily, induce new knowledge".

Neither Bacon nor Comenius actually undertook the construction of a philosophical language. The importance in their outlines of the project lies more in the fact that their widely publicised, influential works contributed greatly towards the awareness of the value and urgency of a project to which cultural conditions were already pointing, than in any concrete realizations, or even in the precise programmatic indications they enunciated. As we have seen, the philosophical projects are much more in line with the few but precise observations of Descartes.<sup>16</sup> The first effective constructor of a philosophical language seems, in fact, to have been Mersenne (1588–1648), who, in a letter to Fabri of Peiresc dated 1636/37,<sup>17</sup> declared that he had completed the construction of a philosophical language, no doubt of Cartesian inspiration. Of this language no fragments whatsoever remain,<sup>18</sup> and it was only two decades later that the first works of which we still have direct knowledge were to come to light.

#### 5.4 Urquhart and Ward

Sir Thomas Urquhart (1611–1660), in *Eskybalauron or the Discovery of a Most Exquisite Jewel* (1652) and *Logopandecteision, or an Introduction to the Universal Language* (1653), proposes a universalist system, which, despite its incompleteness and insufficient development,<sup>19</sup> may be classified as

philosophical inasmuch as it does not attempt exhaustively to symbolize the totality of concepts, but, rather, tries to find a finite, although still very high, number of primitive roots, from which he affirms the possibility of reconstructing the totality of possible ideas according to fixed rules of inflection. Urquhart's aim is "to appropriate the words of the universal language with the things of the universe".<sup>20</sup> To this end, he considers a form of "proportion between the sign and the thing signified" (Urquhart in Cohen 1954: 55) according to which the initial letters of each word would translate the "nature" of the thing signified

as logarithms in comparison of the absolute numbers, so do the words thereof in their initials respectively vary according to the nature of the things which they signify.

(Urquhart in Cohen 1954: 55)

Such a "proportionality" would consequently imply that the learning of this language would not only be extremely simple, but that it would also translate itself into the immediate knowledge of the things signified. As he says: "sooner shall one reach the understanding of things to be signified by the words of this language, than by those of any other" (Urquhart in Cohen 1954: 55).<sup>21</sup>

The same objectives also underlie the proposal put forward by the mathematician and astronomer Seth Ward (1617-1689), in *Vindiciae Academicarum* (1654).<sup>22</sup> In terms strikingly close to those of Descartes, Ward proposes the construction of a universal language which, by decomposing concepts into primary notions and symbolizing only the latter, would intuitively represent the nature of each thing, that is, it would show up its elements and respect the reason of its composition. In his own words:

<...> for all discourses being resolved in sentences, those into words, words signifying either simple notions or being resolvable into simple notions, it is manifest that if all the sorts of simple notions be found out, and have symboles assigned to them, those will be extremely few in respect of the other <...>. The reason of their composition easily known, and the most compounded ones at once will be comprehended, and yet will represent to the very eye all the elements of their composition, and so deliver the natures of things.

(Ward 1654: 21)

Once again, then, we are dealing with an attempt to construct the philosophical language on the basis of a previous categorization of concepts which

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Ward, following Descartes, aims to constitute on the lines of algebraic symbolism.<sup>23</sup>

Around 1653, too, there was published in Rome a project that, dividing all concepts into classes and subclasses and numbering each class as well as each of its component elements, aimed to express each concept by the number belonging to its class and by the order it occupied within it. The project also supplied a set of non-numerical graphic signs to express grammatical inflections and syntactic relations - a system which, as we shall see, clearly anticipates the works of Dalgarno and Wilkins which also start out on the basis of a hierarchical organization of concepts. It is an anonymous publication attributed by Leibniz, in *De Arte Combinatoria* (GP 4.72; A 6.1.201), to a *Hispanus quidam* which has been identified by recent research<sup>24</sup> as the *Arithmeticus Nomenclator mundi omnes nationes ad linguarum et sermonis unitatem invitans* by the Spanish Jesuit Pedro Bermudo (1610-1684).<sup>25</sup>

#### 5.5 Dalgarno

However, it was in Britain that the most important and complete work was carried out, by Dalgarno and Wilkins.

George Dalgarno (1615?-1687) developed, in the *Ars Signorum, vulgo Character Universalls et Lingua Philosophica* (1661), a proposal for a philosophical language, which starts out from the organization of concepts into seventeen classes or supreme categories (*Notium Genericarum*). To each category is arbitrarily attributed, not a number, but - and herein lies the novelty - a (capital) letter which serves as initial for all the concepts of this category. Each of these categories is in turn hierarchically subdivided, so that each subset of a category is denoted by a further letter to be joined to the initial one, in this way forming the name that designates each concept. Thus the process can repeat itself as many times as are necessary for the complete identification of the concept. Moreover, the system comprises a number of rules governing the composition and variation of names, a set of six pronouns, lists of particles and other grammatical inflections, as well as an independent system for the translation of numbers into words.<sup>26</sup>

Hence, on the basis of a hierarchical organization of concepts into

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classes and subclasses, Dalgarno furnishes systematic criteria for the constitution of a logical terminology that he also considers capable of adequately expressing the normal articulation of thought, thus permitting a more profound knowledge of reality.<sup>27</sup>

Leibniz, however, while acknowledging that Dalgarno's system has the advantage of being both a written and a spoken language (cf. GP 7.32), and while also in his more complete table of definitions (established between 1702 and 1704)<sup>28</sup> following the order of categories established by Dalgarno – which, according to Couturat (1901: 170–171), demonstrates the pervasive influence exerted by Dalgarno over Leibniz's thought – simultaneously criticizes Dalgarno's project, especially on account of its less scientific than practical aim of facilitating communication, given that the logical relations among concepts are not adequately expressed and that, more importantly, the correspondence between ideas and their symbols is arbitrarily established.<sup>29</sup> Indeed, the same judgement is often extended to Wilkins,<sup>30</sup> whose project is, for the most part, a development and improvement of Dalgarno's proposals. Fundamentally, it is this last reason that leads Leibniz to classify as *artificial* the languages proposed by Dalgarno and Wilkins. Thus, for instance, in the *Nouveaux Essais*, he writes:

Il y a peutestre quelques langues artificielles qui sont toutes de choix et entièrement arbitraires, comme l'on croit que l'a esté celle de la Chine, ou comme le sont celles de Georgorius Dalgarnus et de feu M. Wilkins Eveque de Chester.

(GP 5.258; A 6.6.278)<sup>31</sup>

### 5.6 Wilkins

John Wilkins (1614–1672), bishop of Chester and one of the most eminent English scholars of the period – also the author of a cryptographic work, *Mercury, or the secret and Swift Messenger* (1641),<sup>32</sup> where, already, emerges the universal language issue – published in 1668,<sup>33</sup> under the auspices of the Royal Society of London,<sup>34</sup> of which he and Henry Oldenburg were joint first secretaries, *An Essay towards a Real Character and a Philosophical Language, with Alphabetical Dictionary*, where he presents not one but two detailed and complete proposals: the *Real Character* and the *Philosophical Language*.

Like Dalgarno, Wilkins begins with a classification of concepts, which he organizes into 40 main categories (*Summa Genera*), each of which he subdivides into 9 *Differences*, which in turn are broken down into 9 *Species*. These categories, through which Wilkins seeks to cover the totality of human knowledge,<sup>35</sup> are represented, in the proposal for a *Real Character*, not by letters, as in the case of Dalgarno's system, but by written characters of an ideographic nature which, as in the case of Bacon, "should not signifie words, but things and notions, and consequently might be legible by any nation in their own tongue" (1668: 12).

Elaborated down to the minutest detail, this system of written characters is constructed by means of a set of original and arbitrary symbols of two fundamental types: integrals, mainly corresponding to nouns and adjectives; and particles, which comprise the copula (the verb "to be"), pronouns, conjunctions, prepositions, adverbs, modes, tenses, etc. Each integral, represented by a continuous line, is composed of three elements - a basic sign, a prefix and a suffix that correspond, respectively, to genus, difference and species - to which may be added small marks and additional lines to indicate the diverse forms of noun inflection and derivation. For example, the concept *father* is represented by the integral  $\leftarrow \overset{\curvearrowright}{\text{—}} \text{—}$ , composed of the basic sign  $\text{—}\text{—}$  which stands for its genus, (interpersonal relationship), with the addition of an oblique mark on the left, indicating the first difference (kinship in this case), and a vertical bar on the right, standing for the second species (direct ascendancy in this case). The additional semicircle on the top half of the character designates the maskulin gender. The syntactic articulation of the integrals is achieved by means of characters that correspond to the various particles (the copula is represented by a small circle, pronouns by points, articles by accents, etc.).<sup>36</sup>

In parallel with this ideographic kind of writing, Wilkins presents another graphic system which is independent of the first and phonetically translatable - *the Philosophical Language*. To each of the 40 supreme genera corresponds a particular fixed syllable composed of an initial capital consonant and a vowel.<sup>37</sup> Hereafter the integral for each concept is formed by adding to the syllable that corresponds to its genus another consonant and another vowel representing, respectively, the difference and species of the relevant concept. Special monosyllables standing for inflection and derivation can subsequently continue to be added. The same concept *father* would be

represented by the integral *Cobar* in which the syllable *Co* stands for the basic sign of the supreme genus (interpersonal relationship), *b* for the first difference (kinship) an *a* for the second species (direct ascendancy); the final syllable would indicate the masculin gender. Particles, also represented by monosyllables, are linearly disposed and establish the syntactic articulations of concepts within the sentence.

Thus Wilkins proposes not one but two independent systems, of very diverse characteristics. The first clearly corresponds to an ideographic type of project; the conceptual contents are directly represented by special graphic marks bearing no connection to phonation. Taking as an example the characters of Chinese, whose excessive number and complexity he condemns,<sup>38</sup> Wilkins starts out, as we have seen, from a series of primary ideograms and, through the definition of an ensemble of fixed rules, constructs complex characters which are intended to invoke, via their own construction, the elements that enter the analysis of the designated concepts. As Wilkins says, "<b>y learning the character and the names of things, we should be instructed likewise in their natures" (1668: 21).

Ignoring (at least apparently) the specificity of such a project, Wilkins proposed another system - in his view an equivalent one - in which conceptual contents are represented by graphic units which, being alphabetical in nature, are therefore translatable into phonic expression. We are now faced with a kind of writing that, in comparison with the former, has the advantage of being speakable - even though precisely because it is or purports to be so, it loses the potentialities resulting from the spatiality and two-dimensionality which made up the advantages of the former. The demand that it be speakable reduces this writing to the simple association and sequencing of monosyllables, with a consequent loss - thanks to this linearity - of richness, variety and rigour in the expression of the interrelations of concepts.

#### 5.7 Leibniz's Position Concerning Previous Philosophical Projects

Curiously enough, even though, as we shall see, Leibniz was perfectly aware not just of the expressive but also of the heuristic potentialities of a written language of ideographic nature (cf., for example, C 285), what he

mostly praises in Wilkins's project - and also in Dalgarno's - is the proposal for a language that can be simultaneously be written and spoken.<sup>39</sup> As for the characters proposed by Wilkins, Leibniz considers them to be quite simply useless, not only because they cannot be spoken but also, and principally, because of their arbitrariness. According to Leibniz, this latter aspect was one of the main defects of the universal language conceived by Wilkins.<sup>40</sup> Indeed, in his letter to Oldenburg (29 April 1671), Leibniz regrets that Wilkins did not use a representation of the figurative kind:

<...> vellem res quae describi nisi pictura non possunt, ut sunt varia animalium, plantarum, instrumentorum genera, figuris adjectis exhibuisset.

(GP 7.6)<sup>41</sup>

Leibniz is not often, let us say, as radical as this regarding his own intentions and proposals in relation to the representative nature of the characters of the future universal language; however, as we will have ample opportunity to show later on, the search for some form of non-arbitrariness constitutes one of the most pregnant guidelines of his multiple investigations in the direction of the construction of a universal philosophical language. Now only the elaborate analysis of the manifold conceptual contents and their interrelations can offer a solid basis for the non-arbitrary establishment of the denominations of this philosophical language.<sup>42</sup> Hence the major difficulty pointed out by Leibniz in Wilkins's project (which Leibniz knew well,<sup>43</sup> and considered, more than any other, to be the most complete and most deserving of being known and publicised)<sup>44</sup> has to do with its underlying analytical insufficiencies:

J'avois considéré cette matiere avant le livre de Mr. Wilkins, quand j'estois un jeune homme de 19 ans, dans mon petit livre *de Arte Combinatoria*, et mon opinion est que les Caracteres veritablement reels et philosophiques doivent repondre à l'Analyse des pensées. Il est vray que ces Caracteres presupposeroient la veritable philosophie, et ce n'est que presentement que j'oserois entreprendre de les fabriquer. Les objections de M. Dalgarno et de M. Wilkins contre la methode veritablement philosophique, ne sont que pour excuser l'imperfection de leurs essais, et marquent seulement les difficultés qui les en ont rebutés.

(GP 3.216)

It is certainly with such analytical difficulties or insufficiencies in mind that Leibniz, in the important fragment *Historia et Commendatio linguae characteristicae universalis* (GP 7.184), referring generally to his eminent

predecessors in the matter of a universal language, manifests his position concerning their work quite clearly:

Et quanquam dudum egregii quidam Viri excogitaverint Linguam quandam sive Characteristicam Universalem qua notiones atque res omnes pulchre ordinantur, et cujus auxilio diversae nationes animi sensa communicare et quae scripsit alter in sua quisque lingua legere queat; nemo tamen aggressus est linguam aut Characteristicam, in qua simul ars inveniendi et iudicandi contineretur.

(GP 7.184; VE 4.670)

His predecessors in this specific domain (including, therefore, Wilkins),<sup>46</sup> had failed to do more than offer suitable tools; their works were, no doubt, ordered and systematic, but the utility of their projects was, nevertheless, merely communicational.

Largely owing to analytic insufficiencies, the philosophical language constructed by Wilkins could not attain the objectives he had planned for it; Wilkins had wanted his language to be a system for adding memory and improving knowledge, which might serve to clear up false or senseless religious or philosophical positions, by showing up the linguistic errors, inconsistencies and contradictions on which they were based.<sup>46</sup>

However, in Leibniz view, his predecessors' projects for a philosophical language were not, we could say, philosophical enough – their languages were still not that *organon* of reason which, like a lens, might extend the reach of the human mind and thus refute error and discover the truth.

Numeris autem plerarumque Notitiarum characteristicis semel constitutis habebit genus humanum organi genus novum, plus multo Mentis potentiam aucturum, quam vitra optica oculos juverunt tantoque superius Microscopiis aut Telescopiis quanto praestantior est ratio, visu. Nec unquam acus magnetica plus commodi navigantibus attulit quam haec cynosura experimentorum mare tranantibus, feret.

(GP 7.187; VE 4.673)<sup>47</sup>





Chapter 6

Final Comments and Combinatory Predecessors

Ce seroit sans doute une belle chose, que  
l'art de Lulle si ces termes fondamentaux  
<...> n'estoient pas vagues.

Leibniz (C 177)

6.1 Functions of a Universal Language According to Leibniz

It is perhaps in the remarkable fragment of 1677 to which Couturat attributed the title *Préface à la Science Générale* (C 153-157), one of the many texts in which the programme of the future Universal Language is presented, that Leibniz shows in the clearest and most vehement terms the urgency and utility of this project as well as his own commitment to carrying it out.

<...> si l'on pouvoit trouver des caracteres ou signes propres à exprimer toutes nos pensées, aussi nettement et exactement que l'arithmetique exprime les nombres, ou que l'analyse geometrique exprime les lignes, on pourroit faire en toutes les matieres *autant qu'elles sont sujettes au raisonnement* tout ce qu'on peut faire en Arithmetique et en Geometrie. Car toutes les recherches qui dependent du raisonnement se feroient par la transposition de ces caracteres, et par une espece de calcul; ce qui rendroit l'invention des belles choses tout a fait aisée. <...> De plus on feroit convenir tout le monde de ce qu'on auroit trouvé ou conclu <...>. Et si quelqu'un doutoit de ce que j'aurois avancé, je luy dirois: contons, Monsieur, et ainsi prenant la plume et de l'encre, nous sortirions bientôt d'affaire. <...> Or les caracteres qui exprimeront toutes nos pensées, composeront une langue nouvelle, qui pourra estre écrite, et prononcée: cette langue sera très difficile à faire, mais très aisée à apprendre. Elle sera bien tost receue par tout le monde à cause de son grand usage, et de sa facilité suprenante. Et elle servira merveilleusement à la communication de plusieurs peuples ce qui aidera à la faire recevoir. <...> Cette langue sera le plus grand organe de la raison. J'ose dire que cecy est dernier effort de l'esprit humain, et quand le projet sera executé, il ne tiendra qu'aux hommes d'estre heureux puisqu'ils auront un instrument qui ne servira pas moins à exalter la raison, que le Telescope ne sert à perfectionner le veue.

(C 155-157; VE 2.311-313)

This text contains the basic definition and presentation, in their mutual articulation, of the great functions and objectives that in Leibniz's view should be assumed by a universal language.

Its most *superficial function* would be to serve as a means of *universal communication* among the various peoples, of simplifying dialogue, and of unequivocally resolving conflicts and misunderstandings. This language - which would exist mainly on the plane of writing although it could also be "pronounced", which would further facilitate its communicability - would not be only or primarily a means of universal communication. As Leibniz says in his

letter to Oldenburg of 1673/76,

scripturam autem rationalem ajo potissimum rationis instrumentum fore, minimumque ejus usum censeri debere commercium inter gentes lingua dissitas.

(GP 7.12)<sup>1</sup>

Its *main function*, on which all its others ultimately depend, is *representative and cognitive*; inasmuch as the universal language permits the correct representation of reality, or, rather, of the knowledge of reality - i.e., inasmuch as it is constructed on the basis of a sign-system that permits the clear and exact expression of all human knowledge - its capacity to become a universal means of communication, a judge of controversies, and an aid to invention, finds a firm grounding. In fact, both the ease with which it can be learnt and its "surprenante" comprehensibility, together with its calculative possibilities and the consequent judicial and heuristic corollaries are, in fact, the result of the difficult task of building a sign-system whose signs will be "propres", "nets" and "exactes", and which will completely and adequately express the sum total of our thoughts.

Once such a sign-system is built, all investigations "autant qu'elles sont sujettes au raisonnement" could then proceed by "une espece de calcul", i.e., it would become possible, by merely applying the rules of "transposition de ces caracteres" (rules of combination, transformation and inference) to detect errors in an automatic, infallible way (*judicial function*).<sup>2</sup> It is in this sense that, in this text, Leibniz further writes:

Ceux qui écrivront en cette langue, ne se tromperont pas pourveu qu'ils evitent les erreurs de calcul, et barbarismes, solecismes et autres fautes de grammaire et de construction.

(C 156; VE 2.312)

In such a language, errors and absurdities (which are, rigorously speaking, inexpressible) would be automatically detected and corrected because

on ne pourra pas parler ny ecrire <...> que de ce qu'on entend: ou si on ose le faire, il arrivera de deux choses une, ou que la vanité de ce qu'on avance soit manifeste à tout le monde, ou qu'on apprenne en écrivant ou en parlant.

(C 156; VE 2.312)

Moreover, this universal language would be used for "l'invention des belles

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choses", for the search and setting down of new truths (*heuristic function*).<sup>3</sup> The Universal Language would then be the greatest instrument of reason, a veritable *telescope of the mind*.<sup>4</sup> Through it, humanity would be able to progress infinitely in its understanding of truth, and would come to have nothing more to strive for but "d'estre heureux".

We are faced with a set of functions which, as we have shown, tend to be pursued by the various types of project for a universal language. The communicative and representative functions, in particular (only the projects for international languages partially exclude the latter), indeed link the different types of project we have mentioned. However, as we have also seen, their heuristic potentialities are only clearly affirmed and consistently explored by Leibniz. As he repeatedly states, none of his predecessors in this area was able fully to comprehend all the advantages and the logical and epistemological consequences of an authentic universal language which, as he says in a letter to Galloys dated December 1678,

<...> seroit tout autre que tout ce qu'on a projeté jusqu'icy. Car on a oublié le principal qui est que les caracteres de cette écriture doivent servir à l'invention et au jugement, comme dans l'Algebre et dans l'Arithmetique.

(GP 7.23)<sup>5</sup>

From this position, Leibniz's great source of inspiration was to be the long-distant *Ars Magna* of Ramón Llull (Raimundus Lullus; 1233-1315/16), rediscovered and developed in the 17th century by Athanasius Kircher (1602-1680), in *Ars Magna Sciendi*.

## 6.2 Combinatory Predecessors: Llull and Kircher

Known and cited by Leibniz since *De Arte Combinatoria* (1660), the *Ars*<sup>6</sup> of Llull contains, in effect, the incipient principles of an *ars judicandi* and *inveniendi*, operating on the basis of an artificial and combinatory language.

Motivated by apologetic and missionary reasons,<sup>7</sup> Ramón Llull aimed, essentially, at the construction of a general and universal science in the form of a system of principles and rules whose combination might produce the totality of truths pertaining to the various sciences. The central idea is

that, through the combination (performed by technical and automatic procedures) of a limited set of simple terms, it should be possible to establish the whole range of possible propositions, as well as to answer every possible question, i.e., to discover and demonstrate the sum total of truths to which human knowledge may aspire.

In order to carry out this ambitious project, Lull establishes a set of categories, grouped in six main classes with nine categories each, and constructs out of these a complex combinatory system intended to permit the automatic determination of all possible subjects for a given attribute, as well as the conclusion and middle term of incompletely known syllogisms<sup>8</sup> - that is, starting out from categories of universal application and operating with a system of symbolic notation and combinatory diagrams, Lull establishes the ground-rules of a synthetic and inventive procedure which, in contrast to the demonstrative character of traditional Aristotelian logic, does not limit itself to the analysis of known truths, but tries to find the means for the discovery of new ones.

Thus, Lull's *Ars Magna* presents itself simultaneously as a remote but prestigious proposal for the mechanization of logical operations, and first draft and practical concretization of the old ideal of a universal science, which would be the basis of all the sciences and the principle of systematization and inter-relatedness of the various disciplines. As F. Gil shows (1979a: 282-301), Lull's conception of the tree of science as an integrative model of the organization of knowledge (a model which Gil categorizes as ontological, exhaustive, categorical and hierarchic) may be placed, as a forerunner, within the wider framework of the *mathesis universalis*, considered as the project of constructing a single universal science that also stems from categorical devices applicable to the various sciences, and postulates the original co-naturalness between thought and being, whose articulations and deep structure are directly envisaged.<sup>9</sup>

Despite the extremely negative critique formulated by, for example, Bacon or Descartes<sup>10</sup> apropos of Lull's *Ars*, the work of the eminent Catalan thinker exerted a deep influence throughout the Renaissance as well as in modern times.<sup>11</sup> This is testified in the 17th century not only by the development of the encyclopaedic Lullism of Johann Heinrich Alsted (1588-1638) or Sebastián Izquierdo (1601-1681),<sup>12</sup> but also by the work of Kircher (referred

to above), the *Ars Magna sciendi* (1669), which explicitly presents itself as a continuation and perfected version of the Lullian *Ars*.<sup>13</sup>

Kircher is generally considered to be the most representative figure of Baroque curiosity, and, in previous works, had already put forward two different proposals for a universal language<sup>14</sup> among his many interests and activities<sup>15</sup> which include the collection and comparative study of different symbolic systems.<sup>16</sup> He presents, in comparison with Lull, two main novelties, both concerned with the choice of a more adequate symbology. He begins his study by expounding Lull's method, from which he retains four of the six classes of categories,<sup>17</sup> but what he specially tries to improve is the Lullian alphabet; in contrast to Lull, who uses the same signs for categories pertaining to different classes, Kircher represents each class by a different sign, which obviously endows the system with a greater precision and clarity. On the other hand, Kircher criticizes the arbitrary nature of the signs (letters) used by Lull,<sup>18</sup> and constructs a symbolic alphabet which is designed to be as natural as possible.<sup>19</sup>

### 6.3 Leibniz's Critiques: Combinatory and Calculus

The very same exigency of constructing a non-arbitrary symbology constitutes one of Leibniz's strongest criticisms of Lull's proposal, which the former knew of, both directly,<sup>20</sup> and indirectly, through his awareness of the diverse work of the earlier followers of Lull, such as Lavinheta, Agrippa von Nettesheim, Bruno or Alsted.<sup>21</sup>

We are here confronted with a critique which, already appearing in *De Arte Combinatoria* (cf. GP 4.61-64), is not only previous to but also independent of Kircher<sup>22</sup> - whose alphabet is nonetheless later reproduced by Leibniz<sup>23</sup> - but is also formulated in more radical terms. In fact, unlike Kircher, Leibniz not only criticizes the arbitrariness of the sign-system that forms the alphabet of the Lullian *Ars*, but also rejects his actual list of categories. As Leibniz says in the *Projet et Essais pour arriver à quelque Certitude pour finir une bonne partie des disputes, et pour avancer l'art d'inviter* (1687-90),

Ce <ne> <plus> seroit sans doute une belle chose que l'art de Lulle

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si ces termes fondamentaux <...> n'estoient pas *vagues* et par consequent servoient seulement à parler et point du tout à decouvrir la verité.

(C 177; our emphasis)

Thus, in Leibniz's opinion, Llull's categories are too "vagues", arbitrarily chosen and organized into classes of nine categories each, a number artificially established, only for reasons of pure symmetry; that is, Llull

<...> Numerum Terminorum determinavit pro arbitrio, hinc in singulis classibus sunt novem <...> Classes verò ultimae Virtutum et Virtutum sunt prorsus ad Scientiam hanc tam generalem <...> Ipsa quoque earum recensio quàm partim manca, partim superflua!

(GP 4.63; A 6.1.193)

Equally decisive is the judgement formulated by Leibniz on the methodological and processual procedures used by Llull and subsequently revived by Kircher. Referring to his own proposals (presented in *De Arte*) of representing complex ideas as the product of simple elements which would represent the primitive ideas required for the definition of the former, Leibniz writes, in *De synthesisi et Analysisi universali seu Arte inveniendi et iudicandi*:

De quibus plura dixi in Dissertatiuncula de Arte Combinatoria, quam vix ex Ephebis egressus edidi, cum nondum opus Kircherianum ejusdem tituli dudum promissum prodisset, in quo sperabam talia constitutum iri, sed postea cum prodisset vidi Lulliana tantum aut his similia in ea renovari, Analysin autem humanarum cogitationum veram nec per somnium auctori in mentem venisse, quemadmodum nec aliis qui tamen de restauranda philosophia cogitarunt.

(GP 7.293)

Therefore, it is also the combinatory methods employed by Llull and Kircher that Leibniz considers to be insufficient and rudimentary,<sup>24</sup> and proposes to replace by calculatory process. In this respect, at the point in the text of *De Arte Combinatoria* where, immediately after expounding and criticizing Llull's method, he finally presents his own proposal for a combinatory methodology,<sup>25</sup> Leibniz, significantly, harks back to Hobbes, directly to the famous passage of *De Corpore* in which the English philosopher defines reasoning as a calculus.<sup>26</sup> Leibniz says:

Quare age tandem artis complicatoriae <...> uti nobis constituenda videatur, lineamenta prima ducemus. Profundissimus principiorum in omnibus rebus scrutator Th. Hobbes meritò posuit omne opus mentis nostrae esse *computationem*, sed hac vel summam *addendo* vel *subtrahendo* differentiam colligi.

(GP 4.64; A 6.1.194)



The text goes on to expound the arithmetical nature of the combinatory proposal Leibniz had in view at the time; but what must be emphasized at this stage is the fact that Leibniz rejects, as insufficient and ineffective, the mechanical procedures to which Lull's combinatory is reduced, and substitutes them - apparently under the influence of Hobbes<sup>27</sup> - by calculatory procedures of mathematical analysis.

However, in spite of these criticisms, Leibniz recognizes the epistemological value of Lull's project,<sup>28</sup> especially with regard to the recognition of the combinatory as the foundation of an *ars inveniendi* and the notion of the possibility of applying to all areas of knowledge, a corresponding number of logical procedures, which would be not merely demonstrative but also technically capable of producing new knowledge. It is in this sense that one should understand the fact that, in the *Projet et Essais pour arriver à quelque certitude*, Leibniz includes Lull's name (along with those of Aristotle, Galileo, Kepler, Descartes, Spinoza and others) in the list of those of his predecessors who, in one way or another, had tried to provide demonstrations of a non-mathematical nature (C 177ff.).

More than a philosophical language, Lull's *Ars* is a technique for the production of knowledge whose object is the mechanical determination of all the possible combinations of simple concepts, as well as the certain establishment of all the truths pertaining to these concepts. Even though, like the constructors of philosophical languages, Lull starts out from a set of categories of universal applicability and from the definition of a symbolic system of notation for those categories, what mainly defines the specificity of his project is the attention given to the combinatory aspects and the syntactic rules for combining definite categorial elements. It is precisely as a technique for the production of knowledge, i.e. as a symbolic system which does not simply represent what is already known, but is also open to unknown elements, that Lull's *Ars* is an important source of inspiration for the Leibnizian project, whose specificity depends, as we have seen, on the constitution of a universal language capable of operating as an instrument of verification and discovery. But for Leibniz this possibility implies, not recourse to the mechanical procedures proposed by Lull, but, rather, the use of calculatory methods.

Ever since his first writings, especially the *De Arte Combinatoria*, whose main application is (as the title itself - *Logicae inventiones semina* (GP 4.27) - implies) the art of inventing, Leibniz had taken mathematics as a model and had thus conceived the project of arithmetizing all the mechanisms of thought, of subjecting the whole of human intellectual activity to calculatory processes that might make it possible not only to demonstrate all known propositions but also to discover new ones, i.e. to turn rational activity into a calculus. Anticipating what will be his fundamental methodological experiment<sup>29</sup> - the discovery of the algorithm of the differential calculus - Leibniz recognizes the not merely representative but also prospective or heuristic value of the sign.

However, it does not follow that Leibniz's aim can be reduced to the construction of a formal language, a system of universal signs designed to treat science logically and to provide a set of simple, precise, rigorous symbols that would express all existing and possible knowledge. Leibniz does not fall prey to the illusion - present to a certain extent in Lull's project - that the automatic functioning of a set of operational rules can permit the development of science, thus reduced to the status of a well-made language.

Leibniz's heuristics also involve a semantic exigency. In the name, conceived as a unit of meaning, there can be discerned an irreducible openness to the world, which should find its translation in the naturalness of its linguistic expression. Each name should be an equation which perfectly defines the path that lies between human perception and the reality to which it corresponds.

Leibniz's research is thus conducted according to a threefold exigency: a logical one, pertaining to the constitution of a linguistic system that will rigorously translate thought and its articulations; a semantic one, bound up with the choice of universal characters that will be isomorphic with the reality they name through their own expressive naturalness; and a heuristic one, requiring a combinatory that will open the road to the development of knowledge.



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**Part II**

**Symbolism in Leibniz**

Part II, Chapter 1: Leibniz's Answer to Descartes

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Chapter 1

Leibniz's Answer to Descartes

Cependant, quoyque cette langue de-  
pende de la vraye philosophie, elle ne  
depend pas de sa perfection.

Leibniz (C 28)

### 1.1 The Cartesian Objection

The principle of evidence always implies an instrumental or merely communicative conception of language.<sup>1</sup> Thus it is not by chance, but for reasons related to the nature of his philosophical postulates and their respective systematic development, that Descartes does not take up language as a theme of reflection in any of his principal works.<sup>2</sup> However, in his famous letter to Mersenne of November 20, 1629 (AT 1.76-82), he mentions the question of the possibility of constructing a universal language in an extremely pertinent form.

Having been informed by Mersenne of the existence of a project (now lost) for the construction of a universal language, of unknown authorship,<sup>3</sup> Descartes examines in detail the six propositions presented to him, and reaches the following conclusions: firstly, a universal language such as the one proposed, inasmuch as it would involve grammar reforms and regularizations, would give rise to strange and unpleasant sonorities, thus violating the rules of euphony that regulate vernacular languages, "<...> car ce qui est facile et agréable à notre langue est rude et insupportable aux Allemands et ainsi des autres" (AT 1.79); secondly, the proposed use of a dictionary would be tiresome, and the alternative solution within the projected framework - i.e. that of learning all the primal words common to all the languages with which one would want to communicate - would be impractical and useless:

Que s'il veut qu'on apprenne des mots primitifs communs pour toutes les langues, il ne trouvera jamais personne qui veuille prendre cette peine. (AT 1.79)

The only two positive aspects pointed out by Descartes are the usefulness of a possible grammar reform that would establish a common basis for all tongues,<sup>4</sup> and the advantages (for writing alone) that might be gained from a

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dictionary of correspondences between the words of different languages:

Toute l'utilité donc que je vois qui peut réussir de cette invention, c'est pour l'écriture: à savoir, qu'il fit imprimer un gros dictionnaire en toutes les langues auxquelles il voudroit être entendu, et mît des caractères communs pour chaque mot primitive.  
(AT 1.79-80)

Next - and this is the point that most interests us - Descartes offers some important reflections, clearly suggested by the previous analysis and showing a close analogy to the process of arithmetical numeration: If the entire arithmetical system can be constructed on the basis of a small number of figures, it should likewise be possible to symbolize exhaustively the whole of the contents of thought through a limited number of linguistic signs:

Je trouve qu'on pourroit ajouter à ceci une invention, tant pour composer les mots primitifs de cette langue que pour leurs caractères en sorte qu'elle pourroit être enseignée en fort peu de temps, et ce par le moyen de l'ordre, c'est-à-dire, établissant un ordre entre toutes les pensées qui peuvent entrer en l'esprit humain, de même qu'il y en a un naturellement établi entre les nombres; et comme on peut apprendre en un jour à nommer toutes les nombres jusques à l'infini, et à les écrire en une langue inconnue, qui sont toutefois une infinité de mots différents, qu'on pût faire le même de toutes les autres mots nécessaires pour exprimer toutes les autres choses qui tombent en l'esprit des hommes.  
(AT 1.80-81)

Here we recognize the methodological direction that characterizes those philosophical projects which, as seen above (cf. part I, chap. 5, note 9), are called Cartesian precisely on account of their observance of Descartes' prerequisite concerning the construction of a universal language: the need to start out from a limited number of concepts and their corresponding characters. He says:

Si quelqu'un avoit bien expliqué quelles sont les idées simples qui sont en l'imagination des hommes, desquelles se compose tout ce qu'ils pensent, et que cela fût reçu par tout le monde, j'oserois espérer ensuite une langue universelle fort aisée à apprendre, à prononcer et à écrire, et, ce qui est le principal, qui aideroit au jugement, lui représentant si distinctement toutes choses, qu'il lui seroit presque impossible de se tromper.  
(AT 1.81)

For Descartes, therefore, any meaningful project for a universal language should involve the reduction of all contents of consciousness to their basic

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elements, to the simplicity of their primitive ideas, i.e., in order to build a solidly grounded universal language it would be necessary to have previously identified all the simple ideas; to have established their order; and to have ascertained their associative laws. In a word, it would be necessary to have carried out the complete, exhaustive logical analysis of all possible contents of human knowledge. But although he recognizes the important advantages and even the theoretical legitimacy of undertaking such a project,<sup>5</sup> Descartes eventually comes to the conclusion that it is practically unrealizable,<sup>6</sup> for, as he says:

L'invention de cette langue dépend de la vraie philosophie; car il est impossible autrement de dénombrer toutes les pensée des hommes, et de les mettre par ordre, ni seulement de les distinguer en sorte qu'elles soient claires et simples.

(AT 1.81)

## 1.2 Leibniz's Reply

Among Leibniz's manuscripts can be found a copy (in his secretary's handwriting) of the last section of the above mentioned letter by Descartes (cf. C 27-28), which had meanwhile been published by Clerselier, and to which Leibniz - who was perfectly aware of the seemingly unsurmountable difficulty pointed out by Descartes -<sup>7</sup> appended, in his own hand, the following commentary:

Cependant, quoyque cette langue depende de la vraye philosophie, elle ne depend pas de sa perfection. C'est à dire, cette langue peut estre établie, quoyque la philosophie ne soit pas parfaite: et à mesure que la science des hommes croistra, cette langue croistra aussi. En attendant elle sera d'un secours merueilleux et pour se servir de ce que nous sçavons, et pour voir ce qui nous manque, et pour inventer les moyens d'y arriver, mais sur tout pour exterminer les controverses dans les matières qui dependent du raisonnement. Car alors raisonner et calculer sera la même chose.

(C 28)

Unlike Descartes, for whom the creation of a universal language would involve the prior constitution of true philosophy, Leibniz (although recognizing the intimate relationship between both) manages to overcome this difficulty by defending the possibility of developing these two tasks in parallel:



the construction of a universal language can take place simultaneously with the development of the analysis and the progress of the sciences, of which this language can meanwhile be an invaluable tool.

These two apparently circular tasks are resolved by Leibniz, precisely because he considers them as such, and not as linear and sequential as Descartes saw them. Leibniz considers them in their reciprocity and mutual conditioning, and therefore proposes to explore the virtualities of their essential correlation: each time analysis advances and through a further distinction is able to determine a new unit, this unit will only become clear and distinct for thought when it is designated by a specific sign. On the other hand, from the attribution of this sign will arise new heuristic virtualities as a result of the combinatory play made possible by its insertion into the structural network formed by all the previously constituted signs.

Hence it is not necessary to have completed the analysis in order to begin the construction of a universal language. It would not even be possible to do so. As Leibniz says in the celebrated fragment *De organo sive Arte Magna cogitandi* (circa. 1679), if it is true that "<O>mnis idea tum demum perfecte resoluta est, cum demonstrari potest a priori eam possibilem" (C 431) and that "<N>on est in potestate nostra perfecta a priori demonstrare rerum possibilitatem" (C 431), that is to say, if it is true that the final analysis, that which would provide adequate knowledge of each thing through its primary or root cause, is interminable, it is also true that "<S>ufficiet nobis ingentem earum multitudinem revocare ad paucas quasdam, quarum possibilitas vel supponi ac postulari, vel experimento probari potest" (C 431).<sup>9</sup>

In the present case, in order to begin the construction of a universal language, it is not necessary - as Descartes would have it - to have established beforehand the totality of primary notions, which would imply having already established their real definitions, i.e., those which would reveal their causes and principles of generation, thus providing an a priori demonstration of their possibility. We can start out from a small number of ideas whose possibility is postulated or proven by experience, and of which we have a nominal definition; this is sufficient to permit a precise distinction of one idea from all the others.<sup>10</sup> For if the real definition of each idea cannot be established, a definition can be used which, although it does not

show how that idea was necessarily constructed out of its primal elements, nevertheless determines it sufficiently to allow us to have an exact knowledge of it - that is, it shows us everything we can know about it from our stand-point.

In *Animadversiones*, precisely in the context of the debate with Descartes, Leibniz points out that, if the geometers

voluissent differe theorematum aut problematum inventiones, dum omnia axiomata et postulata demonstrata fuissent, fortasse nullam hodie Geometriam haberemus.

(GP 4.355)

Inversely, if geometry exists today as a science, independently of the necessity and importance of demonstrating its axioms,<sup>11</sup> this is because the geometers accepted the need to start out from a small number of assumptions, and on the basis of these went on to construct their propositions. As Leibniz says,

<E>go contra potius Geometras laudandos censeo, quod his velut paucis statimaverunt scientiam, artemque repererunt progrediendi, atque ex paucis tam multa ducendi.

(GP 4.356)

Thus it is always the example of mathematics that works for Leibniz, and, once again, the opposition between Leibniz and Descartes may be related to the differences in their methodological experiences on this level. Like Descartes, Leibniz is fully aware of the fact that the creation of a universal language implies the logical analysis of the contents of thought; but unlike Descartes, he believes that he already has at his disposal the necessary means for the effective launching of such a project. As Cassirer emphasizes (1923-29: 1.76), it was the then recently introduced algebraic analysis, which shows how each number is constituted from its original elements as a product of primal factors, that lay at the basis of the possibility opened up by Leibniz in *De Arte Combinatoria*<sup>12</sup> of extending this method to all the contents of knowledge. The construction of a universal language no longer appears to be an insoluble task, provided it continues right to the end, along the road opened by *De Arte Combinatoria*.

Curiously, Leibniz, who always accuses Descartes of "légèreté", of going "trop vite",<sup>13</sup> implicitly criticizes him in this context for his excessive

cautiousness, as it were, i.e., for deferring to a remote future the possibility of constructing a universal language. In opposition to this, Leibniz accepts the challenge of beginning this task immediately, and of carrying it out progressively. Unlike his predecessors, however, (who, either because they were not sufficiently aware of the difficulty pointed out by Descartes, or because they set out to solve it in an expeditious manner by starting out from a group of more or less arbitrarily chosen primary concepts,<sup>14</sup> upon which they went on to built systems which, for this very reason, did not meet with the desired acceptance and finally proved to be inconsequential), Leibniz did not leave any fully completed system of the universal language he planned, but merely a great many projects, drafts, sketches, *specimina*, *échantillons* and other fragmentary attempts. Nevertheless, these fragments today remain so full of fertile suggestions as to justify the interest later centuries have dedicated to them.<sup>15</sup>

Clearly enough, at the root of the disagreement between Leibniz and Descartes there lies a divergence in their conceptions, not only of the nature of analysis and of its limits and functions, but also of the status of symbolism within the general economy of thought, and of its role in the progress of human knowledge. In this sense – and beyond its historical and circumstantial interest – the examination of Leibniz's reply to Descartes gains in relevance if it seeks to clarify this key point of Leibniz's thought.

Chapter 2

Symbolism and Blind Thought

La veritable methode nous doit fournir un *filum Ariadnes*, c'est à dire un certain moyen sensible et grossier, qui conduise l'esprit, comme sont les lignes tracées en geometrie et les formes des operations qu'on prescrit aux apprentifs en Arithmetique.

Leibniz (GP 7.22)

### 2.1 Intuition and Symbolism

It was also in the course of the debate with Descartes that Leibniz's ideas on the importance of symbolism took on a more explicit form. Precisely in the text which opens the debate, the *Meditationes de Cognitione, Veritate et Ideis*, published in the *Acta Eruditorum* (Leipzig 1684) – a text which already represents his mature thought –<sup>1</sup> Leibniz, denouncing the inadequacies of the Cartesian theory of knowledge and the subjectivity of the underlying criterion of truth,<sup>2</sup> and establishing a new typology of ideas,<sup>3</sup> stresses the importance of a type of knowledge which does not require full intuition of its object, and which, for that very reason, he calls *blind or symbolic knowledge (cogitatio caeca)*.<sup>4</sup>

If in relation to a *primitive idea* – that is, according to Leibniz, an idea which cannot be decomposed, and can thus only be understood in and for itself – intuitive knowledge is possible, "*Notionis distinctae primitivae non alia datur cognitio, quam intuitiva*" (GP 4.423), Leibniz maintains that in the case of a composite idea we cannot, in general, be simultaneously aware of all of its component parts.<sup>5</sup>

Ita cum Chliogonum seu Polygonum mille aequalium laterum cogito, non semper naturam lateris et aequalitatis et millenarii (seu cubi a denario) considero, sed vocabulis istis (quorum sensus obscure saltem atque imperfecte menti obversatur) in animo utor loco idearum quas de iis habeo, quoniam memini me significationem istorum vocabulorum habere, explicationem autem nunc judico necessariam non esse.

(GP 4.423)<sup>6</sup>

Unable, in most cases, to conceive simultaneously and distinctly all the determinations which go to make up most of his own ideas, man nevertheless has at his disposal a resource of remarkable potential: the possibility of conceiving his ideas by means of symbols, that is, the possibility of investing the symbols that represent those ideas with a signification which amply transcends his own understanding of the latter in a given moment.

Plerumque autem, praesertim in Analyysi longiore, non totam simul naturam rei intuemur, sed rerum loco signis utimur, quorum explicationem in praesenti aliqua cogitatione compendii causa solemus praeter-

mittere, scientes aut credentes nos eam habere in potestate <...>  
qualem cogitationem *caecam* vel etiam *symbolicam* appellare soleo,  
qua et in Algebra et in Arithmetica utimur, imo fere ubique.  
(GP 4.423)

In contrast to Descartes, who condemned any method whatever for the determination of the truth unless it started out, as in mathematics, from intuitively established evidence,<sup>7</sup> Leibniz accepts the possibility of a gradual progress towards truth by means of a kind of thought which, while not guided by intuition, and therefore "*blind*", can nevertheless permit *symbolic* advance. Rejecting the psychologism of Cartesian intuition and, with it, the requirement that everything should *be seen*, Leibniz accepts the possibility of moving forward even when nothing can be seen, when not everything can even be known, with only the help of a sensory support which can securely permit the formal advance of thought in the labyrinths of abstraction.

## 2.2 Mathematics as a Model

In this resource to symbolic thought, Leibniz takes mathematics as a model, not as a paradigm of evidence, as in Descartes, but precisely as a means of compensating for its absence. For Descartes, the value of mathematics lies in the intuitive character of its objects, and in the evidence of its primary propositions, from which deduction can extract the long reasoning chains which constitute the firm texture of its theorems – a deduction which Descartes, in the end, sees as a continuous process of intuition –<sup>8</sup> that is, deduction itself ultimately tends to be reduced to a continuous series of intuitions, and, therefore, the truth of mathematics is based on intuition alone. For Leibniz, in contrast, it is only through the formal rigour of its proofs (and, he maintains, it should be possible to demonstrate the axioms themselves)<sup>9</sup> that mathematics can become the paradigm of authentic knowledge. As Leibniz further says in *Meditationes de Cognitione, Veritate et Ideis*:

De caetero non contemnenda veritatis enuntiationum criteria sunt regulae *communis Logicae*, quibus et Geometrae utuntur, ut scilicet nihil admittatur pro certo, nisi accurata experientia vel firma demonstratione probatum; firma autem demonstratio est, quae praescriptam a Logica formam servat.

(GP 4.425)

It is precisely for this reason -- since only respect for the laws of logic can guarantee the rigour of demonstrations -- that that rigour cannot remain dependent on subjectively-based certainties, on moral confidence in the intuitive infallibility of a natural light, or on the rules of a method which "donnent sans doute des beaux preceptes, mais non pas le moyen de les observer", as Leibniz says in a letter to Gallois (GP 7.21).<sup>10</sup> The rigour in question should, rather, be achieved through the use of a symbolic system which, rendering the most abstract thoughts fixed and visible,<sup>11</sup> would constitute a material and imaginative support for thought, reinforcing the deductive chain, or even permitting its replacement by the manipulation of symbols:

La veritable methode nous doit fournir un *filum Ariadnes*, c'est à dire, un certain moyen sensible et grossier, qui conduise l'esprit, comme sont les lignes tracées en geometrie et les formes des operations qu'on prescrit aux apprentifs en Arithmetique.  
(GP 7.22)<sup>12</sup>

It is not, then, the evidence of an idea, its clarity, distinctiveness or indubitability<sup>13</sup> that can constitute the criterion or truth. As Leibniz further says in the *Meditationes*, "Saepe enim clara et distincta videntur hominibus temere judicantibus, quae obscura et confusa sunt" (GP 4.425).<sup>14</sup> In contrast again to Descartes, who shows absolute confidence in the universality of common sense and in the infallibility of intuition, and, for that very reason, opposes any kind of formalism which might be offered in replacement of those qualities, Leibniz, who is unwilling to start out on the basis of any dogma, is forced to recognize the weakness of our natural capacities, which are always fallible and subject to paralogisms and errors deriving from lapses of memory or attention,<sup>15</sup> and even to admit the impossibility of inventing a foolproof method for avoiding these lapses;<sup>16</sup> however, since he has no desire to fall into scepticism -- indeed, his aim is to guarantee the possibility of truth in a non-dogmatic form, he arrives at the solution of the "artifice" (cf., e.g. GP 7.168) of the constitution of a symbolism which would elevate, or even replace, natural reason.<sup>17</sup> Only the reduction of mental operations to elementary operations which can be carried out on symbols permits, through the possibilities of verification and control which it offers, the satisfactory guaranteeing of certainty in the deductive chain, thus preserving the logical necessity of the conclusions.

Now, according to Leibniz, it is precisely in its systematic resource to

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symbolism that the secret of mathematics lies; mathematics is more than a chain of reasons, it is a form of mechanics which works with symbols "<...> res Mathematicae sua examina et comprobationes secum ferunt, quae causa est potissima successus" (*De primae philosophiae Emendatione, et de Notione Substantiae*; GP 4.469). On this question, the following extract from the famous *Preface à la Science générale* (1677) is particularly eloquent:

Or la raison pour quoy l'art de demonstrier ne se trouve jusqu'icy que dans les mathematiques n'a pas esté bien pénétrée de qui que soit, car si l'on avoit connu la cause du mal, il y a long temps qu'on auroit aussi trouvé le remede. Cette raison est, que les Mathematiques portent leur épreuve avec elles: Car quand on me presente un theoreme faux, je n'ay pas besoin d'en examiner ny même d'en sçavoir la demonstration, puisque j'en découvriray la fausseté à posteriori par une experience aisée, qui ne coûte rien que de l'encre et du papier, c'est à dire par le calcul; qui fera connoistre l'erreur pour petit qu'il soit <...>. Il faut donc remarquer que les preuves ou expériences qu'on fait en mathematique <...> ne se font pas sur la chose même, mais sur les caracteres que nous avons substitués à la place de la chose.

(C 154)

It is precisely because in mathematics reasoning can be reduced to the manipulation of symbols, to a materially and graphically supported automatic process, that it is possible to arrive at a purely formal verification of the validity of the logical operations carried out. That is, it is because mathematics operates with symbols that those symbols can be constituted as the actual principle of verification and control of the correctness of the rational processes which are realised by their means. Mathematics thus offers those who cultivate it a "filum palpabile" (GP 7.57),<sup>18</sup> a mechanical thread<sup>19</sup> which governs and sustains its own discursive development. It is a question of an imaginative material support which gives fixed form to reasoning and obliges it to leave, as it were, *visible traces on the paper*,<sup>20</sup> and which, for that very reason, makes it possible to guide thought and even to replace it, freeing it from the need of exhaustive representation of the ideas it manipulates, converting deduction into the play of symbols and formulae. In this way, the speed, the efficiency and the very formal validity of reasoning can be guaranteed.<sup>21</sup> It is for this reason that Leibniz argues, in the fragment *De l'usage de la méditation*, that the study of mathematics – first pure, then applied – should precede the consideration of metaphysical and moral problems; in those areas that are not accessible to experience, the latter can be replaced by the manipulation of characters and the use of the imagination, in which the previous study of mathematics guarantees suf-



ficient training.<sup>22</sup>

However, Descartes too had recognized the importance of symbolism in mathematics. When, for instance, he refers, in the *Discours de la Méthode* (AT 6.17-20), to the methods of his own discovery of Analytic Geometry, the major emphasis is on its symbolically innovative character and possibilities (occupying an intermediate position between the abstraction of algebra and the excessive figuration of geometry).<sup>23</sup> Descartes is certainly also thinking of symbolism when, in the *Regulae* (cf. especially III and XI), he admits the role of memory in the development of mathematical thought. Although, as we have seen, he tried, as far as it was possible, to return back deduction to intuition, rushing at breakneck speed through the various stages of the deductive chain, Descartes was aware of how it becomes necessary to resort to memory along that chain, while specifying, besides, that it is in memory too that, in a sense, the very certainty of that deduction lies.<sup>24</sup> In the *Regulae* XIV, further, Descartes stresses the decisive role of figuration in geometry, without, however, going beyond the question of the merely auxiliary nature of those imaginative supports: extensive figuration facilitates the understanding of the abstract figures which are the object of geometry, but in no way can the perception of the latter replace the intuition of them.<sup>25</sup>

Now, when Leibniz affirms of Descartes, in a letter to Foucher of 1676: "S'il avoit suivi exactement ce que j'appelle *filum meditandi*, je croy qu'il auroit achevé la premiere philosophie" (GP 1.370-371),<sup>26</sup> his criticism may be considered to be justified, not so much by the real absence of a *filum meditandi* in Descartes, as by the merely auxiliary role which the latter concedes to symbolism.

In contrast (although not without certain ambiguities and oscillations, as we shall see further on), Leibniz tends to endow symbolism with a constitutive role, seeing in symbology - especially that of a arithmetic and algebra - the vehicle and the very element of thought. Furthermore, and in contrast to Descartes, who tends to start from the basis of geometry, in which figural symbolization plays a merely auxiliary role, accompanying the reasoning process and providing it with imaginative support, Leibniz takes as his models arithmetic and, especially, algebra. In the latter, in fact, operations with symbols constitute the reasoning process itself, completely re-

placing the supposed direct experience of mathematical truth and objects.<sup>27</sup>

### 2.3 The Auxiliary or Constitutive Status of the Sign Oscillations and Ambiguities

From *De Arte combinatoria* on, the notion of blind thought appears in close articulation with the discussion (albeit not explicit) of the auxiliary or constitutive status of the sign. According to Leibniz:

*Unum autem esse intelligitur, quicquid uno actu intellectus seu simul cogitamus, v.g. quemadmodum numerum aliquem quantumlibet magnum saepe Caeca quadam cogitatione simul apprehendimus, cyphras nempe in charta legendo, cui explicate intuendo, ne Mathusalae quidem aetas suffectura sit.*

(GP 4.35)

Blind thought is here invoked to determine what type of knowledge can be had of a complex totality whose parts, since they cannot all be distinctly viewed in simultaneity, would require a prolonged operation of successive enumeration.

We note, at once, that the sign here fulfils a double function, let us say that of condensation (of the complex) and that of economy (of time) – that is, apparently, a mere auxiliary function. However, here already a fundamental ambiguity comes into play, which points, we believe, in the direction of the attribution of a more decisive role to the sign. It is true that, as Dascal (1978: 207) shows, what here makes it possible for the sign to be used in a blind fashion is the possibility of (at least theoretically) filling it with the distinct knowledge of all the elements which make up the idea it represents, and it is therefore the evocative character of the sign that underlies the conception of blind thought that is in question. On the other hand, it is no less true that such a possibility is, indeed, only theoretical (not even the lifespan of Methuseiah would suffice to put it into practice); and, if we think, for example, of numbers of infinite size, it will emerge, even in theoretical terms, as a practical impossibility. We consider it legitimate, then, to affirm that, as early as the *De Arte Combinatoria*, the notion of blind thought has as its basis the consideration of the constitutive character of the sign, by means of which it becomes possible to operate with an ideal signification, which only the sign can establish, and

which can only be conceptualized through the mediation of the sign.

In another youthful fragment, *Demonstrationes Propositionum Primarium* of 1671-72, the consideration of the constitutive character of the sign is still more explicitly put forward, again in close articulation with the notion of blind thought.

In fact, after emphasizing that, in the absence of words, or else of invariable signs of some other kind, the usefulness of mathematics would disappear (cf. A 6.2.481) and, indeed, suggesting (even if in the interrogative mode) that arithmetic can be reduced to an activity with signs,<sup>28</sup> Leibniz affirms explicitly: "si semel nobis consilii simus verba distincte contanterque ordinasse, suffecerit cogitationibus caecis uti ad distincte ratiocinandum" (A 6.2.481). This is clearly equivalent to the recognition of symbolism as the necessary and sufficient vehicle of thought; once the requirements were met for the adequate constitution of the symbolic system (that is, ordering, constancy and invariability of signification), it would be possible to think and calculate purely on the basis of the signs, without there being any reason, at any moment, to abandon them in favour of the ideas signified by them. However, this text too is not free of ambiguities. Using terms very similar to those employed in the extract from *De Arte Combinatoria* quoted above, Leibniz argues that

Quemadmodum enim nemo computare posset, praesertim numeros ingentes, sine nominibus vel signis numeralibus, loco numeri enim deberet sibi distincte imaginari omnes in eo comprehensas unitates. Quis autem nisi tempore aetatis Methusalae imaginabitur sibi distincte unitates quae sunt in 1 000,000,000,000 et si posset tamen progrediendum priorum oblivisceretur.

(A 6.2.481)

The central idea is, as can be seen, that the (numerical) sign is indispensable,<sup>29</sup> at least for calculation with large numbers. But what is the nature of this indispensability?

On the one hand, it seems to have to do with the possibility of substituting the sign for the fully and completely present intuition of the idea that it signifies, which points in the direction of the consideration of the constitutive function of that same sign. On the other hand, if this indispensability is, at least apparently, restricted to large numbers, the possibili-

ty remains that we might conclude that, where small numbers are in question, that indispensability would disappear; in this way, symbolism would become purely mnemonic, and, as such, auxiliary in function.

It may further be noted that Leibniz's final comment in the above quotation - "et si posset tamen inter progrediendum priorum oblivisceretur" (A 6. 2.481) - appears, on the one hand, to contradict the interpretation we offered earlier of the meaning of the example of the age of Methuselah, to the extent that it appeals to the mnemonic function of the sign (it is not sufficient to progress in analysis; it is necessary to retain the previous steps in one's memory, which is only possible through recourse to signs); yet, on the other hand, it may actually be read as reinforcing that interpretation, since it shows that even the activity of significative filling which the lifetime of Methuselah would permit, would still require recourse to the sign.

The same ambiguity or oscillation, which, as Dascal clearly shows (1977: 387-398; 1978: 174-190; 207), is present in several other texts, especially in two written during Leibniz's stay in Paris, the first in 1672, *Accessio ad arithmetica infinitorum*, and the second between 1672 and 1676, *Notes Parisiennes*, appears, albeit in a milder form, in such central and decisive later works as the *Dialogus de connexione inter res et verba* of 1677, the fragment *Analysis linguarum* of 1678, the fragment known as *Signs and Logical Calculation* of 1684(?), or the *Meditationes de Cognitione, Veritate et Ideis* of 1684.

In the last-named text, in which, as we have seen, Leibniz makes an especially clear presentation of the importance and the functions of blind or symbolic thought, he attributes to this type of thought the usual auxiliary functions of abbreviation, mnemonic retention, condensation of the complex, etc.; opposing blind thought to intuitive knowledge, Leibniz stresses the possibility, which always remains open, of evoking the ideas corresponding to the blindly employed signs (as, for instance, in the case of the chignon). But, on the other hand, by restricting the possibility of intuitive knowledge to distinct and primitive notions, and thus leaving the greater part of human knowledge (given its composite character) in a state of dependence on symbolic knowledge, Leibniz accentuates the positive - that is, constitutive - potentialities of symbolism itself.

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The most significant elements are, however, provided by the three other texts mentioned above. In *Analysis Linguarum*, Leibniz affirms: "*Analysis autem characterum fit, cum characteribus quibusdam substituimus alios characteres, qui prioribus usu aequipollent*" (C 351), thus giving to understand that the analysis of characters does not imply abandoning the latter in favour of the ideas corresponding to them, but, rather, that this analysis is, or can be, carried out within the symbolic space itself. Later in the same text, Leibniz further states: "*cogitationes quae characteribus substitutis respondent, prioris characteris qui resolvendus proponebatur significationi aequipollere*" (C 351), and adds: "*Hoc autem ope characterum facillius fit, quam si nullo ad characteres respectu cogitationes ipsas aggrediamur*" (C 351). Apart from the elements in this passage which pertain to the problem – central to Leibnizian logic – of substitution and equivalence,<sup>30</sup> what should be emphasized for present purposes is the fact, stressed by Leibniz, that it is the analysis of characters (that is, the substitution of certain characters by others of equivalent value) that permits the determination, as it were *a posteriori*, of the actual equivalent nature of the corresponding thoughts. Although this undeniably implies a certain recognition of what may be termed a cognitive function of the sign, and even of its autonomous operativeness,<sup>31</sup> the abovementioned ambiguity still persists – on the one hand, because the possibility offered by the analysis of the characters is presented as a process of facilitation of the analysis of the thoughts themselves, and, on the other, because Leibniz makes it clear, even in the first lines of the text, that it is the analysis of thought – to which corresponds the analysis of characters – that is essential for the discovery and demonstration of the truth: "*Ad inventionem ac demonstrationem veritatum opus est analysis cogitationum, quae quia respondet analysis characterum, quibus ad significandas cogitationes utimur*" (C 351).

In the fragment *Signs and Logical Calculation*, Leibniz begins by stating: "*Omnis humana ratiocinatio signis quibusdam sive characteribus perficitur*" (GP 7.204). This is a clear and categorical affirmation of the indispensability of the sign, which is immediately reaffirmed in the following passage: "*Non tantum enim res ipsae, sed et rerum ideae semper animo distincte observari neque possunt neque debent*" (GP 7.204; our emphasis). It should be noted that Leibniz grounds this indispensability on two levels, which may be characterised respectively as *de facto* – *non possunt* – and *de jure* – *non de-*

*bent*. There one may add that Leibniz goes on to supply three examples which, in their contextual diversity, tend to suggest that this indispensability is evident not only in mathematics (geometry and arithmetic) but also in juridical activity.

The analysis of these examples, however, reveals, in all three cases, restrictions on the role Leibniz attributes to symbolism. In the example relating to geometry, he argues:

Si enim Geometra, quoties Hyperbolam aut Spiralem aut Quadratricem inter demonstrandum nominat, semper earum definitiones sive generationes et rursus terminorum eas ingredientium definitiones sibi exacte praefigurare cogeretur, *tardissime* ad nova detegenda perveniret.

(GP 7.204; our emphasis)

It could be concluded from this that the function attributed by Leibniz to the sign is merely that of permitting greater speed in reasoning. Similarly, when, in the example relating to arithmetic, he writes: "Si Arithmeticus inter calculandum omnium notarum sive ciphRARUM quas scribit valores unitatumque multitudinem continuo cogitaret, nunquam *prolixos calculos* absolveret, perinde ac si totidem lapillis uti vellet." (GP 7.204; our emphasis), the conclusion could be drawn that, once again, the sign is here endowed with only an auxiliary function in the facilitation of reckoning, which is only really necessary in the case of large-scale calculations.

In the third and last example, concerning the activity of the jurist, the ambiguity of the formulation is even more evident:

<e>t ICTus aliquis, quoties actiones aut exceptiones aut juris beneficia memorat, requisita harum rerum essentialia saepe prolixa semper mente percurrere non potest, *neque opus est*.

(GP 7.204; our emphasis)

How should this last comment be interpreted? Does the absence of necessity (*neque opus est*) arise because the sign permits the effective evocation of the signified reality, that is, it rigorously fulfills a purely mnemonic function; or, on the contrary, does it arise because the sign offers, in its very texture and positiveness, the necessary means for the realization of an operation on ideal significations which can only be kept on the horizon of possibility of human thought through its mediation? In general, are the restrictions reintroduced by the abovementioned examples simple ambiguities of

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formulation which in no essential point contradict the categorical affirmation with which the text opens; or are they effective limitations of that initial affirmation?

Finally, it is in the *Dialogus de connexione inter res et verba* that we find the most illuminative formulations concerning the constitutive character of language in relation to thought. These formulations, however, appear in a specific context, whose precise contours must necessarily be taken into account.

In fact, the *Dialogus* is one of the texts in which Leibniz most directly and decisively analyses and criticises the *supernominalism*<sup>22</sup> of Hobbes, according to which truth is dependent on names, and therefore subject to the effects of their radical arbitrariness.<sup>23</sup>

Now, the argumentative strategy employed by Leibniz in this text<sup>24</sup> consists, in the first phase, of the radicalization of Hobbes' theses up to the limit of possible agreement between the two thinkers: that is, the recognition of the eminently linguistic character of all thought. It may be noted that this recognition is all the more significant considering that Hobbes employed it as a premiss for the affirmation of precisely that thesis which Leibniz aimed to refute, that is, the notion that truth can remain dependent on the arbitrariness which, according to the author of *Leviathan*, characterizes human language.<sup>25</sup> Indeed, in a second moment of the same text, this will be precisely this thesis relating to the arbitrariness of language which Leibniz will contest.<sup>26</sup> However, this question will not, for the moment, be subjected to his acute analysis.

In this fragment, which consists of a dialogue between two speakers, Hobbes' thesis is expounded by A: "A. quidam veri docti putant veritatem oriri ab arbitrio humano, et ex nominibus seu characteribus" (GP 7.191). After A has reproduced, in minute detail, the various steps of the argument in favour of Hobbes' "paradoxical" opinion,<sup>27</sup> B replies: "B. Quid tum? cogitationes fieri possunt sine vocabulis" (GP 7.191) - to which A's riposte is: "A. Ad non sine aliis signis" (GP 7.191).

It may be noted that Leibniz could have adopted the strategy of withdrawal which, precisely, he dramatizes through the speaker B; that is, he could

have immediately demarcated his own position vis-à-vis that of Hobbes, denying the constitutively linguistic character of all thought, especially as, in other texts, as we have seen, his formulations are never completely exempt from ambiguity. Nevertheless, Leibniz's desire was to retain this Hobbesian thesis, in spite of his full awareness of the seriousness of the logical and gnoseological implications which the latter had derived from it - a fact which may allow us to gauge the importance which Leibniz attributed to the thesis in question.

In the course of the dialogue, Leibniz presents the case of arithmetic as a paradigmatic example. A affirms:

A. Tenta quaeso an ullum Arithmeticum calculum instituere possis sine signis numeralibus.

B. Valde me perturbas, neque enim putabam characteres vel signa ad ratiocinandum tam necessaria esse.

A. Ergo veritates Arithmeticae aliqua signa seu characteres supponunt.

B. Fatendum est.

(GP 7.191)

After B has admitted, in the wake of the pregnant example put forward by A, that, at least on the level of arithmetic, it is impossible to think without signs, Leibniz goes on to extract the general conclusion that all thought demands symbolic mediation. This is quite clearly stated in the following passage:

B. <...> quod nunquam a me ullam veritatem cognosci, inveniri, probari animadverto nisi vocabulis vel aliis signis in animo adhibitis.

A. Imo si characteres abessent nunquam quicquam distincte cogitarem, neque ratiocinaremur.

(GP 7.191)

We have now concluded our analysis of the main Leibnizian texts which refer to this question, and we have seen that all of them (with the exception of the *Dialogus*, a text which, as is generally recognized, contains Leibniz's most advanced development of the notion of the constitutive character of the sign)<sup>38</sup> are marked by certain ambiguities concerning the effective status conferred by Leibniz to the sign. The question now facing us is whether or not, beyond their manifest textual incidence, these ambiguities reflect a deeper difficulty of systematic character. The answer to this question can only be given in a wider context, going beyond the textual limits

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of the fragments in question; indeed, we believe that it requires an overall interpretation of the nature and scope of symbolism in Leibniz's thought.

For Dascal,<sup>39</sup> the abovementioned ambiguity takes the form of a never fully-resolved tension between the two conceptions of the sign as, respectively, auxiliary and instrumental or truly constitutive. Notwithstanding he considers that this tension shows a certain development, in the direction of an ever-closer approximation to the thesis of the constitutive nature of the sign. This development, which he sees as correlative to the epistemological and psychological development of Leibniz's thought (cf. Dascal 1978: 174) is not, however, linear, since it is characterized, he argues, by numerous hesitations and regressions to earlier positions. Dascal further argues that this tension has some of its roots in the very epistemological and linguistic limits of the seventeenth century - limits which Leibniz valiantly tried to overcome (cf. Dascal 1978: 174; 222; 1976: 212) and concludes that it was at this point that Leibniz reached the highest level permitted by the *episteme* of his time - to use Foucault's terminology.<sup>40</sup> However, beyond historical or epistemic factors, there are also systematic reasons that can explain the ambiguities which we have seen to be present in Leibniz's theory of symbolism.

Thus we would further argue that it is through the elucidation of the nature and scope of the concept of blind thought, and its relations with other elements in Leibniz's system, that the key to the understanding of these ambiguities may be found. It is therefore essential to question, in overall terms, the status which Leibniz confers on blind thought in the general economy of his system.

In order to go more deeply into the matter, two essential factors have to be taken into consideration. In fact, the greatest resistances to the thesis of the constitutive nature of the sign (toward which, nonetheless, the entire Leibnizian theory of symbolism tends) are offered by: first, the postulation of a type of non-symbolic knowledge (divine knowledge); and second, the very definition of blind or symbolic thought which Leibniz presents (essentially based, as we have seen, on the opposition to intuitive thought).

2.4 Divine Thinking as the Outer Limit of Symbolic Thought

If the divine thinking is defined as atemporal, intuitive and infinite,<sup>41</sup> the discursiveness which characterizes human thought, and therefore its development in time, ceases to be conceived as inherent to thought in general, to take on the status of an imperfection to which man alone is subject.<sup>42</sup> Limited in this way in contrast to the perfection of divine thinking, blind thought arises as an instrument to which man is obliged to resort, given his inability to transcend his own finiteness.<sup>43</sup>

However, if the view is adopted that the human thought obeys the same logical principles as its divine counterpart, and that it can, besides, gain access to the eternal truths to which God himself is subject<sup>44</sup> - that is, that what differentiates the divine and human forms of thinking is essentially a temporal difference, then blind thought, to the extent that it points towards a multiplicity which, while not fully developed, is potentially consistent, is both the gauge mark and the natural, fertile procedure of an intellect which has the positive ability to grasp the potential signification of each symbol, and which can thus comprehend and penetrate the total signifi-  
cative content of which the symbol is the bearer.

In this line of interpretation, one may cite Cassirer, who, in his *Philosophie der symbolischen Formen*, recognizes the positive character that blind or symbolic thought has in Leibniz (cf. 1923-29: 1.77), justifying this view in terms of the latter's non-dualist conception of the relations between sensibility and intellect (cf. 1953-57, 1: 76). These two faculties - traditionally conceived as opposites (sensibility as passion, intellect as action) - are seen by Leibniz in terms of their reciprocal relation, and thus, in Cassirer's view, come to determine the attribution of a central role of the sign. Just as the universal can only be glimpsed through the particular, and the particular can only be conceived in the universal, so the conceptual determination of the contents of thought demands the constitution of a sensory substratum of signs which will, in its turn, permit the elevation of the particular to the universal, since it already represents a totality, a set of possible contents and, therefore, a first stage of universality (cf. 1923-29: 1.29-31). Cassirer further argues that Leibniz was profoundly aware of how it is through the mediation of linguistic thought that the chaos of sensory impressions is fixed and articulated, and an ideal signification is

established, representing not only the data of sensation, but also a set of possible relations which persists as such - that is, he was aware of how it is language allows man to pass from the world of sensation to the world of representation. Leibniz would, then, have understood, fundamentally on the basis of the problems connected with his discovery of infinitesimal analysis, that the sign does not exist only in order to communicate thought, but, rather, that it is the very means through which the content of thought takes on form, externalized and acquires the fulness of its meaning (cf. 1923-29: 1.27ff.).

It is not only Cassirer who emphasizes the decisive importance of the discovery of the infinitesimal calculus for the formulation of the Leibnizian theory of symbolism. In fact, since the invention of mathematically adequate notations (especially that of an adequate notation for the infinitesimal calculus) is one of Leibniz's basic preoccupations, it must, therefore, have lain at the basis of his profound reflections on the role of mathematical notation in particular and symbolism in general. Thus, for instance, Martin, in *Leibniz. Logik und Metaphysik*, goes so far as to argue that Leibniz's thinking, which underlies the invention of the new notation for the infinitesimal calculus (and concerns the signification of signs for the new science of the infinite), is both dependent on and determinant of his positions on symbolism and the *characteristica universalis* (cf. 1967: 86, 9, 13). Concretely, it may be concluded that the infinitesimal calculus provided Leibniz with experience of the necessity both of using an adequate symbology (which would be representative of the realities signified, and capable of guaranteeing the correct exercise of thought), and of considering the constitutive character of the sign, which is, in that context, called on to perform a role that is not so much evocative as one of substitution of processes and notions which, never fully realized, exist at the limits of the non-actualizable potentialities of human reason.<sup>45</sup>

It should be noted, however, that in either case - whether, in terms of the general interpretation of this aspect of Leibniz's thought, one tends to emphasize or, on the contrary, to underplay the difference or distance between human and divine thinking - symbolism may still be considered to be an essential constituent of human reason. In the first case, it would be the means of transcending a limit that is externally fixed by the existence of a divine thinking, a resource with which man should content himself, and which

allows him, by means of successive approximations, to come near a truth whose full knowledge is inevitably forbidden him. However, this does not imply that it is a question of an artificial, or merely auxiliary, resource - symbolism can be the mark of a limit, but, precisely because of that, it can also be seen as a practice inherent to the (limited) nature of human reason. In the second case, symbolism, as a specific mode of functioning of a thought which, in its difference regarding divine thought, is nonetheless endowed with a parallel positiveness, becomes the proper, necessary and essential organ of human reason. It would be then a question, not so much of a *limitation* of human knowledge in the face of divine thought, as of a *delimitation* of the nature and value of the former.

#### 2.5 Intuitive Knowledge as the Inner Limit of Symbolic Thought

The fundamental question, then, concerns less the *outer* limit constituted by divine thought than that other limit, resulting from the possibility which Leibniz posits on an intuitive knowledge, *within man himself*.

We have already seen how simple and primitive (undecomposable) ideas can only be recognized intuitively, and how the proper object of symbolic thought is formed by composite ideas. If we now consider that primitive ideas, (which go to make up composite ideas, that is to say, which are their elements), are required by the very definition of symbolic knowledge, because they are the minimal constituents of its own object, we may conclude that it is these primitive ideas that form the very inner limit of symbolic thought. In fact, since symbolic thought is based on primitive ideas, and tends towards them but finally has no access to them (since, even if it could reach them, it would be dissolved in them), it emerges as, indeed, no more than a mediation between a postulated primal intuition and a final, never attained intuition - that is, it is in simple ideas that the essential limit of symbolic thought is to be found.

It is in this sense that, for Leibniz, God, as the only being who, as already seen (cf. notes 41 and 42 above), has the absolute and simultaneous knowledge of all the primitive ideas - it may be pointed out that Leibniz even came to argue that God is the one and only truly primitive idea (cf. *Introductio ad Encyclopediam arcanam* of 1679; C 513) - may be considered as

the foundation of the *characteristica*: "Mais à present il me suffit de remarquer, que ce qui est le fondement de ma caracteristique l'est aussi de la demonstration de l'existence de Dieu" (Letter to Princess Sophie of Hannover of 1678; GP 4.296). It is thus possible to claim (in the opposite direction to the present argument) that Leibniz's theory of symbolism, in its requirement of simple ideas, depends, in the last analysis, on the proof of the existence of God. This is, for instance, the view of Derrida (1967: 116-118), who reads the Leibnizian project for a *characteristica universalis*, in the context of the infinitist theology on which it is based, as not an *inter-ruption* but, rather, a *confirmation* of the logocentrism which, in his view, has characterized metaphysical thought since Aristotle.

The limit in question is, at all events, of ambiguous status. In fact, if the limit to symbolic thought introduced by the simple or primitive idea tends to open it towards an intuitive horizon which transcends it, this horizon is never, however, actualized. Leibniz even argues, as has been seen, that such an actualization is not demanded by the symbolic process, since, as he says, one does not have to take analysis down to simple terms in order to prove the truth of propositions, their relations of equivalence or inclusion;<sup>46</sup> symbolic operations can – and should –<sup>47</sup> be carried out directly on signs, without any need to resort to the mediation of the intuitions which the signs are believed to replace.

In this case, simple ideas are no more than a potential limit, a spectre hovering over Leibniz's project for the construction of a universal symbolic system, which even tends to prevent him from proceeding to its effective concretization.

For Leibniz, however, their function is vital. It are simple ideas – of which, in certain texts, he even offers quite extensive lists –<sup>48</sup> that form the foundation of the meaning of symbolic thought and, in general, of language, the condition of possibility of its interpretation. It is also these ideas that, guaranteeing the return of the symbolic system to the semantic universe of intuition,<sup>49</sup> at the same time preserve it from a pure mechanical formalism,<sup>50</sup> from the gratuitous automatic and (this time) genuinely blind manipulation of characters.

This paradoxical status of the simple or primitive idea within the Leib-

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nizian theory of symbolic thought, as simultaneously its foundation and its limit, which establishes the sign as both the specific procedure of a constitutively symbolic reason and the auxiliary resource of a thinking that is only provisionally estranged from the intuition of the simple which is its gnoseological foundation, cannot be considered accidental. It does not derive only from historical or epistemic conditionings, or from purely theological determinations, rather, it is, as has been shown, inherent to the very Leibnizian theory of symbolic thought. In that paradoxical status of the simple, primitive ideas, there lies, in fact, the root of the textual ambiguities shown above in the different formulations which Leibniz presents in relation to the question of the constitutive or merely auxiliary character of the sign.

That same question could be reformulated, in different contexts. For instance, it is Leibniz himself who, in the *Nouveaux Essais*, clearly establishes the relation between the theory of symbolic thought and that of pre-established harmony, especially with regard to the body-soul relation. He writes:

Car c'est par une admirable Oeconomie de la nature que nous ne saurions avoir des pensées abstraites, que n'ayent point besoin de quelque chose de sensible, quand ce ne seroit que des caracteres tels que sont les figures des lettres et les sons; quoiqu'il n'y ait aucune connexion necessaire entre tels caracteres arbitraires, et telles pensées. Et si les traces sensibles n'etoient point requises, l'harmonie preetablie entre l'ame et le corps, dont j'aurai occasion de vous entretenir plus amplement, n'auroit point de lieu.

(NE I.1.5 = A 6.6.77-78)<sup>61</sup>

The ambiguity of the answers offered by Leibniz's system suggests that what matters most is less to opt for one or other of the possible solutions than to recognize the centrality of the question itself.



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**Part III**

**The Leibnizian Projects for a Universal Language**



**Chapter 1**

**Diversity and Complementarity of the  
Leibnizian Projects**

<...> comme la même structure ou la même  
ville peut être représentée par différen-  
tes Scénographies, suivant les différens  
costés dont on la regarde.

Leibniz (GP 5.273)

### 1.1 Three Strategies

There is certainly no area of the thought of Leibniz in which terminological imprecision is so evident as that concerned with his attempt to constitute a universal language. It follows that the very choice of "universal language", to signify that heterogeneous set of projects aiming to construct a linguistic system of scientific and philosophical utility, is itself polemical. In fact, Leibniz employs a large number of designations, in a non-uniform manner: *lingua universalis* (cf., eg., GP 7.12; .17; .25; GP 3.605; C 176; 279; 283), *lingua philosophica* (GP 7.11; .198-199; .269; C 152; 288), *lingua rationalis* (GP 7.19; .21; .28; C 94; 280; 524), *lingua generalis* (C 277), or simply *lingua nova* (GP 7.184; C 156; 277). On the other hand, his primary aim in this field is, as we have seen, less universal communicability than the correct expression of thought and the adequate knowledge of the world - that is, for Leibniz communicability is less an objective than a consequence of the universal language.

This terminological imprecision is aggravated by the dispersed nature of the writings, themselves highly diverse in character, in which the project is presented. Perhaps even more here than in other areas,<sup>1</sup> the (fully recognized) fragmentary and multiple character of Leibniz's texts requires special emphasis. In the absence of any definitive, or even sufficiently systematic text, which might, for instance, clarify the different levels of the project, discuss the various forms of its realization, or articulate the diverse proposals, we are faced with a proliferation of references, differing from each other not only in their formal presentation but also in their objectives, details and starting-points, or even in their contents and arguments: fragments, letters, "opuscules", brief passages of major works; texts varying from those dedicated solely to questions of language, to those which take up those questions amid many others, to those which contain only brief, but almost always illuminating references.

It may be added that, in the development of this project, Leibniz pursues and explores practically all the possible forms and strategies of its realization: the purification and perfection of a natural language (German); the *a posteriori* constitution of a universal language on the basis of linguistic elements common to all natural languages (the Rational Grammar); and

the deliberate abandonment of natural language in favour of the *a priori* construction of an artificial symbolic language (the *characteristica universalis*).

In this fragmentary and imprecise body of texts, certain scholars have nevertheless attempted to discern some kind of development. This is the case of Couturat (1901: 59-61), who argues that Leibniz opted for the *a posteriori* construction of a universal language as a result of the difficulties which arose from his earlier attempt at its *a priori* construction.<sup>2</sup> However, as Couturat does not concern himself with the analysis and study of the means of purification and perfection of the German language proposed by Leibniz, and, on the other hand, continues to recognize the undeniable constancy of the Leibnizian project of the Universal Characteristic, the development of which he speaks is purely local, and limited primarily to the works concerning the establishment of a universal grammar which, in fact, are those which occupy a more precisely-defined space in the corpus of Leibniz's work.<sup>3</sup>

Yet, even in relation to Leibniz's research towards the constitution of a Rational Grammar, and given that, many of the texts and fragments are undated, the rigorous determination of chronological phases is impossible. It may be added that, as will be seen,<sup>4</sup> even with regard to the constitution of a universal grammar, Leibniz defends, in parallel to an *a priori* methodology (as proposed in those texts), an alternative empirical approach, which he was to pursue until long after the date when, presumably, he wrote the last text related to the *a priori* methodology for the constitution of the rational grammar. In fact, it is impossible to reduce the multiplicity of strategies pursued by Leibniz to a process of evolution, or to any other kind of internal historicity. Only the texts concerning research towards the constitution of a Rational Grammar exhibit any relatively specific temporal localization within Leibniz's work (between 1678 and 1685); in the case of both the project of perfection of German and that of the construction of the *characteristica universalis*, the multiple character of these different strategies - developed in parallel by Leibniz throughout his life - is evident.

1.2 Complementarity of the Projects  
and Natural Languages

It is a question, then, of a set of projects, neither sequential nor conceived as alternatives by Leibniz, but which, on the contrary, are best considered as being complementary, if one takes account of their common starting-point and their ultimate goals.

As for their *starting-point*, the three projects derive, in the last analysis, less from the consideration of the inappropriateness of natural languages for the constitution and progress of scientific knowledge than from the recognition of the obstacles presented by human language to its own correct use. On this point too, Leibniz's position is not free from certain crucial ambiguities. Indeed, in some passages (though not as many as might be expected),<sup>5</sup> Leibniz accentuates the imperfection of natural languages, their radically equivocal nature and their inability to perform a calculative function.

Linguae vulgares etsi plurimum prosint ad ratiocinandum, attamen innumeris aequivocationibus sunt obnoxiae, nec officium calculi facere possunt.

(GP 7.205)<sup>6</sup>

More frequently, however, he tends to seek an immediate remedy for the difficulties identified, finding the solutions in language itself, and in the field of possibilities which it opens up.

The most illuminative passages in this respect appear in chapters 9 and 10 of Book 3 of the *Nouveaux Essais*, where Leibniz, closely following the corresponding passages of Locke's *Essay*, comments, one by one, on the imperfections and abuses of words referred to by Philalethe. Leibniz's position - while he recognizes the relevance of the critical arguments presented by Philalethe - is invariably the following: he stresses the possibility, which is always within our reach, of introducing modifications,<sup>7</sup> filling gaps and fixing indeterminacies,<sup>8</sup> in a word, of remedying the *defects* of language. As Leibniz says:

pour revenir à vos quatre *defauts* de la nomination, je vous dirai, Monsieur, qu'on peut remédier à tous, sur tout depuis que l'écriture

est inventée, et qu'ils ne subsistent que par notre negligence.  
(GP 5.317-318 = A 6.6.337; our emphasis)

The solutions proposed by Leibniz are, basically, the recognition and the exploitation of the qualities of writing,<sup>9</sup> the fixing of meaning, and the definition as a process, internal to language itself, of supersession of its ambiguities;<sup>10</sup> that is to say, Leibniz thus attempts to show that the responsibility for the imperfections and abuses listed by Philalethe lies less with languages themselves than with the human subjects who use them. So, one can easily understand why he tends to tone down the difference established by Locke between the imperfections inherent in human language and the abuses resulting from its defective use, invoking psychological reasons - "negligence",<sup>11</sup> "peu de soin et de bonne volonté" -<sup>12</sup> to explain both the former and the latter. This fine yet significant difference is, indeed, emphasized by Leibniz, when he has Philalethe become aware of it:

On dira qu'au lieu d'imputer ces imperfections aux mots, il faut plutot les mettre sur le compte de nostre entendement: mais je repons que les mots s'interposent tellement entre nostre esprit et la verité des choses, qu'on peut comparer les mots avec le milieu, au travers duquel passent les rayons des objets visibles, qui repand souvent des nuages sur nos yeux.

(NE 3.9.21 = GP 5.320; A 6.6.339)

This image is all the more significant considering that it does not appear in the corresponding text by Locke, and, further, that, as is well known, Leibniz opposes it with the image of the mirror, as a medium which, while equally optical in character, faithfully reproduces the reality represented (in this case, the mind and its operations):

les langues sont le meilleur miroir de l'esprit humain, et <...> une analyse exacte de la signification des mots ferait mieux connoître que toute autre chose, les operations de l'entendement.

(NE 3.8.6 = GP 5.313; A 6.6.333)

It may be added that, in this text as in many others,<sup>13</sup> Leibniz defends, with clarity and even a certain vehemence, the qualities and potentialities of natural languages. These include, not only the fact that they are "le meilleur miroir de l'esprit humain" (NE 3.8.6. = GP 5.313) and "les plus anciens monumens du Genre humain" (NE 3.9.10 = GP 5.317), but also their status as the undeniable site of meaning.

Indeed, since the immemorial epoch of its origin, the word (being moti-

vated) has contained the secret of a radical openness to the world which is spoken in it and of which it speaks. Its indicatory power resides not only in the unlimited play of possible utterances within the system that constitutes it, but also, and above all, in the openness of both the system and its constitutive elements to the world in which the word was created and which is in it expressed.

Now, if Locke invokes the multiple imperfections which are, in his view, inherent to any natural language, it is because he starts out from the basic thesis of the arbitrary character of the act of naming. This is a central thesis in Locke's philosophy of language (and, besides, is generally characteristic of the British school), which Leibniz refutes in the longest paragraph of the *Nouveaux Essais* (NE 3.3.1) - a thesis that can even be considered as lying at the centre of the polemic between the two writers over the problem of language (cf. Aarsleff 1982: 42), and, furthermore, is explicitly invoked by Locke to explain the reasons for the imperfection of language. Thus, in a paragraph precisely entitled "*Of the Imperfection of words*" of the *Essay Concerning Human Understanding* (3.9.5), Locke writes:

Causes of their imperfection. Words having naturally no signification, the idea which each stands for must be learned and retained by those who would exchange thoughts and hold intelligible discourse with others, in any language.

Locke's aim is - as Leibniz was fully aware -<sup>14</sup> to stress the effect of opacity which, he believes, any language introduces between objects and the human mind.

Leibniz, in contrast, not only exculpates natural languages, laying the blame for their imperfections on human subjects' incorrect use of them, but also, given that he starts from the thesis (opposite to Locke's) of the motivated origin of natural language,<sup>15</sup> tries to show how, rather than concealing the reality it names, language becomes the space of revelation, or rational penetration, of that reality; the word, both in its lost origin and in its present thickness,<sup>16</sup> always points towards a reality which exceeds and transcends it, but has marked it, and, gains colour, density and pregnancy only through the mediation of the word. It is in this sense that, as Leibniz says, in the very chapter concerning the imperfections of words and in Theophile's speech immediately following Philalethe's account of the four

great defects of natural languages (NE 3.9.5ff.), the existence of a dictionary of all the languages of the world would be a precious instrument for knowledge, *not only of the mind but also of the things themselves*:

On enregistrera avec le tems et mettra en Dictionnaires et en Grammaires toutes les langues de l'univers, et on les comparera entre elles; ce qui aura des usages très grands *tand pour la connoissance des choses, puisque les noms souvent repondent à leurs propriétés* (comme l'on voit par les denominations des Plantes chez de differens peuples) que pour la connoissance de notre esprit et de la merveilleuse varieté de ses operations.

(NE 3.9.10 = GP 5.317; A 6.6.336-337; our emphasis)

It is clear that the reality revealed by the word is not uncovered in its full and absolute presence. This does not, however, impede the possibility of a progressive movement towards the exhaustion of the horizon of signifying potential announced by each word. The often-repeated example of gold,<sup>17</sup> which Leibniz offers also in the context of the *Nouveaux Essais*, is eloquent enough:

Vous voyéz donc, Monsieur, que le nom de l'or par exemple, signifie non pas seulement ce que celui, qui le prononce en connoit; par exemple, un jaune très pesant, mais encore ce qu'il ne connoit pas, et qu'un autre en peut connoitre, c'est à dire un corps doué d'une constitution interne, dont decoule la couleur et la pesanteur, et dont naissent encore d'autres propriétés, qu'il avoué être connus des experts.

(NE 3.11.24 = GP 5.335; A 6.6.354)

In all their diversity, the projects which we shall now examine start out from, first, the recognition of the difficulties, not so much of natural languages themselves as of their use; and, second, the awareness of the inexhaustible field of cognitive possibilities opened up by the use of those same natural languages, thanks to that power of revelation which characterizes them. Thus, we too consider it possible to conclude that Leibniz's three projects - the purification of the German language, the constitution of a Rational Grammar and the construction of the *Characteristica Universalis* - also converge in the pursuit of two *higher goals*: to scrutinize the *raison d'être* of the power of revelation of human natural language, and to perfect that power, even through the construction, root and branch, of a new (and artificial) language.

In the face of the fact (apparently contradictory) that the insistent efforts made by Leibniz in the direction of the construction of an *artific-*

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*ia* language coexists with the interest with which he dedicated a large part of his intellectual activity to the study of *natural* languages, it is not surprising that critics should be so radically divided over the sense to be attributed to his position on natural languages. On the one hand, Knecht (1981: 131-133), for example, argues forcibly that Leibniz takes up a highly critical position towards natural languages and their capacity, as such, of functioning as an instrument of the expansion and progress of scientific knowledge - a position which, Knecht believes, lies at the basis of Leibniz's demand for the construction of a formalized language;<sup>18</sup> that is to say, Knecht bases his entire argument in the opposition between Leibniz's eulogy of the *characteristica* and the latter's position in relation to natural languages; in a word, he sees Leibniz's commitment to the construction of a new philosophical language as the negative of his critique of the capacities of natural languages. Dascal (1976: 207ff.), on the other hand, argues that Leibniz's position in relation to natural language is essentially a positive one, considering both his project of a *Characteristica Universalis* and his attempt to develop and purify the German language to be parallel symptoms of his belief in the positive role of language. Indeed, Dascal not only demonstrates the radical difference between Leibniz's position and the Baconian conception of language as a factor of disturbance of knowledge (which should, therefore, whenever possible, be superseded by the return to things or notions), but also argues that Leibniz, more than any other thinker of his time, conceived man as a truly symbolic animal, in the sense that he believed that language is not only that which distinguishes humans from other animals, but also that which permits their very rationality - a viewpoint which, according to Dascal, brings Leibniz markedly close to Hobbes. Verburg (1968: 558-572), too, claims that it was Leibniz who most fully developed what he calls the *theorem of the ennōesis of language* (first identified by Hobbes), according to which the constitution of scientific knowledge requires the use of the words of natural language as noetic marks. He further argues that Leibniz not only accepted the Hobbesian inheritance in this area, but engaged in work on the syntactic and semantic problems involved in the constitution of an authentic philosophical language.<sup>19</sup>

More indeterminate is the position of Cassirer (1923-29: 1.27), who, on the one hand, argues that it is with Leibniz that the problem of the function of symbolization receives its most rigorous determination, to the ex-



tent that language is conceived as the necessary and essential organ of thought, by means of which the latter is not only communicated, but, through externalization, acquires the fullness of its meaning; but, on the other, finally regrets that this elevated conception of the symbolizing function of language should have been translated after all into the denial of the value of natural languages, in the sense that, as he says, the *Characteristica Universalis*, once constituted, would be intended completely to replace them. (cf. 1923-29: 1.77-78).

According to us, while apparently contradictory, these two movements - the effort to understand and perfect natural languages, and the commitment to the construction of a new language - not only explain the interpretative divergence which, as we have seen, has been provoked by Leibniz's position on natural languages, but, in their mutual interrelation, may also be considered to contain the guiding thread that may lead us to the unitary, if subtly nuanced, character of Leibniz's thought on language.

In his project for the constitution of a philosophical language, as in other areas of his work, Leibniz did not follow a single path in ordered fashion. His methodological regime consisted of the exploration of diverse paths and the multiple opening-up of perspectives and lines of research; he left to others the labour of methodically following them up. The starting-point is always multiple, and unity is always a goal to be achieved.

Chapter 2

Leibniz and the German Language

Illud tamen asserere ausim, huic tentamento probatorio atque examine philosophematum per linguam aliquam vivam, nullam esse in Europa linguam Germanica aptiorem.

Leibniz (GP 4.144)

2.1 The Praise of the German Language in the  
*Dissertatio de Stylo philosophico Nizolii*

It was in his preface to the work of the Italian humanist Marius Nizolius which he published in 1670,<sup>1</sup> *Dissertatio de Stylo philosophico Nizolii* (GP 4.129-176 = A 6.2.398-444), that Leibniz for the first time presented his position concerning the German language. This position appears after a series of reflections on the stylistic features which should characterize philosophical discourse.

Leibniz starts with the statement that of the three desirable characteristics of language - clarity, truth and elegance - it is the first two that are of primary importance for philosophical discourse.<sup>2</sup> Since the knowledge of the truth of a proposition depends on the clarity with which its signified is apprehended, "<...> vero manifestum est veritatem propositionis notam esse non posse, nisi significatio vocabulorum sit nota, id est <...> nisi sit clara" (GP 4.139 = A 6.2.409), Leibniz tries to establish the conditions on which that clarity depends - i.e., origin and use - and concludes:

<...> si origo ab usu dissentit, usum potius quam originem in dicendo sequamur, sed usu vel dubio vel non repugnante origine potius haereamus.

(GP 4.140 = A 6.2.410)

If the word has multiple uses, one should either abstract a formal signified (which would include all its uses), or establish one which would be original (cf. GP. 4.140). At all events, once the signification is chosen, the word should be defined, and the definition uniformly respected (cf. GP 4.141).

On the other hand, according to Leibniz, "<c>laritas autem maxima est in Terminis e medio sumtis, usu etiam populari retento" since, "<...> obscuritas semper aliqua in Technicis" (GP 4.141; A 6.2.411): the more popular terms could be used, the clearer the discourse would be; technical terms should, therefore, be avoided (cf. GP 4.145). This is the central thesis of this text. From it, Leibniz goes on to draw important conclusions regarding both the excellence of the German language and the obscurity and verbosity of contemporary scholastic philosophy.

Leibniz recognizes the advantages of technical terms: they are condensed forms of sense which economically substitute that which, in ordinary language, can only be said in a prolix form (cf. GP 4.142). He also recognizes the legitimacy of their use in specific circumstances. He argues, for instance, that they may justifiably be employed in proofs and to refer to those realities to which no name has been given by the people (cf. GP 4.142) - that is, in mathematics, physics and mechanics - but in those areas alone; while in politics, morality and law - subjects which should be accessible and comprehensible to all - they should be rigorously avoided (cf. GP 4.145). His position is, then, that technical terms should be eschewed wherever possible (cf. GP 4.141), and that "<...> nullam rem esse, quae non explicari terminis popularibus <...> possit" (GP 4.142 = A 6.2.413).

Since philosophers are superior to ordinary people not in what they think, but, rather in the fact that they think in a different way,<sup>3</sup> it should be recognized, as a general governing principle for all philosophical discourse, that everything which cannot be expressed in the language of the people should be exorcized from philosophy. As Leibniz says,

<...> quicquid terminis popularibus explicari non potest, nisi immediato sensu constet (qualia sunt multa Genera colorum, odorum, saporum) esse nullum, et a Philosophia velut piaculari quodam carmine arcendum.

(GP 4.143 = A 6.2.414)

It is precisely on this basis that he condemns the verbosity of the scholastics,

<...> illos disputatores dialecticos ad hoc urgere, ut vel omnes terminos suos clare explicent, vel si hanc molestiam subterfugere velint, descendant ad linguam aliquam vivam seu popularem, ac tentent in ea animi sensa exponere.

(GP 4.143-144 = A 6.2.414)

Echoing the general criticism directed by modern philosophers<sup>4</sup> at the stylistic obscurities characteristic of scholastic philosophy - obscurities which, while giving an appearance of profundity, in fact conceal nebulousness or vacuity of thought -<sup>5</sup> Leibniz emphasizes the advantages of cultivating philosophy in natural language. Only in this way can everyone, including women, be enabled to evaluate it (cf. GP 4.144), and thus to recognize its worth or worthlessness. If "<...> in Anglia Galliaque paulatim scholasti-

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ca philosophandi ratio exoleverit, quia jam dudum illae gentes Philosophiam sua lingua excolere coeperunt" (GP 4.144; A 6.2.414). On the other hand, the continued implantation of scholastic philosophy in Germany could be traced to (among other causes) the fact that it was only belatedly that philosophers had begun to write in German.<sup>6</sup>

This does not, however, mean that the German language is not adequate to the labour of philosophy. On the contrary, of all the European languages it is the most suitable for this purpose. As Leibniz says, "<...> tentamento probatorio atque examine philosophematum per linguam aliquam vivam, nullam esse in Europa linguam Germanica aptiorem" (GP 4.144; A 6.2.414).

After making this affirmation, Leibniz presents the three main reasons which, in his opinion, explain the superiority of German and the excellence of its philosophical mission. First, German is extremely rich in *real* terms, "<...> Germanica <lingua> in realibus est et perfectissima, ad invidiam omnium caeterarum" (GP 4.144; A 6.2.414). This richness of real or concrete terms is attributed by Leibniz to the fact that over the centuries the German people, more than any other, had cultivated the practical, and especially the mechanical arts, in such a way that "<...> cum artes reales et mechanicae a multis seculis a nulla gente sint diligentius excultae; usque adeo ut ipsi Turcae in fodiis Graeciae et Asiae minoris, vocabulis metallicis Germanorum utantur" (GP 4.144; A 6.2.414). Second, German is poor at expressing fictions: "Contra ad commentitia exprimenda, lingua Germanica est facile ineptissima, longe quidem Gallica Italicaque et caeteris Latinae propagini-bus ineptior; quia in Latinae filiabus" (GP 4.144; A 6.2.414). Third and lastly, Leibniz stresses the advantages for philosophical purposes stemming from the German language's incapacity to assimilate Latin and Latinisms. In the Romance languages, Latinisms are easily assimilated, "<...> voce Latino-Barbara leviter inflexa statim fit Gallica aut Italica non-barbara" (GP 4.144; A 6.2.414), and thus "<...> multa Philosophiae Scholasticae in Gallicum quomodocunque tamen translata habentur" (GP 4.141; A 6.2.414). On the contrary, in German, which is the European language furthest removed from Latin,<sup>7</sup> it is impossible to preserve such Latinisms without encountering universal ridicule.<sup>8</sup>

Inpenetrable to Latin, as it were, German therefore remained free from the pernicious influence of barbarous philosophy; this permits Leibniz to

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conclude:

Atque haec causa fuit Philosophiae apud nos serius vernaculo sermone tractatae, quia Lingua Germanica non a Philosophia quidem, a barbara tamen Philosophia abhorruit, cum vero barbara philosophandi ratio sero sit pulsa, mirum etiam non est tardigradam in philosophando nostram linguam fuisse.

(GP 4.144 = A 6.2.414)

From the analysis of this text, we would argue that the following conclusions can be drawn. First, the advantages of German as a philosophical language lie, according to Leibniz, in certain characteristics of its vocabulary. In fact, at no point does he refer to grammatical specificities. Even when he accentuates the gulf that divides German from Latin and the Latin derived languages, it is always in the context of vocabulary. There is, then, no reason to argue in favour of any incompatibility between this thesis and Leibniz's later research towards the foundation of a Rational Grammar by means of the identification of grammatical invariants common to several languages. As Leibniz is fully aware, human language is simultaneously one and multiple, the same in all people and infinitely variable among those who speak it.

Second, the characteristics of vocabulary which, according to Leibniz, make German the most suitable language for philosophical work can be reduced to one - the abundance of real or concrete terms, that is, of terms which maintain an immediate relation with empirical reality. In fact, both the difficulty in expressing fictions and the incapacity to assimilate Latinisms - two other advantages of German pointed out by Leibniz, as seen above - derive from vocabulary-related factors: German does not contain adequate words for the expression of fiction or abstraction devoid of content, and it is impenetrable to the sterile verbosity of the barbarous Latin-derived terms by which the Romance languages are easily penetrated. The superiority of German resides, then, in its "sense of the real," and in the proximity of its vocabulary to the concrete realities and practical activities which determine the life of the people that gives it life.

Two important consequences follow from the above. On the one hand, the praise of German as a language containing an excellent repository of concrete terms corresponds to the ideal of clarification, so characteristic of Leibniz (and which inspired all his projects for a universal language), to

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the extent that, being concrete, each term translates an immediate relation with the signified reality, thus avoiding the ambiguity and equivocalness that characterize abstract terms, which, by definition, designate - abstractly - a quality or mode which has no real existence as such.<sup>10</sup> It is in this sense, too, that one should understand Leibniz's demand that every word should be defined, or, at least, should be used with a uniform signification. On the other hand, by making the concreteness of vocabulary of the German language dependent on the practical and even mechanical activities of its people, Leibniz is implicitly recognizing the existence of a profound relationship between the language, the people and its civilization (produced above all on the level of vocabulary). This is a thesis fertile in ideological and cultural consequences, which Leibniz was later to develop and ground.<sup>11</sup>

Finally, it appears possible to draw a third conclusion from the analysis of this text. Insofar as Leibniz condemns the use of technical terms, or at least would restrict it to certain fields of knowledge, and, conversely, argues that it is the use of popular terms that contains, not only clarity of discourse, but also the touchstone which permits the distinction between what is truly philosophical (that which can be expressed in popular language) and what is no more than hollow verbosity (that which should be exorcized out of philosophy), it may be concluded that the adoption of German as a philosophical language implies, not its progressive formalization, but, on the contrary, respect for the popular terms which, according to Leibniz, maintain an immediate and faithful relation to the real. It is here, then, a question of gaining clarity (and thus access to the real), not through an attempt at the formalization of natural language - which would require the introduction of exactly the kind of technical conceptual apparatus which Leibniz wishes to avoid - but, precisely, through the inverse process, i.e., the deepening of their "naturalness", to be understood here as a primordial relation of proximity between the vocabulary of a language and the concrete objects and actions of the world of the human beings who have created and used it.

In general, Leibniz was to maintain, for all of his life, the thesis of the superiority of the German language, which he first presented in the *Dissertatio de Stylo Philosophico Nizolii* of 1670. Although this thesis is partially contradicted by Leibniz's own writing practice,<sup>12</sup> it was to be taken

up again theoretically in other texts, and would also inspire certain measures of a practical nature. We refer to the proposal for the inclusion of the study of the German language and the writing of reports in German among the central objectives of the Berlin Academy of Sciences which Leibniz tried so insistently (and finally successfully) to found.<sup>13</sup> For instance, in the *Consultatio de Naturae cognitione ad vitae usus promovenda, instituendaque in eam rem Societate Germana, quae scientias artesque maxime utiles vitae nostra lingua describat patriaeque honorem vindicet* (SO 351-373), which he drew up anonymously in 1676, Leibniz demanded that all the work of the future academy should be documented in German, in order both to promote the development of the language and to show foreigners that Germans too could write things which they would not regret knowing about, as well as to encourage the research activities of his fellow-citizens.<sup>14</sup>

Participating decisively in the movement which, in Germany, was already tending towards the consolidation of a national consciousness and, to that end, sought the renovation of the national language and literature,<sup>15</sup> Leibniz would aim to establish the grounds for the thesis of the superiority of the German language, through the collection and analysis of the results of previous research,<sup>16</sup> and, above all, through his own etymological and philological investigations.<sup>17</sup>

## 2.2 The German Language in the *Nouveaux Essais*

Some of the results of this profound and most extensive research appear in the *Nouveaux Essais* (NE); having established the thesis of the common origin of all nations and of the existence of a primordial language,<sup>18</sup> Leibniz affirms that, of all tongues, the German or Teutonic language is the closest to the former.

Si l'Hebraïque ou l'Arabesque y approche le plus, elle doit estre au moins bien alterée, et il semble que le Teuton a plus gardé du naturel, et (pour parler le langage de Jaques Böhm) de l'Adamique.  
(GP 5.260 = A 6.6.281; our emphasis)

It should be noted that the caution with which Leibniz formulates this hypothesis is qualified by various factors: first, by the audacity with which he rejects the priority of Hebrew (placing it on a footing of equality with

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other languages and even deriving it from Arabic);<sup>19</sup> second, by the preceding detailed philological establishment of the antiquity of the Germanic language;<sup>20</sup> third, by the following demonstration of its phonic and expressive naturalness;<sup>21</sup> and fourth, by the fact that, a little further on, Leibniz wishes explicitly to show his agreement with Goropius with respect to the antiquity of German.<sup>22</sup> It may be added that the primordial character of German is immediately assimilated to its natural and Adamic character (concepts which, in Leibniz, tend to overlap).

In fact, for Leibniz the Adamic language is fundamentally something which, as we have seen, has without doubt been lost as such,<sup>23</sup> but can be etymologically rediscovered, in the naturalness of its traces which still remain in natural languages, and in the phonic and articulatory naturalness which is still present in the various existing languages, especially in German.

It is precisely in this direction that the text of the *NE* (referred to above) continues - that is, after affirming that it is Old German which, it would seem, has retained natural and Adamic traits in the highest degree, Leibniz goes on to explain the defining features of the naturalness, that "*quelque chose primitif*" (GP 5.260) which, in spite of all the transformations they have undergone, natural languages, especially German, still retain and which can be demonstrated by etymological analysis.

By means of a series of examples, most of them taken from German,<sup>24</sup> Leibniz defends the notion of the onomatopoeic origin of many of the words of the Germanic language,<sup>25</sup> the phonetic symbolism of the letters which "<...> les anciens Germains, Celtes, et autres peuples apparentés avec eux" (GP 5.261; A 6.6.282) are used to signify a violent movement (*R*), a gentle movement (*L*), a slight breathing (*AH*, *W*), or anything isolated on a kind of plain (*Au*, *O*).<sup>26</sup>

Through the etymological reconstruction<sup>27</sup> of the converse process to that of the gradual disappearance of the natural motivation of languages, Leibniz thus discovers two fundamental types of naturalness: the onomatopoeic origin of names, that is, the mimetic relation between the name and what it signifies; and the phonic expressiveness of letters, deriving from the primordial concordance established between sounds, emotions and ideas.<sup>28</sup>

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Now, in both cases, the profound naturalness of German becomes evident, in the first case, it may be concluded that

à l'égard de ces mots <Leibniz refers to the onomatopoeic> la langue Germanique peut passer pour primitive.

(GP 5.261 = A 6.6.282)

In the second (with regard to the phonic expressiveness of letters),

il semble que par un instinct naturel les anciens Germains, Celtes, et autres peuples apparentés avec eux, ont employé la lettre R pour signifier un mouvement violent et un bruit tel que celui de cette lettre.

(GP 5.261 = A 6.6.282)<sup>29</sup>

German is not, then, the Adamic language, but it is, of all natural languages, the most primordial, that which, in Leibniz's eyes - whether through the onomatopoeic motivation of its words or through the symbolic expressiveness of its letters - has kept closest to the unconscious origin - biological and psychological (articulatory) - of language.

It is thus clear that, if the *Dissertatio de stylo philosophico Nizolii* established the superiority of German essentially by means of a structural analysis of its present existing vocabulary, in the *NE*, in contrast, Leibniz explains how, from a genetic viewpoint, this superiority ultimately lies in its antiquity, that is, its naturalness and its essential proximity to the language of Adam.

The grounds for the superiority of German as a language especially suitable for philosophical work should now be clear: to the terminological concreteness which, according to the theory expressed in the *Dissertatio*, still characterizes it today, should be added - following the analysis of the *NE* - the natural, primordially established relation between its names and the realities they signify, between its sounds and the objects and concrete actions which they mimetically translate. Similarly, the call made in the *Dissertatio* for the use of a popular terminology, as alone capable of guaranteeing clarity and reality in philosophical discourse, is now translated, in the *NE*, into a convinced belief in the original popular roots of the naturalness of language; onomatopoeic and phonetic symbolism are seen as being processes that are fully within the capacities of the ordinary person, indeed, as deriving from that "natural instinct" which characterized the an-

cient Germans. Simultaneously, these processes, which lie at the root of the naturalness of the German language, constitute it as an instrument of particular suitability to the exercise of reason, since they guarantee, by their very presence, the fundamental harmony between Nature and the Word.

### 2.3 The German Language in the *Unvorgreifflichen Gedancken*

Both in the *Dissertatio de stylo philosophico Nizolii* and in the *NE*, Leibniz stressed the superiority of the German language, attributing it, in the first case, essentially to the concreteness of its vocabulary, and, in the second, to its antiquity and naturalness. In both cases, it is the popular character of German which, in terms of origins, can explain these advantages - the German language, in its superiority, is, for Leibniz, a popular creation. In the *Unvorgreiffliche Gedancken, betreffend die Ausübung und Verbesserung der Teutschen Sprache* (UG, D 6.2.6-51; CE 1.255-314; PU 327-371), curiously, there is a slight but significant change in the situation. The objective of this text is less the exaltation of the virtues of German - although this element is also present - than an appeal for its perfection on a higher level. It is as if, after stating the superiority of his own language and trying to understand its origins, its *raison d'être* and the causes which may explain it, Leibniz now wished to call his contemporaries' attention to the need of a collective effort in order to raise it to a higher state of perfection.

Hence the tone of greater nationalist exaltation which pervades the text:

Die Teutsche Nation hat unter allen Christlichen den Vorzug wegen des Heiligen Römischen Reichs, desen Würde und Rechte sie auff sich und ihr Oberhaupt gebracht.

(UG §2)

and, a little further on,

Derowegen haben die Teutsche sich desto mehr angreifen, dass sie sich dieser Würde würdig zeigen, und es andern nicht weniger an Verstand und Tapfferkeit zuvor thun mögen, als sie ihnen an Ehren und Hoheit ihres Oberhauts vorgehen.

(UG §3)

Leibniz goes on to show how, to the military glories already achieved by Germany, it is now necessary to add the triumphs of genius and knowledge. It is at this point that the need to perfect the language becomes evident. This is a task which, according to Leibniz, supposes two complementary movements, one for the protection of its already existing virtues (cf. UG §9), the other for the correction of its imperfections, which, obviously, implies the recognition of certain defects.

Now these deficiencies consist of the absence of an adequate terminology for the signification of all those realities which lack an immediate relation to the sensory. As Leibniz says,

Es ereignet sich aber einiger Abgang bey unserer Sprache in denen Dingen, so man weder sehen noch fühlen, sondern allein durch Betrachtung erreichen kan.

(UG §10)

If, in the *Dissertatio*, Leibniz praised the German language for its richness in concrete terms, and, in the *NE*, explained that richness on etymological grounds, he now, in the *UG*, laments its lack of abstract terms which might express feelings, values, or moral and political concepts. As he says,

als bey Ausdrückung der Gemüths-Bewegungen, auch der Tugenden und Laster und vieler Beschaffenheiten, so zur Sitten-Lehr und Regierungen-Kunst gehören; dann ferner bey denen noch mehr abgezogenen und abgefeimten Erkänntnissen, so die Liebhaber der Weisheit <...> unter dem Nahmen der Logick und Metaphysick auff die Bahne bringen.

(UG §10)

Here there is clearly a shift in register, of which, besides, Leibniz himself is well aware:

Nun wäre zwar dieser Mangel bey denen Logischen und Metaphysischen Kunst-wörtern noch in etwas zu verschmertzen, ja ich habe es zu Zeiten unser ansehnlichen Haupt-Sprache zum Lobe angezogen, dass sie nichts als rechtschaffene Dinge sage <...>. Daher ich bey denen Italiänern und Frantzosen zu rühmen gepfleget: Wir Teutschen hätten einen sonderbahren Probierstein der Gedancken, der andern unbekandt; <...> dass es unsere Sprache selbst sey, denn was sich darinn ohne entlehnte und ungebrauchliche Worte vernehmlich sagen lasse, das seye würcklich etwas Rechtschaffenes; aber leere Worte, da nichts hinter, und gleichsam nur ein leichter Schaum müssliger Gedancken, nehme die reine Teutsche Sprache nicht an.

(UG §11)

This shift does not, however, suppose any contradiction in Leibniz's po-

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sition - on the one hand, because the existence of a concrete vocabulary does not imply the non-existence of an abstract vocabulary, and on the other, because in the *Dissertatio*, with its praise of the German language for its concrete vocabulary and its complementary indication of the need to avoid the use of technical terms, what Leibniz intended to stress, in our view, was the non-existence, in German, of words devoid of content, of those Latinisms which, as we have seen, he condemns for their obscurity and vacuity. Now, the abstract vocabulary which, in the *UG*, Leibniz argues that the German language should try to acquire has nothing in common with the objectlessness which characterizes the futile, obscure and pedantic discourse of those masters of dialectic and disputation whom Leibniz at that point basically had in mind.

In fact, three - and not two - distinct levels are in question here: the *ordinary term*, real and concrete, firmly anchored in the practical, artistic and mechanical experience of people, historically and culturally determined, and, as such, the ultimate root of all meaning; the *abstract term*, an indispensable instrument of science and reflective thought; and the *empty term*, which exemplifies the sterile, obscure and obscurantist verbosity which only barbarian philosophy requires. The German language is already - and has always been - endowed with the first level, owing to its origins; Leibniz now wishes to enrich it with the second level, and - now as before - stresses the importance of freeing it from the third level.

The only difference, then, concerns the second level. The demand, which Leibniz now formulates, of endowing German with the abstract terms required for the development of the sciences, may appear to contradict the recommendation made in the *Dissertatio* for the avoidance of "technical terms", but this is only due to the ambiguity which marks the last-named expression. As we have seen, in the *Dissertatio*, Leibniz, on the one hand, affirmed clearly that technical terms should be avoided, but, on the other, recognized their advantages and the necessity of their use, at least at certain circumstances. If we remove from the expression "technical terms" the associations which, at that point, it had with empty words and sterile Latinisms - that is, the elements which there justified the condemnation of such terms - and retain only its function, as already recognized by Leibniz,<sup>30</sup> as an instrument of facilitation and rigour, we will discover that we are dealing not so much with a contradiction or an effective shift in perspective as with an-

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other means of complementation or deepening.

There is, we think, an important and significant alteration, but not in that respect. It lies, in our view, in a difference not of doctrine but of *attitude*. What we believe to be new in this text is the viewpoint from which Leibniz addresses his own position and that of his contemporaries – that is, the position of the sage or philosopher in relation to his own language.

#### 2.4 The Role of the Sage in the Improvement of the German Language.

##### From the Popular Onomatourge to the Illustrious Onomatourge

In the *Dissertatio*, the sage appeared in two different forms: that of the philosopher who seeks clarity, and to this end prefers to use popular terminology, in which he knows he will find an immediate relation to the real, and that of the scholastic who avoids the clarity of the popular terminology of his own language, taking refuge in stylistic obscurities which allow him to preserve the appearance of the very interchange of ideas which, in reality, he fears. At all events, it is not the philosopher's responsibility to intervene directly in the determination of the qualities of language. Language is entirely a creation of the people, and the philosopher should employ it as such – guaranteeing by his use of language, the clarity of his discourse, or if he fails to use it in this way, endangering that clarity and running the risk of lapsing into "barbarian philosophy".

In the *UG* the situation is different:

weil nemlichen die Gelehrten fast allein mit dem Latein beschäfftiget gewesen und die Mutter-Sprache dem gemeinen Lauff überlassen, welche nichts desto weniger auch von den so genandten Ungelehrten nach Lehre der Natur gar wohl getrieben worden.

(UG §9)

Leibniz now diagnoses a gap in the German language, deriving from the non-intervention of the sage in the determination of its quality – a state of things which, as we have seen, previously appeared as desirable. The sage (der Gelehrte) has abandoned his own language, and thus it appears as imperfect (mangelhaft) with regard to logic, metaphysics, morality, politics, natural philosophy and jurisprudence.<sup>31</sup> However, it is he, more than anyone, who suffers the consequences of these imperfections:

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Denn weil alles was der gemeine Mann treibet, wohl in Teutsch gegeben, so ist kein Zweifel, dass dasjenige, so vornehmen und gelehrten Leuten mehr fürkommt, von diesen, wenn sie gewolt, auch sehr wohl, wo nicht besser in reinem Teutsch gegeben werden können.  
(UG §10)

Now, according to Leibniz, the German language may be imperfect, but it deserves to be perfected<sup>22</sup>,

dass in der Denck-Kunst und in der Wesen-Lehre auch nicht wenig Gutes enthalten, so sich durch alle andere Wissenschaften und Lehren ergiesset, <...>. Unter welchen allen viel Gutes ist, damit die Teutsche Sprache allmählig anzureichern.  
(UG §12)

Leibniz goes on to present various proposals and suggestions for the realization of this process of enrichment - one may even say that the text as a whole has no other aim. As we will see, it is the sage who is responsible for putting the process of perfection into effect.

The measures proposed are essentially three: the recovery and re-establishment of ancient and obsolete terms (cf. UG §15); the importation and adaptation of foreign terms (cf. UG §15-28); and the invention of new terms (cf. UG §§63, 74-75). For the realization of this programme, which is here specified in minute detail,<sup>23</sup> Leibniz argues for the need to call on the organized effort and commitment of several scholars:

Weilen aber die Sach von einem großen Begriff, so scheint selbige zu bestreiten etwas grössers als privat-Anstalt nöthig, und würde demnach dem ganzen Werck nicht besser noch nachdrücklicher als mittelst einer gewissen Versammlung oder Vereinigung aus Anregung eines hocheleuteten vornehmen Haupts, mit gemeinem Rath und gutem Verständniss zu heiffen seyn.  
(UG §30)

With regard to the first measure - the recovery and re-establishment of ancient and obsolete terms - Leibniz recommends, as a first step, the revision and scrutiny of all the words of the German language, both those relating to the various arts and professions, and those used in rural and urban areas and the various regions of Germany and its sister nations (Bayern, Österreich, Schwaben, etc.), as well as the forgotten or obsolete terms and those terms of German origin which are now used by other nationalities (cf. UG §32). For the compilation of this inventory, which should be as complete

as possible, Leibniz suggests exhaustive research in ancient German books and archives, as well as in literature (cf. UG §§29, 65-66).

Finally, according to Leibniz, this work should be given substance in three great volumes: the *Sprachbrauch* or *Lexicon*, containing the words currently in use; the *Sprach-Schatz* or *cornu copiae*, comprising the words relating to the various arts and occupations; and the *Sprachquell* or *Glossarium*, which would collect the ancient words and form a basis for etymological discoveries (cf. UG §33). Leibniz offers a detailed analysis of the advantages, aims and specific mode of realization of each of these volumes.<sup>24</sup> Thus, for instance, with regard to the etymological dictionary, whose usefulness Leibniz never ceases to emphasize, the project would be of undeniable interest, not only for the Germans, but also for all other people of Europe, who "<...> sehr viel Worte von den Teutschen haben, und also den Ursprung ihrer Sprachen guten Theils bey uns suchen müssen" (UG §42), since, as he says later on: "Stecket also in Teutschen Alterthum und sonderlich in der Teutschen uhralten Sprache <...> der Ursprung der Europäischen Völcker und Sprachen" (UG §46). An etymological dictionary such as that which Leibniz proposes would also show that words are not as arbitrary as is commonly thought,<sup>25</sup> since

Und weiln die Teutsche Sprache vor vielen andern dem Ursprung sich zu nähern scheint, so sind auch die Grund-Wurtzeln in derselben desto besser zu erkennen.

(UG §50)

Leibniz further argues that the *Treasury of languages* would provide opportunities for new inventions (cf. UG §40), since

<...> die Worte den Sachen antworten, kan es nicht fehlen, es muss die Erläuterung ungemainer Worte auch die Erkänntnis unbekandter Sachen mit sich bringen.

(UG §40)

The second measure aimed at the perfection of German which Leibniz proposes is, as we have seen, the importation and adaptation of foreign terms:

Hat es demnach die Meynung nicht, dass man in der Sprach zum Puritaner werde und mit einer abergläubischen Furcht ein fremdes, aber bequemes Wort als eine Todt-Sünde vermeide.

(UG §16)

However, if excessive puritanism is to be condemned, it is also necessary to

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avoid the opposite extreme, that is, a situation, like that then prevailing in Germany (cf. UG §20), of massive and indiscriminate importation of foreign terms which tend to adulterate the language and can, eventually, lead to the loss of national independence (cf. UG §21). If this situation is to be condemned on all counts, it does not, however, in Leibniz's view, justify the drastic prohibitions on the use of any foreign terms whatever which some writers advocate.<sup>36</sup> Prudence and moderation are required, in order to receive and adapt, in the smallest number of cases possible and only when absolutely necessary,<sup>37</sup> terms taken, preferentially, from languages closely related to German (cf. UG §§69-72).

As for the third proposal - the invention of new terms - Leibniz argues that it is here desirable to obey the law of similarity:

Jemehr nun die Gleichheit beobachtet wird, und je weniger man sich von dem so bereits in Übung, entfernt; je mehr auch der Wolklang, und eine gewisse Leichtigkeit der Aussprache dabey statt findet, jemehr ist das Schmieden neuer Wörter nicht nur zu entschuldigen, sondern auch zu loben.

(UG §75)

Now, each of these three measures of perfection of the language proposed by Leibniz involves a type of labour which can only be undertaken by the sage. Leibniz is fully aware of this. For instance, the construction of new terms requires not only knowledge of the phonic and phonological laws which regulate the system of the natural language, but also, according to Leibniz, the support of certain eminent scholars whose authority can help to underwrite and confirm these terms and their use. For the terms to be used advantageously, it is necessary

<...> durch grundgelehrter Kenner Urtheil, Ansehen und Beyspiel dergleichen wol erwogen, nach Gutbefinden erhalten und in Übung gebracht würde.

(UG §76)

As for the importation and adaptation of foreign terms, while there is no explicit reference to this in Leibniz, it involves, by definition, competences which cannot be imputed to the people, that anonymous entity which is indissociably linked to the very language that confers identity on it. Finally, with respect to the recovery and re-establishment of ancient and disused terms, Leibniz even recommends attention to the specificity of the diverse tasks in the selection of the collaborators:

<...> die wenigsten derer so an Verbesserung der Sprache arbeiten wolten, sich des Alt-Fränckischen und des ausser Teutschland in Norden und Westen <...> anzunehmen haben würden. Weil solches vor eine gewisse Art der Gelehrten und Liebhaber allein gehört.

(UG §34)

With regard to the *Glossarium*, too,

<...> Wenn nemlich Leute wie Schottel, Prasch oder Morhoff bey uns, oder wie Menage bey den Frantzosen, und eben dieser mit dem Ferrari bey den Welschen, Spelmann in England, Worm oder Verhel bei den Nordländern sich darüber machten.

(UG §41)

Finally, the compilation of the *Treasury of Languages* requires

<...> Leute <...>, so in der Natur der Dinge, sonderlich der Kräuter und Thiere, Feuer-Kunst (oder Chymi) Wiss-Kunst oder Mathematic und daran hangenden Bau-Künsten und andern Kunst-Wercken, Weberey und so ge nannten Manufacturen, Hanndel, Schiffarth, Berg- und Saltzwercks-Sachen, und was dergleichen mehr, erfahren.

(UG §52)

It has been shown, then, that if, in the *UG*, the German language is still conceived as a popular creation in its origin, obeying the natural processes of motivation which guarantee its openness and immediate relation to the real,<sup>29</sup> its perfecting is now seen as requiring the initiation of a series of artificial procedures which can only be realized by a collectively organized group of sages with diversified interests and competences.<sup>30</sup>

The new elements which now enter are not only the necessity of perfection in itself (which is already illuminating), but also the determination of the entity to which responsibility for the process should be given.

In fact, if the German language needs to be perfected it is because, on the one hand, the set of qualities with which it was initially endowed, as a popular creation, have revealed themselves to be insufficient in the face of the progress of knowledge and the demands of rigour imposed by the new sciences; and, on the other, because the sages – precisely those responsible for that progress – have abandoned and ignored it in favour of languages which are erudite but nonetheless dead, since they lack any connection with any popular language (cf. UG §9). It is thus now up to the sage, as the main interested party in the overcoming of these imperfections (cf. UG §10), to

put himself in the people's place in the labour of determination of the qualities of the language, developing and refining its potentialities and inserting new perfections. It is as if, after the language had emerged in its perfect state from the hands of the people, in its role as anonymous onomatourge, fully responsible for its origin, the people had come to lose its capacity for influence on and determination and control of its own work; since the people was in no way responsible either for the progressive inadequacy of language in the face of the new realities created by science, or for its adulteration (a phenomenon only explicable in terms of the political vicissitudes of the States),<sup>40</sup> it cannot now be asked to prolong its onomatourgic functions, to correct what emerged in perfection from its hands, or to introduce improvements which, in all truth, it does not feel to be necessary.

In parallel, the function of the sage was to be conceived differently by Leibniz. If in the *Dissertatio*, as has been seen, the sage's function was merely that of using his own native language, in whose qualities - although he had in no sense contributed to their determination - he would discover the underlying element of "reality" which guaranteed the clarity and the sense of his own discourse, it is now, according to the *UG*, his responsibility not only to preserve the virtues of his language, but actively to promote its perfection.<sup>41</sup> Now, to the extent that this perfection is conceived not only as the preservation of the original purity of the language (the recovery and re-establishment of ancient and obsolete terms), but also as the introduction of new terms (foreign words and neologisms), it can be argued that, through the figure of the sage as defined in the *UG*, Leibniz recovers, at least partially, for himself and for his peers, the onomatourgic role which, in both the *Dissertatio* and the *NE*, he had given over entirely to the anonymous people.

The figure in question is very special in its characteristics. Unlike Plato's onomatourge,<sup>42</sup> the sage of the *UG* does not work on the basis of the contemplation (as an intuition without linguistic mediation) of the reality or the objects to be named - that is, the specific mode of action also supposed to have been employed by the popular onomatourge. He has at his disposal, from the beginning, raw material which is already linguistic - natural language. It is then on the basis of natural language, the recovery of its past and the respect for its own rules and limits, that the sage can con-

struct "more language", and thus refine his conception of a new reality to whose discovery he has himself contributed. On the other hand, like Plato's onomatourge, the sage operates in a rational manner, with full knowledge and control of the variables in play,<sup>43</sup> and not in the unconscious, "instinctive" manner which characterized the onomaturgy of the ancient Germans.

These two onomaturgic figures, the sage and the anonymous people, do not, however, contradict each other, but, rather, are complementary. In fact, with the notion of a popular, unconscious, instinctive and anonymous onomaturgy, Leibniz frees the explanation of the origin of language from the intellectualist tendency and its aporeias.<sup>44</sup> On the other hand, with the notion of the onomaturgy of the sage, Leibniz safeguards the already linguistic nature of the knowledge of the real, and simultaneously, the rational character, not of language, but of its perfection; it is because the sage is able, by means of natural language, to construct new scientific realities that he can now forge, for those same realities, a more adequate and rigorous terminology.<sup>45</sup>

This complementarity is also expressed in the retrospective effect which the work of perfection carried out by the sage is held to exert on the intellectual development of his people. As Leibniz says in the very first lines of the important text which we have been analysing, since language is

\* <...> ein Spiegel des Verstandes, und dass die Vöcker, wenn sie den Verstand hoch schwingen, auch zugleich die Sprache wohl ausüben.

(UG §1)<sup>46</sup>

Since it is through the perfection of language, the authentic means of linkage between human minds,<sup>47</sup> that the level of understanding of the Nation can be raised, it follows that the action of the sage on language can contribute decisively to the intellectual development of his people.<sup>48</sup>

If it was through the definition of the figure of the popular onomatourge that the subsequent influence of Leibniz's linguistic thought was most pronounced,<sup>49</sup> it is, however, in the figure of the enlightened onomatourge of the *UG* that there lies hidden the latent presence of the profound intention which underlies the Leibnizian project for the construction of a universal language, and of the role which Leibniz reserves for himself as its "logo-

thete" and onomaturgic creator.

Chapter 3

A Posteriori Projects

Omnia <in oratione> resolvi possunt in Nomen substantivum  
Ens seu Res, copulam seu verbum substantivum *est*, nomina ad-  
jectiva, et particulas formales.

Leibniz (C 289)

### 3.1 Language Analysis

#### Semantic, Grammatical and Logical Analysis

It was in 1678 that the project of the *a posteriori* construction of a universal language, which Leibniz almost always calls *lingua rationalis*,<sup>1</sup> appeared for the first time in his work.<sup>2</sup> It is a complex project, imprecisely formulated as such, and involving at least three distinct levels.

On a *first level*, Leibniz proposes the reduction of the diversity and heterogeneity of the elements that constitute human language to those elements which are essential to the expression of thought. This goal, merely announced in the fragment of April 1678,<sup>3</sup> is specified in greater detail in the *Analysis linguarum* of September of the same year, a text whose central objective, as we shall see, is the determination of the rules of analysis to which natural languages should be subjected.

Leibniz begins by considering the advantages deriving from the replacement of the analysis of thoughts by a more sensory analysis of characters, which, by making the analysis of thoughts sensorial, permits its orientation, as it were, by a mechanical thread.<sup>4</sup> The analysis of characters is then defined as the substitution of characters by equivalent characters:

Analysis autem characterum fit, cum characteribus quibusdam substituimus alios characteres, qui prioribus usu aequipollent.

(C 351)

However, this concept of the analysis of characters on the basis of the principle of substitution or equivalence - which is of such crucial importance in Leibniz's logic and, as he stresses in this very text, constitutes the foundation of all sciences based on demonstrations -<sup>5</sup> is here employed in a subsidiary function. As will be seen, its application to the character systems of human language is merely propaedeutic to the authentic analysis (by decomposition) to which Leibniz intends to subject them.

From the semantic viewpoint, Leibniz recognizes the existence of two kinds of components in human languages: those whose meaning can be obtained through the comprehension of their minimal elements, and those whose meaning is derived from usage and which are therefore not reducible to that type of

analysis. To the first group belong periods (*periodi*), utterances (*enunciations*), constructions (*constructiones*), and those words (*voces*) which "<...> scilicet simplices primitivae non sunt, nec novam significationem ab origine abeuntem ascivere" (C 353). To the second group belong those elements which Leibniz calls solemn formulae (*formulae solennes*), proverbs (*proverbia*), phrases (*phrases*; i.e. idiomatic phrases), and those words which are "simple primitive" or whose meaning has become estranged from their original sense.<sup>6</sup> As Leibniz recognizes, human language includes mobile, ambiguous elements (those which make up the second group), whose meaning cannot be obtained by the simple comprehension of their constitutive elements as in the case of proverbs (cf. C 352; VE 4.812). But if it is not through analysis conceived as decomposition that the meaning of these expressions can be obtained, they may, nonetheless, be analysed through the comprehension of their meaning as a whole (if analysis is now understood as the replacement of an expression, in its wholeness, by another whose semantic equivalence can only be established through the "usus"). Thus Leibniz says: "<...> *formulae integrae* sunt, quae non tam pro vi orationum ex quibus componuntur, quam usus quem populus formulae proprium fecit" (C 352-353; VE 4.812).

In relation to those elements which may be considered recalcitrant to any resolution or decomposition into minimal elements capable of providing a genetic (etymological) explanation of their meaning,<sup>7</sup> Leibniz suggests, then, that they should be replaced by equivalent words or expressions which can be analysed through decomposition. In fact, as Leibniz puts it (in somewhat paradoxical terms): "Resolvendae ergo voces, phrases, proverbia, formulae, quaecumque scilicet resolutionem suam non accipiunt ex partibus ex quibus componuntur" (C 353; VE 4.812); that is, those words which cannot be subjected to analysis (in the sense of the vertical decomposition of the linguistic whole into its original elements) should be subjected to analysis in the sense of the horizontal substitution of a word or expression by others of equivalent meaning. It is a question, then, of reducing the elements of the second group to those of the first, by finding, for all those expressions whose meaning is unstable and local because it is established by usage alone and thus cannot be "etymologically" grounded, equivalent substitutes which can be subjected to a combinatory logic of decomposition and recomposition:



Quoniam vero periodi (qui scilicet formulae solennes non sunt) enuntiationes (quae scilicet proverbia non sunt), constructiones (quae scilicet phrases non sunt) voces (quae scilicet simplices primitivae non sunt, nec novam significationem ab origine abeuntem ascrivere) intelliguntur, intellectis partibus ex quibus componuntur, hinc sufficit analysin haberi vocum primariarum quae scilicet significationem non omnino a sua Etymologia accipiunt, phrasium, proverbiorum, formularum. Caetera unusquisque iudicio praeditus ex his ducere potest.

(C 353; VE 4.812-813)

Once this reduction has been carried out, analysis by simple substitution ceases to be necessary. Its propaedeutic function is exhausted, or, rather, from now on, the whole process of character substitution becomes no longer a paraphrase, but a resolution of the complex elements of discourse into their most basic components, that is an "etymological" explanation.

The following diagram may be useful to illustrate the processes of language analysis which Leibniz proposes in this text:

ANALYSIS BY DECOMPOSITION		ANALYSIS BY SUBSTITUTION	
Linguistic elements whose meaning depends on the meaning of their elements		Linguistic elements whose meaning depends on usage	
Periods	<-----	-----	Solemn formulae
Utterances	<-----	-----	Proverbs
Constructions	<-----	-----	(idiomatic) phrases
Non-simple primitive words	<-----	-----	Simple primitive words
Words used in their original sense	<-----	-----	Words used in a non-original sense

In this way the semantic stabilization of language is carried out, in order to permit the subjection of the totality of its constitutive elements to a logical uniform treatment.

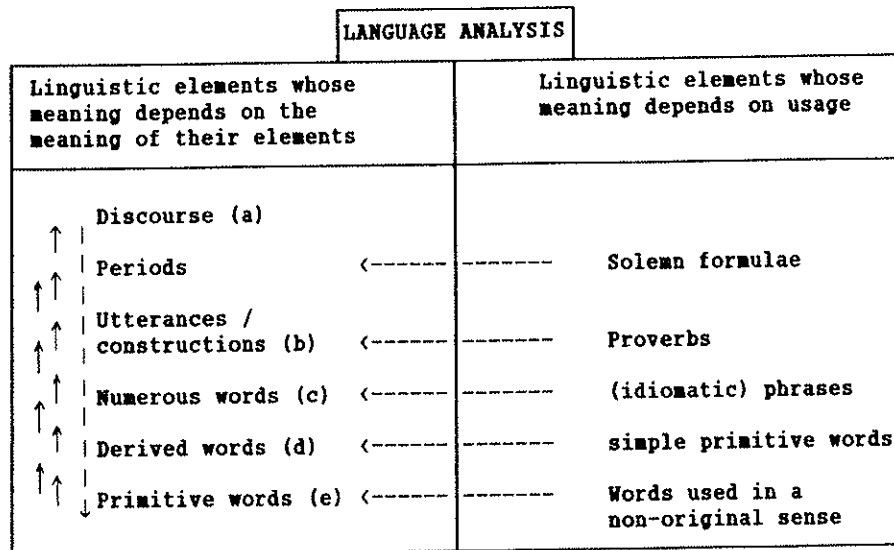
In a second moment (to which the final part of this text corresponds), Leibniz shows the necessity of extending language analysis to the grammati-

cal level, that is, to the level of the syntactic articulation of the elements which have been identified through semantic analysis. As he puts it:

Deinde subjiciendus est modus ex his formandi vel componendi, ex vocibus primis derivatas, ex pluribus vocibus constructiones vel enuntiationes, ex his periodos, ex periodis sermonem.  
(C 363; VE 4.813)

Once the semantic elements which make up human language have been subjected in their totality to a uniform logical procedure of resolution of the complex into the simple, it then becomes necessary to formulate rules which will permit syntactic articulation within this set of elements, especially the ascending recomposition of the complex elements on the basis of the most simple.

If we return to our illustrative diagram, it may now be reformulated as follows:



Key: <--- semantic analysis (by substitution)  
           | semantic analysis (by decomposition)  
           ↑ Process of syntactic recomposition, which can only be carried out within the group of linguistic elements which permit semantic analysis by decomposition.

- (a) Category absent from the previous diagram.
- (b) Levels now identified with each other, but which, in the previous diagram, appeared as different levels.
- (c) Having now identified utterances with constructions (b), Leibniz felt the necessity of introducing this new level which, ultimately, corresponds exactly to that of constructions.
- (d) This new level of *derived* words is introduced to clarify the sense previously attributed to *non-simple primitive words* (thus confirming Couturat's interpretation. Cf. n. 6 above.).
- (e) One must distinguish between *simple primitive words*, which, in accordance with the observation made in (d), are simple words (that is, non derived), and *primitive words*, a term which, in our opinion, can only be interpreted as meaning those used in their original sense.

Note that the confusion to which this terminological proximity can easily lead may possibly explain the interpretive difficulty manifested by Couturat (1901: 64) when, inverting the logic of the text, he argues that, for Leibniz, it is the elements of discourse which cannot be decomposed into more simple terms which should be analysed through equivalence. For this reason, it may be - that is, because he fails to see that Leibniz's objective was the reduction of those elements which cannot be analysed by decomposition to elements which can be analysed by that method - Couturat does not establish any articulation between the first part of text (concerning the semantic analysis of language) and the second (concerning the grammatical analysis of language);<sup>9</sup> since he does not show how the entire first part aims to identify the elements whose analysis (by decomposition) permits the discovery of the most basic semantic elements of discourse, Couturat is not, in fact, in a position to understand that, in the second part of the text, Leibniz's objective is to establish the rules of recomposition which will permit the progressive syntactic articulation of the semantic elements identified in the first part.<sup>9</sup>

The establishment of these rules of syntactic recomposition can, according to Leibniz, only derive from a grammatical analysis which would rigorously determine the specific sense of each type of articulation, each structure and each grammatical category: "<...> haec est analysis grammatica, qua vis et proprietates omnium quae *generalia* sunt in lingua intelligitur" (C 353; VE 4.813; our emphasis). In this way, too, anomalies are registered, and the diverse senses of inflexion and particles are distinguished, in such a way as to obtain, for every *general* element of human language, a clear and precise sense (Cf. C 353).

Leibniz does not, in this text, reach the point of establishing these rules with precision. However, he stresses the necessity of attributing a constant meaning to inflexions and particles; but for his purpose, they have to be analysed, that is, decomposed into their most simple elements (which will permit the identification of their diverse senses), while some of them have to be discarded.<sup>10</sup>

This grammatical analysis is not, however, sufficient, in Leibniz's view, for the objective of explicating the totality of modes of substitution and derivation existing among linguistic elements. In fact, only logical analysis, showing "<...> modus plures grammaticas substitutiones inter se invicem conjungendi" (C 353; VE 4.813), can make it possible to demonstrate "<...> quomodo propositiones in propositionum locum substitui possunt, licet not immediate ex alia per grammaticam substitutionem oriatur" (C 353).

### 3.2 Rational Grammar:

#### Comparative and Logical-Linguistic Methods

It is this grammatical analysis, which will here only be described in outline, along with the subsequent logical analysis which complements it,<sup>11</sup> that underlies the construction of the *Rational Grammar* envisaged by the *second level* of the Leibnizian project for the *a posteriori* construction of a *lingua rationalis*.

If the first and principal end of the Leibnizian project for the *a priori* construction of a universal language was the determination of the system of characteristic signs which were to permit the construction of the lexicon of that language,<sup>12</sup> the *a posteriori* project was, according to Leibniz, to be initiated with the determination of the grammar of the universal language to be constructed.<sup>13</sup> As Leibniz says in the *Lingua Rationalis*:

Absolutis jam generalibus seu grammatica accedendum ad voces seu Nomenclatorem, et propositiones seu veritates.

(GP 7.29; VE 4.796)

For the establishment of this Rational Grammar,<sup>14</sup> two principal solutions or methods may be used. The first would be to start out on the basis

of the empirical and comparative study of the grammars of the various natural languages. Through the simplification and reduction of their differences, it would be possible to discover and classify the totality of logical relations which, through the mediation of the various languages, human beings customarily establish; in this way the Rational Grammar would be determined, as a regular and universal system of all possible conceptual relations, of which each individual language would be a part.

This is the direction in which Leibniz is tending when he writes in the *Nouveaux Essais*: "<...> celui qui écrirait une Grammaire Universelle ferait bien de passer de l'essence des langues à leur existence et de comparer les Grammaires de plusieurs langues" (GP 5.280; A 6.6.301-302).

The day will come, he further writes, when

On enregistrera avec le tems et mettra en Dictionnaires et en Grammaires toutes les langues de l'univers, et on les comparera entre elles; ce qui aura des usages très grands tant pour la connoissance des choses, puisque les noms souvent repondent à leurs propriétés (comme l'on voit par les denominations des Plantes chez de différens peuples) que pour la connoissance de notre esprit, et de la merveilleuse variété de ses opérations.

(GP 5.317; A 6.6.336-337)

However, precisely because human languages permit the knowledge of our mind and the marvellous variety of its operations, that is, because "<...> les langues sont le meilleur miroir de l'esprit humain, et qu'une analyse exacte de la signification des mots ferait mieux connoître que toute autre chose, les opérations de l'entendement" (GP 5.313; A 6.6.333),<sup>10</sup> another solution, which is not only quicker but also even more correct and effective, becomes possible. This consists, not of the empirical comparison of the grammars of the various languages in order to establish then, inductively, the general rules which they all obey, but of the discovery, within one particular language, of the profound and necessary reasons underlying the general structure which *should* characterize this particular language as much as any other.

As will be shown, it is this second route, perhaps less linguistic and more logical, which Leibniz privileges in the context of his research towards the constitution of a rational grammar. This does not, however, mean that he was not also interested in the inverse line of approach (here, as

almost always, Leibniz reveals the tendency of his thought to advance through dispersal, or on several fronts at once); he certainly did not neglect the comparative study of the various natural languages and their grammars. On the contrary, through his profound and continuous etymological and philosophical investigations,<sup>16</sup> Leibniz made a decisive, even pioneering, contribution to the synchronic and diachronic study of the various human languages, of their regional particularities (as in the case of German), their internal historicity and their structural similarities.<sup>17</sup>

### 3.3 Latin as the Basic Language for the Logical Description of the Structure of the Rational Grammar

It was, then, on the basis of the notion, generally accepted in the seventeenth century, of a logico-grammatical parallelism,<sup>18</sup> as reflected so clearly in the passages of the *Nouveaux Essais* cited above, that Leibniz developed his research towards the constitution of a *grammatica rationalis*; if language is not a purely cultural phenomenon, but is, rather, essentially a reflection of the universal properties of the human mind, then not only should there exist a common logical structure underlying the syntactic forms of the various languages, but it should be also be possible to locate that structure in each individual language, beyond the redundancies, anomalies and specific determinations of the latter.<sup>19</sup>

The first difficulty lay in the choice of the individual language which was to serve as the basis for the logical description of the linguistic structure which the Rational Grammar is intended to offer. Leibniz appears to have hesitated between an uninflected language like French,<sup>20</sup> on the one hand, and a synthetic language like Latin, on the other; but faithful to the tradition of the grammarians who saw in Latin (as a dead language, with stabilized rules) the canonic example of grammaticality,<sup>21</sup> in the end he opted for the latter, although the reductions and simplifications to which he was to subject its grammatical categories and structures tended to bring it closer to an analytical language like French.<sup>22</sup>

3.4 Rational or Philosophical Grammar, General Grammar  
of Languages, and Regular Latin Grammar

Leibniz had already expressed the view (in the *Analysis linguarum* of 1678) that the linguistic analysis which he presents in that text, while in principle applicable to any language, would be most advantageously applied to Latin, since the latter is the dominant language of the sciences and is therefore known by most scholars.<sup>23</sup>

It is, however, in the fragment *Lingua Rationalis* (1680-1685) that the question is most directly confronted:

Primum id agendum est, ut ostendatur, quomodo ex aliis linguis in hanc <Rational Language> transferri possit oratio. In hunc usum condenda erit *Grammatica linguarum generalis*, et speciatim Latina. Nam cum Latina sit hodie lingua scientiarum in Europa, sufficit ex Latina lingua aliquid in Linguam rationalem transferri posse.  
(GP 7.28; VE 4.795, our emphasis)<sup>24</sup>

that is, in order to construct the rational language into which all others should be translatable, one must begin by establishing a *General Grammar of Languages*. Now, since Latin was, of all languages, that which was, in the period, the most universal, it was on the basis of Latin that such a grammar could most conveniently be established. It seems to have been, then, merely for reasons of economy that Leibniz decided in favour of Latin as the intermediate language between the Rational Language to be constructed and the diversity of existing vernacular tongues (it would be sufficient to translate from Latin into the rational language).

In anticipation of the Rational Grammar, Leibniz proposes, then, to eliminate all the irregularities, exceptions and special cases of Latin, constituting a grammar that would be more universal than that of ordinary Latin, to the extent that it would be more regular and free from anomalies.

This *Regular Latin Grammar* is, however, as Leibniz says, only a part of the general grammar, to the same extent as any regular grammar of any other ordinary language<sup>25</sup> might be; this is for the basic reason that, as Leibniz says. "<...> omnes omnium linguarum Grammaticae regulares sunt tantum partes, speciminave Grammaticae philosophicae" (GP 7.28; VE 4.795).

We are, then, in the presence, not only of the explicit affirmation of the existence of a deep universal grammatical structure underlying the grammars of the various natural languages – what, in this text, Leibniz calls the *Philosophical Grammar* –<sup>26</sup> but also of the definition of a series of methodological degrees or stages for a gradual approach to that structure: on the most superficial level (which, however, is not as superficial as that of the grammars of the vernacular languages, with their irregularities and anomalies), the *Regular Latin Grammar*; on an intermediate level, the *General Grammar of Languages*, conceived as a set of grammatical invariables common to the various languages; and finally, on the deepest level, the *Philosophical or Rational Grammar*. It must be noted that the General Grammar of Languages is only distinguishable from the Philosophical or Rational Grammar (with which it should ultimately coincide) to the extent that it supposes a strategy involving an inductive approach, while, on the contrary, the Rational or Philosophical Grammar, as a necessary expression of the fundamental thought and linguistic structure from which all possible types of syntax would derive, emerges as characterized by a necessity which no induction could justify.<sup>27</sup>

We have here identified an aspect of Leibniz's linguistic thought which has been considered to be extremely close to certain contemporary intuitions, notably those of Chomsky. In fact, the Leibnizian distinction between the grammatical structures of ordinary languages and those described for the Rational Grammar corresponds fully to the Chomskyan distinction between surface and deep structure. Furthermore, Leibniz would have had no difficulty in accepting that, if the forms of logical reasoning are innate, so are the linguistic structures.<sup>28</sup> In his turn, as has already been pointed out, Chomsky (1966: 68ff.) fails to recognize – no doubt owing to deficient information – the privileged position of Leibniz's theories in the configuration of the linguistic thought of modernity from which he aims historically to derive his own research. His attention is entirely concentrated on the Cartesianism of the Port-Royal grammar, in which he finds a clear formulation of the distinction between deep and surface structures, together with a definition of the research task of determining the principles and regularities ("les raisons de ce qui est comun a toutes les langues") which would explain the diversity of syntactic forms of the different languages.<sup>29</sup>



3.5 Reduction of Grammatical Categories  
and Simplification of Syntactic Structures.  
Particles

We have now reached a *third level* of Leibniz's project for the *a posteriori* construction of a *lingua rationalis*, on which, as a means to the establishment of a Rational Grammar, as implied by the second level, he subjects the Latin language to the rules of grammatical and logical analysis evolved, albeit incompletely, on the first level, thus constituting a simplified, regular version of Latin syntax.<sup>30</sup>

In the following table are indicated the specific *reduction of grammatical categories* proposed by Leibniz, and some of their varied and multiple textual occurrences.

Reduction of grammatical categories	
Grammatical categories subject to reduction	Occurrences in C
gender	243; 286
number	277; 281
adjectival inflexions	288; 290
verbal conjugations	282; 286; 288; 290; 353
verbal tense	281; 282; 289; 353
verbal person	281; 290; 353
declension	281; 286-288; 290; 353
├─ with the nominative	282
├─ with the genitive	285
└─ with particles	35; 283; 288

From the brief presentation of these elements, it may be concluded that, if Leibniz has no hesitation in reducing gender, number, adjectival inflexion and verbal conjugation, tense and person,<sup>31</sup> on the other hand, in relation

to declension he oscillates between keeping just one<sup>32</sup> and getting rid of them altogether (in which case the function of inflexion would be attributed to particles, which would precede the noun, always expressed in the nominative).<sup>33</sup> The last-named, more analytic solution having been chosen, the major remaining difficulty lay in how to substitute the genitive, which Leibniz at times argued should be kept after all.<sup>34</sup> Given that Leibniz believed it contained the most indirect relation capable of expressing the various types of oblique qualifications,<sup>35</sup> its elimination would imply the necessity of finding, for each of those oblique qualification a predicative form of substitution - as in the famous case presented by Leibniz in the *Grammaticae cogitationes* (C 287; VE 2.349) of "Ensis Evandri" which would have to analysed as: "Ensis quem habet Evander", or, preferably: "Ensis est supellex, quatenus Evander est dominus".<sup>36</sup>

The difficulty lies precisely at this point, in the attempt to reduce to the form *S est P* judgements of relationship which are, in themselves, irreducible to the logic of inclusion which, privileged by Leibniz, underlies the nature of the kind of attributive judgement to which he aims to reduce all utterances.

In fact, besides the abovementioned reduction of grammatical categories, Leibniz also proposes a *simplification of syntactic structures*. Once the gender and inflexion of adjectives are reduced, any adjective accompanied by the word *ens* or *res* becomes equivalent to a noun, since it is only the idea of substance, implied in any noun, that is not contained in the adjective.<sup>37</sup> Similarly, all verbs can be reduced to the verb *esse*, provided they are determined by the relevant adjectives.<sup>38</sup> As for adverbs, they are to verbs what adjectives are to nouns, that is, their function is to qualify verbs.<sup>39</sup>

It is thus that "Omnia in Oratione resolvi possunt in Nomen substantivum *Ens* seu *Res*, copulam seu verbum substantivum *est*, nomina adjectiva, et particulas formales" (C 289; VE 2.367), that is, everything can be reduced to the noun, copula and adjectives (expressing the specific qualities of the noun) which constitute the "*material*" of discourse, and to the particles (in which category Leibniz includes prepositions, conjunctions and adverbs)<sup>40</sup> which, by establishing the articulations between the nouns, the verb and the adjectives, constitute its "*form*":

Vocabula sunt Voces aut particulae. Voces constituunt materiam,  
particulae formam orationis.

(C 288; VE 2.353)

This final reduction may be expressed schematically in the following form:

Simplification of syntactic structures

Material	Form
names - nouns	particles - prepositions
- pronouns	- conjunctions
- adjectives	- adverbs
verbs - to be	

Once this has been carried out, it is the particles, as authentic elements of combination which establish the relation between the remaining components of the sentence, that Leibniz goes on to endow with major importance and to consider with particular attention.<sup>41</sup>

The objective cannot here be reduction (to reduce the number of particles would be an impoverishment of the number of relations which, through their mediation, human beings are able to establish). On the contrary, it is necessary to list, analyse, define and classify the largest possible number of this class of tiny words which exercise a vital determining influence on the entire form and structure of language,<sup>42</sup> and, further, to establish, through this analysis, the various significations which they are capable of expressing, through the mediation of what Leibniz calls "*substitutive paraphrases*".<sup>43</sup> Through the exposure of the various mental structures which the particles imply, it would be possible to specify their diverse meanings, and to identify, for each case, a simplified and uniform grammatical form.<sup>44</sup>

The logical scope of this investigation is undeniable, and is, besides, recognized by Leibniz when he defines *Rational grammar* as an *ars intelligendi*,<sup>45</sup> or argues that it should precede logical analysis.<sup>46</sup> This does not, however, mean that syntactic and logical rules are in any way reducible to each other, or that it is even possible to guarantee the formal correctness of thought by purely syntactic means.<sup>47</sup> On the contrary, as Leibniz says:

Linguae vulgares etsi plurimum prosint ad ratiocinandum, attamen innumeris aequivocationibus sunt obnoxiae, nec officium calculi facere possunt, nempe ut errores ratiocinationis ex ipsa vocabulorum formatione et constructione detegi possint.

(GP 7.205)

But it is precisely for this reason - because ordinary languages, however subject they may be to error, however incapable they may therefore be of becoming the instrument and medium of rigorous thinking, are nonetheless of the greatest utility for reasoning, and because it is possible to transmit, invent and promote science in all of them -<sup>48</sup> that it becomes necessary to propose, as a possible alternative to the root-and-branch *a priori* construction of an artificial universal language, exempt from those ambiguities and imperfections, it is precisely because of all this, we would say, that it becomes necessary another strategy, that is, to purify natural language, to rid it off the irregularities and ambiguities which traverse its surface, and lay bare that latent element in it which is the mirror-image of the human thought - to which, in the end, both of these tasks are bestowed.



**Chapter 4**

**A Priori Projects**

Nomen tamen quod in hac lingua imponetur, clavis erit eorum omnium quae de auro humanitus, id est ratione atque ordine sciri possunt, cum ex eo etiam illud appariturum sit, quatenus experimenta de eo cum ratione institui debeant.

Leibniz (GP 7.13)

4.1 The Concept of the *characteristica universalis*:  
Ambiguities

It is for the project of the *a priori* construction of a universal philosophical language that the terminological and textual difficulties which we have referred to, in the context of the overall project for the constitution of a universal language, appear at their most acute. In fact, if for the project of purification and perfection of the German language, as well as for that of a Rational Grammar, it was still possible to present them by means of the analysis of a relatively small number of texts, in the case of the *characteristica universalis* that methodology is, to a large extent, no longer viable, owing not only to the far larger number of texts in question, but also to their markedly fragmented character (in fact, we are here dealing with an extremely heterogeneous corpus of fragments, circumstantial writings, brief references and letters).

These difficulties are augmented by two others. The first derives from the radically incomplete nature of Leibniz's work towards the construction of a Universal Characteristic, of which he scarcely offers even a single "specimina". Attention should be focussed on the contrast between the abundance of theoretical observations (which are, besides, directed more to the functions and objectives of the projected universal language than to its nature and the concrete forms of its construction) and the paucity of the examples and sketches offered, which are practically non-existent if we exclude the properly mathematical and logical studies. The second difficulty stems from the fact that the very designation "*characteristica universalis*" is, in Leibniz, ambiguous. In fact, he employs the term variously to signify, both the universal philosophical language whose construction was one of the constant themes of his life's work,<sup>1</sup> and the science "qui donne les paroles aux langues, les lettres aux paroles, les chiffres à l'Arithmétique, les notes à la Musique" (C 99),<sup>2</sup> that is, a kind of general theory of the sign, or semiology *avant la lettre*,<sup>3</sup> which was to underlie the *a priori* universal language. In other words, the term "characteristica" is used by Leibniz both to designate that "<...> Scientia Characteristica generali, cuius ope characteres apti ad Algebram, ad Musicam, imo et ad Logicam excogitari sunt aut excogitari possunt" (GM 4.460), and to signify what he himself at times conceives as being only one of its "corollaries" - the universal

language.<sup>4</sup>

It should also be added that, since the universal language cannot be reduced to the status of a simple corollary of that general science of characters – that is, it is not merely a system of characters but requires, simultaneously and in parallel, a system of ideas to which those characters are to give adequate expression – it becomes possible to use the designation "characteristic" (as does Couturat (1901), one of the most eminent commentators on this question) to signify, not the project of the *a priori* construction of a universal philosophical language in its totality, but simply one of its basic elements: the invention and adaption of a system of signs that would be adequate to the expression of primitive concepts and their relations, that is, precisely that component of the Universal Language which is dependent on that general science or "l'art de bien employer les notes dont on se sert" (GM 3.240).

The distinction is, for Couturat, so clear-cut that it justifies the existence, in that monumental work *La Logique de Leibniz*, of two separate chapters, one on the Universal Language and the other on the Characteristic (chapters 3 and 4, respectively). This terminological choice seems to us perfectly justifiable, given that, in the construction of any universal language (especially in Leibniz, since he aims to discover a non-arbitrary symbolic system), the determination of the sign-system which is to permit the constitution of its lexicon is an essential and decisive stage, crucial to the success or (as has invariably been the case) the failure of the new language system. If we have not adopted Couturat's distinction, it is because it does not in practice correspond to the most frequent signification of the term "Characteristic" in Leibniz, while not (perhaps for that reason) proving to be any more useful as an operative tool (on the contrary, Couturat frequently diverges from his own chosen terminology).<sup>5</sup>

We are dealing, then with a double ambiguity, deriving, in one case, from Leibniz's own terminological oscillations,<sup>6</sup> and, in the other, from the fact that, for the reasons we have specified, the term "Characteristic" can be used to designate only the signifying component of his projected *a priori* Universal Language. In the last analysis, this terminological ambiguity, present both in the criticism and in Leibniz's own work, reflects the architectonic complexity inherent to the vast Leibnizian project of constructing,



root and branch, a universal symbolic system, written and/or spoken, that would be capable of adequately expressing the entire (encyclopaedic) system of human knowledge.

Now, in contrast to the project of the purification and perfecting of German, or to that of the construction of a Rational Grammar, what is really in question in this project is the aspiration to construct a philosophical language that would be entirely independent of natural languages, that is, that would be radically artificial in its form in the sense in which, for instance, in his letter to Oldenburg (1675), Leibniz writes: "Haec Algebra, quam tanti facimus merito, generalis illius artificii non nisi pars est" (GP 7.10).<sup>7</sup> For this reason, we have decided to use the term *A priori Projects*, which we consider to be most suitable, since it stresses precisely what differentiates this project from the others that have been presented above.

However, this project for the construction of an *a priori* Universal Language, no less than the others, is expressed not through one unitary consistently pursued strategy, but, rather, through a multiplicity of approaches, many of which are merely outlined.

The diversity - in which attempts have been made to discover a certain development<sup>8</sup> - is, however, largely the effect of the different systems of notation which, as will be shown, Leibniz tries out or simply describes. The fact is that the determination of the system of characteristic signs that are to make up the lexicon of the projected universal language is a central aspect of this project; on it hang decision of major importance, given that for Leibniz the character is not purely an instrument of logic (beyond its operability, it should adequately represent the reality it signifies), and, therefore, the choice of character should also take account of the nature of the content to be represented.

If, however, the diversity of notations does not affect the internal unity of the project, this is because, in our view, it contains a common core of functions, aims and stages of construction, which provide orientation and grounding for that very diversity. Hence we consider it methodologically more correct to begin with a brief account of these common elements, as a preliminary to the analysis of the different systems of notation.

4.2 Methodological Regime of the *A Priori* Construction  
of a Universal Language

It is in *De Arte* that, for the first time, Leibniz defines the *methodological regime* which should govern the construction of an *a priori* universal language. In that context, the universal language appears as one of the possible applications of the *ars combinatoria*:

Ex his, quae de Arte complicatoria Scientiarum seu Logica inventiva disseruimus, <...> fluit velut Porisma seu usus XI: Scriptura Universalis, id est cuicumque legenti, cujuscunq[ue] linguae perito intelligibilis.

(GP 4.72)<sup>9</sup>

As such, then, it is to be initiated by means of the determination of the simple or primitive ideas into which all concepts can be resolved: "Nam Termini primi, ex quorum complexu omnes alii constituuntur, signentur notis, hae notae erunt quasi alphabetum" (GP 4.72-73). Once this alphabet has been constituted, it would then become possible to obtain, by combination, all the complex concepts and their respective symbolic representation. So, this text already contains an indication of the three fundamental stages of the *a priori* mode of construction of a universal language, which would, essentially, be reaffirmed in later formulations:<sup>10</sup> determination of primitive terms, constitution of the alphabet of human thoughts, and the regulated formation of complex terms.

It is in the *first stage* that Leibniz locates the semantic foundation of the universal language to be constructed. On this stage depends in fact the return of the symbolic system to the universe of intuition, and, as such, to the world which is to be spoken through the universal language. The first stage is thus the basis of the very possibility of constitution of a lexicon whose ordering would adequately mirror the relations between ideas and which would thus be equipped to signify (in the simplest form possible) the totality of human knowledge. Now, while in *De Arte* Leibniz presents a list of primitive terms (with that *naïveté* he was later to recognize as characterizing it),<sup>11</sup> it was to be in the definitive constitution of such a list (GP 4.70-71) that - as was inevitable - he would encounter the greatest difficulties.

Such a list, on the one hand, would imply that the frontier between primitive and composite terms should be clearly drawn, that is, that the former should be absolutely indivisible, so as to ensure that the latter would derive from them or could be reduced to them; on the other, it would have to be exhaustive, since, if not, the combination of its elements would fail to produce the totality of concepts necessary for the integral representation of the world which the Universal Language is intended to permit.

Leibniz never compiled this definitive list; he also rejected his predecessors' proposals in this area,<sup>12</sup> seeing them as arbitrary and as deriving from analytic insufficiencies. His various attempts at drawing up the complete inventory of primitive ideas<sup>13</sup> demonstrate the crucial importance which he attributed to this initial stage.

The main difficulty in the rational determination of simple concepts derives from the impossibility of conceiving them in themselves, that is, without employing the definitions which would convert them into complex concepts - the knowledge of them would therefore, as Leibniz repeatedly affirms, have to be purely intuitive, thus constituting in itself its own "mark" or "note".<sup>14</sup> Now, as we have seen, intuitive thought, as a fundamental postulate of all symbolism (given its status as the gnoseological correlatum of the simple ideas), is finally perceived as the never-reached limit of that very symbolism. Leibniz is even led to affirm, at one point, that the only truly primitive idea is that of God:

Et quidem solius rei quae per se concipitur talis esse potest conceptus, nempe Substantiae summae hoc est Dei. Nullos tamen conceptus derivativos possumus habere, nisi ope conceptus primitivi, ita ut revera nihil sit in rebus nisi per Dei influxum, et nihil cogitur in mente nisi per Dei ideam, etsi neque quomodo rerum naturae ex Deo, neque quomodo rerum ideae ex idea Dei profluant satis distincte agnoscamus, in quo consisteret analysis ultima seu adaequata cognitio omnium rerum per suam causam.

(C 513 = VE 4.871)<sup>15</sup>

It is also in this sense that, taking for his model the binary arithmetic on the basis of which he was even to formulate the aim of constructing a new Characteristic, "secrète et sacrée", which "donnera le commencement de l'analyse des idées",<sup>16</sup> Leibniz puts forward the hypothesis of reducing the sum of simple terms to the concepts of God and Nothingness. As he argues in

*De Organo sive Arte Magna cogitandi*, "<f>ieri potest, ut non nisi unicum sit quod per se concipitur, nimirum DEUS ipse, et praeterea nihilum seu privatio" (C 430), that is, if the only simple ideas were those of God and Nothingness, then, their adequate characteristic signs would be the 1 and 0 (zero) of binary arithmetic.<sup>17</sup> However, even in this case, Leibniz says (in the same fragment):

Quoniam verò non est in potestate nostra perfectè a priori demonstrare rerum possibilitatem, id est resolvere eas usque in DEUM et nihilum, sufficiet nobis ingentem earum multitudinem revocare ad paucas quasdam, quarum possibilitas vel supponi ac postulari, vel experimento probari potest.

(C 431)

At all events, whether primitive ideas are reducible to the idea of God alone, or to the two ideas of God and Nothingness, or, on the contrary, from a more numerous series, like those presented by Leibniz in other texts, the position he finally adopts is always pragmatic. As in the reply to Descartes, if it is true that the universal language is dependent on true philosophy, it does not depend on the perfection of the latter,

"<...> cette language peut estre établie, quoyque la philosophie ne soit pas parfaite: et à mesme que la science des hommes croistra, cette langue croistra aussi.

(C 28)

In other words, the universal language *can* and *should be* constructed in parallel with the Encyclopaedia.<sup>18</sup>

Likewise, the impossibility of establishing the definitive list of primitive ideas or of bringing their analysis down to their absolute simplicity, the project of the *a priori* construction of a universal language can be undertaken together and in parallel with that analysis; in other words, if, at present, we cannot gain access to the "termes absolument primitifs", we can start out from the "termes primitifs à notre égard",<sup>19</sup> that is, from notions provisionally assumed to be primitive, whose possibility can be either postulated or proved by experience.

With regard to the constitution of the alphabet of human thoughts through the attribution of signs to the primitive ideas, and in addition to the difficulties deriving from the fact that, as we have seen, Leibniz never

drew up the definitive list of primitive ideas, attention should be given to the problems inherent to the choice of the system of characteristic signs which is to represent those ideas. Inevitably, almost all Leibniz's examples and indications with respect to the system of characteristic signs to be adopted concern complex characters. The only exception is, precisely, the hypothesis of the constitution of a Characteristic on the basis of binary arithmetic, in which the primitive terms (God and Nothingness) would be represented by 1 and 0.

It is, then, the regulated formulation of the complex terms and their corresponding characters that becomes the centre of attention with regard to the entire problematic of the choice of the sign-system which is to represent both the primitive terms and the composite terms deriving from them. Starting out from a broad conception of the sign,<sup>20</sup> Leibniz attempts to lay down the criteria which should govern its choice and construction, with the aim in view of making it possible for the Universal Language to fulfil all the ambitious hopes deposited in it – as a clear and exact expression of all forms of knowledge, an art of invention, an arbiter of controversies and a means of universal communication. Now, the possibility of realizing this programme derives, in the last instance, from two basic properties which are to characterize the signs chosen, and which we will call *Operativity* and *Representativity*. We shall see how it is in relation to the representativity of the sign that the greatest difficulties arise, since, as far as operationality is concerned, Leibniz simply had to try to follow the secret of mathematical symbolism.

#### 4.3 Operativity of the Sign

In a famous letter of May 1678 (that is, written after the discovery of the infinitesimal calculus), Leibniz replies to an objection advanced by Tschirnhaus, who criticises, precisely, both the usefulness of the new type of calculus and the new notations that Leibniz had created for it. Largely attributing the success of his discovery precisely to his invention of an adequate symbolism, Leibniz points out the advantage of his system of notation<sup>21</sup> and gives an extremely clear account of the properties which a system of well-constructed signs should possess.

As Leibniz says, signs should permit "<...> omnes cogitationes nostrae velut *pingi et figi et contrahi* atque ordinari" (GM 4.460; our emphasis), since

"<...> unde quoniam resolutio conceptus resolutioni characteris ad amussim respondet, characteres tantum aspecti nobis adaequatas notitias sponte et sine labore ingerent in mentem.

(GM 4.461)

In this passage, the two levels of requirements referred to above are clearly specified; in fact, *on a first, operational level*, each character should contain a maximum of meaning in a condensed form, permitting the *abbreviation* of the work of thinking to the extent that, as Leibniz puts it, thoughts may be "*contrahi ut paucis*" (GM 4.461). The sign will thus bring about the proper *ordering* of ideas so that they could all be present to us: "<...> ordinari ut omnia in conspectu meditantibus habeantur" (G; 4.461).

We know that the simultaneous presence of ideas which the sign condenses and evokes is played out only on the plane of possibility, but it is precisely because we can substitute signs for the ideas signified, and because each sign maintains a regulated relation with all the others that, out of their interplay, there arises, within the formal artefact itself, the calculatory and heuristic potential; through the analysis of the characters, or, to use Leibniz's words, their "*substitutione ordinata continuata*" (C 352),<sup>22</sup> reasoning is reduced to a form of calculation analogous to arithmetical and algebraic calculation, and endowed with the rigour, infallibility and heuristic potential which characterize those calculative activities.

We are here face to face with the central theme of the role of symbolism as the "Ariadne's thread" of rational activity itself,<sup>23</sup> which, permitting the provisional forgetting of the content of utterances and of the intuitive sense of terms, can advantageously substitute reasoning by the correct manipulation of signs in accordance with fixed and pre-established rules.<sup>24</sup>

It should be noted that, if for Leibniz the sign has the essential mnemonic function of facilitating recollection,<sup>25</sup> it is no less the case that the correlative possibility of forgetting constitutes symbolism as not only the sensory support of rational activity but also its specific space of real-

ization.<sup>26</sup> In fact, to wish constantly to conceptualize the sense of signs is not only to retard, but even to impede the actual formal rigour of deduction;<sup>27</sup> only the surrender of the mind to the mechanism of symbolism creates the speed, guarantees the validity and intensifies the inventive and creative fecundity of the logical mechanisms themselves.<sup>28</sup> This is the meaning of the often-repeated Leibnizian metaphor of the *a priori* universal language as

"<...> genus humanum organi genus novum, plus multo Mentis potentiam aucturum, quam vitra optica oculos juverunt tantoque superius Microscopiis aut Telescopiis quanto praestantior est ratio, visu.  
(GP 7.187 = VE 4.673)

This is a set of instruments<sup>29</sup> which, as Dascal shows (1978: 210-212), are conceived not only as a means of quantitatively increasing human intellectual capacity, but also as a mode of operating a qualitative change. The role of the characters would be not merely to facilitate the realization of operations that could equally well be carried out without them, but also to extend, and therefore redefine, the natural limits of human reason; the characters would make it possible to realize certain operations which, without them, would be beyond our capacities, just as the telescope allows us to discover worlds which we could never reach without it.

#### 4.4 Representativity of the Sign and its Models

On the *second level*, that of the representativity of the sign, each character should be capable of representing the idea which it substitutes. As Leibniz says in his letter to Tschirnhaus cited above (GM 4.460), "pingi aliis ut doceantur", or else "figi nobis ne obliviscamur" (GM 4.461). It may be noted that, in both cases, one can say that the objective is that conveyed by the richer expression "to paint" ("pingi"); it is a question of determining a sign capable of evoking the signified idea in all its presence, for both the user and the receiver.

If, as we have seen, the operativity of the sign encloses the work of reason within the sign itself - thus guaranteeing its successful manipulation - its representativity may now be considered to return the sensory ma-

teriality of the sign to its founding ideality. It remains to be determined how Leibniz conceives the constitution of a sign that, going beyond itself, would make that which it signifies visible (that is, would *paint it*).

The difficulties that arise in the elucidation of this question, beyond those inherent to its very complexity, derive from the fact that, here once again, Leibniz did not evolve a homogeneous theory concerning the representativity which he wished to achieve for the system of characteristic signs of the *a priori* Universal Language.

Indeed, on the basis of the analysis of Leibniz's multiple and heterogeneous indications, we believe it possible to identify three principal modes in terms of which he intended to conceive that representativity. We shall call them *Figurative*, *Essentialist* and *Expressive* Representativity.

#### 4.4.1 Figurative Representativity

We term *figurative* that model of conceiving representativity which is present, for instance, in the *Nouveaux Essais* when Leibniz writes

Et on pourroit introduire un *Caractere Universel* fort populaire et meilleur que le leur <i.e. the Chinese>, si on employoit des petites figures à la place des mots, qui representassent les choses visibles par leur traits, et les invisibles par des visibles qui les accompagnent, y joignant des certaines marques additionelles, convenables pour faire entendre les flexions et les particules.

(NE 4.6.2; GP 5.379 = A 6.6.398)

What should be stressed in the first place is the fact that Leibniz here conceives representativity in its strongest sense, that is, as the spatial and imagetic reproduction of the most pregnant traits of signified reality. This is a procedure which Leibniz believes to be applicable to all kinds of reality (visible and invisible), while arguing that although invisible realities are, by definition, not immediately figurable, they could become so if riveted on to the "choses visibles qui les accompagnent"; in other words, visible things would be figured metonymically and invisible things metaphorically, or rather, allegorically, as Leibniz, in a letter to Bouvet, recog-



nizes to be the case with Egyptian hieroglyphics.<sup>30</sup>

It may also be noted that Leibniz also aims to guarantee the figuration of the relations between the figures when he suggests that they could be accompanied, as in Wilkins' system,<sup>31</sup> by small additional marks, or, alternatively, that, as is the case in certain popular almanacs, the figures could be interspersed with words of the natural language.<sup>32</sup> Leibniz fully recognizes the technical difficulties inherent to the use and diffusion of this type of writing. As he says:

Il est vray que l'art de dessiner n'estant point connu de tous, il s'ensuit qu'excepté les livres imprimés de cette façon (que tout le monde apprendroit bientôt à lire) tout le monde ne pourroit point s'en servir autrement que par une maniere d'imprimerie, c'est à dire ayant de figures gravées toutes prettes pour les imprimer sur du papier, et y ajoutant par après avec la plume les marques des flexions <et> des particules. Mais avec le temps tout le monde apprendroit le dessein dès la jeunesse, par n'être point privé de la commodité de ce *Caractere figuré*.

(NE 4.6.2; GP 5.379 = A 6.6.398-399)

Nonetheless, he stresses the educational, universal function of this "<...> *Caractere figuré, qui parleroit veritablement aux yeux*" (NE 4.6.2; GP 5. 379 = A 6.6.399).<sup>33</sup>

Curiously enough, this project, presented in detail in the *Nouveaux Essais*, appears as the belated resumption of Leibniz's first hypothesis of an *a priori* Universal Language - that of *De Arte* -<sup>34</sup> as well as being closely articulated with some of the studies which, he believed, should make up the *Encyclopaedia*.<sup>35</sup>

This is an extreme proposal which, obviously, would encounter insuperable difficulties mainly in the figuration of invisible realities.

#### 4.4.2 Essentialist Representativity

The recognition of the extreme difficulties that such a representativity would encounter, underlies, without doubt, another model of conceiving representativity, which we will here call *essentialist*. It is obvious that (ac-

ording to Leibniz) all representativity, if rigorously conceived, is essentialist to the extent that the sign represents, not a particular entity or concept as a subjectively determined product, but an essence, or "la possibilité de ce qu'on propose" (NE 3.3.15; GP 5.272; A 6.6.293).<sup>36</sup> By restricting the term "essentialist" to this model, we aim to emphasize its claim to represent directly, via the sign itself, its ideal *correlatum*. The model is clearly illustrated by the following passage:

<...> atque quae <res> pingi non possunt, qualia sunt intelligibilia, ea pinguntur tamen hieroglyphica quadem ratione sed eadem et philosophica. Quod fit, si non ut pictores, mystae aut Sinenses similitudines quasdam sectemur, sed rei ipsius ideam sequamur.  
(GM 5.216)

What is essential at this stage, then, is not the figural representation of particular traits of sensory reality as it immediately appears to our perception, but the representation of the thing itself, that is, of the essential basis from which those same particularities could be deduced. Only thus is it possible to ensure the presence of a fundamental property which Leibniz demands for the characters to be constructed - their autarky: "<...> tanto perfectiores esse characteres, quanto magis sunt αὐτοαρκεῖς, ita ut omnes consequentiae inde duci possint" (C 284; *Essais d'analyse grammaticale*). It is the intelligible itself which should now be immediately represented, given that its sensory particularities and properties may be determined through the analysis of the intelligible reality to be represented by the character.

Leaving aside the metaphysical problems underlying such a claim to direct designation of the essence (it would be necessary to determine it in real, and not just nominal terms, and, besides, to choose one of the multiple perspectives through which it can be expressed),<sup>37</sup> which, inevitably, imply supplementary difficulties for this theory of representativity, it is important to stress that, in our opinion, one may distinguish, in Leibniz's attempts to conceive the nature of the representativity in question, two different orientations.

(A) Genetic Representativity

The first, which we shall call *genetic*, aims to represent essence on the basis of its status as causal principle.

It is fundamentally around this idea that Leibniz pursues the project of constituting a Characteristic on the basis of binary arithmetic, since he finds in the latter an admirable similarity between its mode of generation of numbers and the relation of dependence of creatures towards God, their ultimate causal principle:

Car, d'après la dyadique, tous les nombres sont exprimés par les seuls caractères 0 et 1, par l'unité et 0; remarquable analogie de la création des choses sorties de Dieu et du néant.

(FNL 167)<sup>38</sup>

In spite of the extremely vague and imprecise nature of Leibniz's indications concerning the possibility of constituting a Characteristic on the basis of binary arithmetic (that is, building it on the abovementioned analogy), we believe it is legitimate to suppose that, just as in binary arithmetic "<...> in bimall (ex characteribus) omnia demonstrari possunt quae de numeris asseruntur" (C 284; *Essais d'analyse grammaticale*),<sup>39</sup> similarly, if it were possible to achieve a similar representativity for the Characteristic, in which the essence of each creature would correspond to its ordered place in the process of creation, then it would be equally possible to deduce from each character the totality of properties of the creature it represented, as a manifestation of its dependence on the first cause or absolute essence.

(B) Analytic Representativity

A second orientation, which we will call *analytic* - while also Pythagorean in inspiration -<sup>40</sup> aims that the character should represent less the genesis than the composition of the idea signified. The essence which the character should directly represent is now fundamentally conceived as the "key" ("clavis") or unifying principle of a multiplicity of properties, and no longer primarily as its generative principle.

In a letter to Oldenburg, in which Leibniz expounds the project that he designates by the name of *characteristica realis* this type of representativity is defined clearly:

Ipsi cujusque rei nomen clavis erit omnium quae de ea dici, cogitari, fieri cum ratione debeant <...>. Nomen tamen quod in hac lingua

imponetur, clavis erit eorum omnium quae de auro humanitus, id est ratione atque ordine sciri possunt, cum ex eo etiam illud appariturum sit, quatenam experimenta de eo cum ratione institui dedeant.  
(GP 7.13)

The sign thus acquires a status that is not only representative but also heuristic. In fact, the objective is here to discover a form of representation which would not only condense all the existing known elements of the signified reality, but also present them according to the law of its composition, so as to permit the future adequate knowledge of all its other elements.

The representativity of a complex character constituted in this way - that is, its capacity of evoking the idea signified - would therefore imply a process of analysis of the sign itself (it is for this reason that we refer to it as "analytic representativity") which would identify in it, both the constitutive elements of the idea represented and their law of combination. While recognizing chemical symbols<sup>41</sup> and Egyptian and Chinese hieroglyphics as example of the *characteristica realis*, Leibniz argues that it is not these but arithmetic and algebra that most closely correspond to the underlying model of representativity that is here in question:

Hieroglyphicae Aegyptiorum aut Chinensium et apud nos notae Chymicorum *characteristicae realis* exempla sunt, *facteor* <...>. At Arithmetica et Algebra inter mei instituti specimina recenseo, ut videas ejus quoque jam tum exempla haberi.  
(GP 7.12)

By representing the constitutive elements by prime numbers, which, like the former, are undecomposable, and by taking their product as an analogical representation of the combination of the elements, it would be possible, as Leibniz recognizes, in, for instance, the fragment *Lingua Generalis* (1678), via the decomposition of the characteristic number of a complex idea into its prime factors, to discover the characteristic numbers of each of the constituent elements of that idea:

Optima autem ratio contrahendi <Leibniz here refers to the expressions or composite characters of the *Lingua Generalis*> erit, ut res revocetur ad numeros inter se multiplicatos, ponendo elementa alicujus characteris esse omnes ejus divisores posibles. Artificium hoc sane admirabile est, et probari possunt ejusmodi ratiocinationes per novenariam probam. Elementa simplicia possunt esse numeri primi seu indivisibiles.  
(C 277)<sup>42</sup>

However, with regard both to the identification of the elements and to the representation of their law of combination, this model does not provide a satisfactory solution. Indeed, the analysis of a complex character does not lead directly to its constituent elements, but, rather, leads to other characters (now "simple"), which represent them, so that the identification of those elements would remain dependent on the representativity of the ("simple") signs used to designate them. We may take the example of the complex character 15 which Leibniz uses to represent gold:

Verbi gratia quia <...> Aurum est metallum ponderosissimum hinc si sit <...> metalli numerus <...> *m* ut 3 <...> ponderosissimi verò numerus <...> *p* ut 5, erit numerus <...> auri seu solis *s*. idem quod *mp*, id est in hoc exemplo 3 , 5 seu 15.

(C 50; *Elementa Calculi*; April 1679)<sup>49</sup>

If the complex character would exhibit, through the formule  $3 \times 5$  to which it is equivalent, the composite nature of the idea signified, it would, however, remain dependent on the interpretation of the signs 3 (metal) and 5 (heaviest element), in order fully to fulfil its functions. Similarly, this form of symbolization finally makes it impossible to articulate the "key" principle of unification of the multiplicity of constituent elements, since, in all cases, translating it by a multiplication, it not only tends to standardize the various modes of unification of the elements of the ideas represented, but also reduces it to the status of a consequence or product of the elements themselves; the totality of the idea which the complex character aimed to represent appears, not as a true unit, but as a mere aggregation.

#### 4.4.3 Expressive Representativity

There is, finally, a third model of representativity, which we will call *expressive*, which aims to discover, neither the figuration of sensory particularities of the signified reality, nor the symbolization of the essential basis of those particularities - whether as their causal principle, or as "key" or principle of their unification - but, rather, the analogical and structural reproduction of the network of relations which constitutes the idea and its articulations. Leibniz's aim is here to symbolize the very network of relations which each idea establishes with all others, that is to

say, the articulated totality of their regular associations.

Clearly, if one uses the term rigorously, all representativity in Leibniz is expressive. Expression is the supreme instance of any type of relation, whether on the metaphysical or the cognitive level. It is in this sense that, in the celebrated letter to Arnauld (9 October 1687), one of the best expositions of the Leibnizian theory of expression, Leibniz writes:

L'expression est commune à toutes les formes, et c'est un genre dont la perception naturelle, le sentiment animal, et la connoissance intellectuelle sont des especes.

(GP 2.112)

and further on:

Or cette expression arrive par tout, parceque toutes les substances sympathisent avec toutes les autres et reçoivent quelque changement proportionnel, répondant au moindre changement qui arrive dans tout l'univers.

(GP 2.112)

Similarly, in *Quit sit idea* (1678), another of the most important fragments on this question, Leibniz writes:

<...> expressiones variae sunt; exempli causa modulus Machinae exprimit machinam ipsam, scenographica rei in plano delineatio exprimit solidum, oratio exprimit cogitationes et veritates; characteres exprimunt numeros, aequatio Algebraica exprimit circulum aliamve figuram.

(GP 7.263 = VE 3.454)

If, within the complex Leibnizian theory of the sign, instead of considering representativity as an instance of the relation of expression, on the contrary, we view the later as an instance of the former, this is because our aim is precisely to establish the closer proximity of this third type of representativity to the doctrine of expression, and, simultaneously, to stress the multiple distinctions which, within the very relation of representativity (itself, strictly speaking, always expressive), Leibniz subtly draws. We cannot, therefore, agree with Knecht (1981: 137ff.), who, stressing the expressive nature of the entire relation of representativity in Leibniz, tends to blur all differences which this relation implies, and which on the contrary, we have here tried, precisely, to emphasize. Filippo Costa (1950: esp. 123-124) occupies much the same ground; it may be said that both are victims of the supreme extension conferred by Leibniz's own system on the

concept of expression, which, since it designates the most ample relation of the system, does not permit an authentic conception of the multiple modes of expression which it includes.

If the representativity which we have called essentialist, took, as we have seen, arithmetic and algebra for its underlying model (binary arithmetic for genetic representativity and analysis into prime factors for analytic representativity), it is now geometry which provides the privileged model for the relation of expression.<sup>44</sup> In fact, geometry is characterized by the immediate establishment of an isomorphism between the idea represented, as an ideal structure, and its schematic figuration; this isomorphism implies a search, not for similarities, but, rather, as Leibniz puts it, for "<...> un rapport constant et réglé entre ce qui se peut dire de l'une et de l'autre" (GP 2.112). In contrast to the reproductive model of figurative representativity, in which, as we have seen, absolute primacy is given to the relation of similarity as the imitation of an original, in the case of expressive representativity that which expresses does not necessarily have to be similar (simile) to the thing expressed, provided that some kind of analogy can be discerned in their form of being,<sup>45</sup> "<...> comme une Ellipse exprime un cercle vu de travers, en sort qu'à chaque point du cercle il en reponde un de l'Ellipse et vice versa, suivant une certaine loy de rapport" (GI 282; letter to Foucher; 1686); that is, the relation of expression does not require similarity (although it does not exclude it either). It can even accept dissimilarity. Thus, for instance, in the *Essais de Théodicée*, Leibniz writes:

<...> un même cercle peut être représenté par une ellipse, par une parabole, et par une hyperbole, et même par un autre cercle et par une ligne droite, et par un point. Rien ne paroît se different, ny si *dissemblable*, que ces figures; et cependant il y a un rapport exact de chaque point à chaque point.

(GP 6.327; our emphasis)

In a word, what the relation of expression absolutely demands is a structural and analogical parallelism, "sufficit <...> constans quaedam sit lex relationum, qua singula in uno ad singula respondentia in alio referri possint" (C 15).<sup>46</sup>

(A) Diagrammatic Representativity

As early as *De Arte*, Leibniz seems to point towards such a project, even though he then conceives it, in a purely diagrammatic form when he writes:

Commodum autem erit notas quam maxime fieri naturales, v.g. pro uno punctum, pro numeris puncta, pro relationibus Entis ad Ens lineas, pro variatione angulorum aut Terminorum in lineis genera relationum.

(GP 4.73)

Each sign would, then, be, emptied of any autonomous signification or any immediate reference to the real universe, and reduced to a simple pole of convergence of a multiplicity of relations, which would be represented by various types of lines according to their characteristics. The same indication seems equally to be present in a brief passage of the fragment *Essais d'analyse grammaticale* (1683/84), where Leibniz says:

<...> liceret enim characterum partes variis lineolis connectere, quia simul in charta visuntur, cum soni evanescant, id ideo sonus prior ad posteriorem referri non queat, nisi aliquid in se habeat <...> respondens ei quod fuit in priore.

(C 285)

It should be noted that there is here a clear recognition of the value of writing in contrast to speech. As already noted, Leibniz's position in relation to the value of writing *vis-à-vis* speech is marked by certain ambiguities. On the one hand, on the level of natural languages, Leibniz has to recognize that the original linguistic activity is primarily phonetic and not graphic, that is, that phylogenetic and epigenetic priority must obviously be accorded to speech over writing (the theory of onomatopoeia, conceived as a relation between things and the sounds and movements of the vocal organs (cf. NE 3.2.1), is a most illuminative example of this); on the other hand, when his aim is to overcome the ambiguities that characterize human language, whether by reforming it internally, or by attempting the root-and-branch construction of a scientific and philosophical language, Leibniz has recourse to writing - in the first case, stressing its role as a means of fixing intellectual content, illuminating the most difficult operations and verifying and recapitulating the various steps of proof, and, in the second case, clearly committing himself to the constitution of an ideographic language which, as he puts it in a letter to Gallois; 1677 (GP 7.21), would paint not words but thoughts. Conceiving speech and writing as distinct and inde-

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pendent modes of organization of the significative content (for instance, in the most extensive and complete fragment of the *Encyclopaedia*, which presumably dates from 1702-04, he defines speech as the attaching of a sign to thoughts, through the mediation of an articulated sound, and offers a parallel definition of writing as doing the same through the mediation of permanent traces, under a support, *without it being necessary*, as he puts it, *to link those traces to a sound* (cf. C 497)). Leibniz not only rejects the classic privileges of speech as being closer to thought and to its temporal intimacy, as the chosen space of the Logos itself, but, conversely, emphasizes and defends what is, necessarily, the eminently written characters of scientific language. And if Leibniz at times tends towards the idea of a speakable *a priori* universal language, as, for instance, in the fragment *Lingua Generalis* (C 277-278), it should be noted not only that this position is not uniform (on occasions he seems to give no importance to this question (cf. GP 7.12-13, .22 and .26), but also that, if the universal language is to be spoken, Leibniz's aim is to find a means of giving phonetic shape to writing, thus inverting the situation prevailing with ordinary languages, in which writing appears as a secondary code in relation to the spoken language. This is why, in this sense, in the *Lingua Generalis*, Leibniz strives to discover a means of making numerical characters pronounceable, attaching a letter or vowel to each prime number.<sup>47</sup>

In the case of diagrammatic representativity, this recognition of the value of writing is not limited to the stressing of its advantages as a means of fixing and registering, and as a support for the failures of attention or reasoning, offering the possibility of a stable and manipulable vision of signs or the revision and control of significative content;<sup>48</sup> what Leibniz here emphasizes and affirms above all is the two-dimensionality of writing, and the consequent possibility of simultaneously grasping the multiple relations which characters and the ideas that they signify establish among themselves.<sup>49</sup> However, if the diagrammatic symbolism, to which the passages cited above tend, might have the merit of permitting the simultaneous apprehension of the totality of relations of independence of the entities represented, it would shift the *a priori* universal language in the direction of the pure formalism of a system (points, lines, etc.) devoid of any reference to the immediate universe of intuition and, therefore, irreducibly estranged from the world, thus contradicting the precise objectives at which Leibniz aims with the idea of the representativity of the sign.

(B) Structural Representativity (properly speaking)

It is still, we believe, expressive representativity that Leibniz is seeking when he writes, in *Dialogus* (August 1677):

<...> si characteres ad ratiocinandum adhiberi possint, in illis aliquem esse situm complexum, ordinem, qui rebus convenit, si non in singulis vocibus (quanquam et hoc melius foret) saltem in earum conjunctione et flexu.

(GP 7.192; VE 1.63)

In contrast to the cases of the two other models of representativity which we have discussed (the figurative and the essentialist), Leibniz is now, as it were, forced to displace the ideal of representativity from the character, (without, however, completely abandoning it), on to the plane of syntactic relations, since, as he says in the same fragment:

Nam etsi characteres sint arbitrarii, eorum tamen usus et connexio habet quiddam quod non est arbitrarium, scilicet proportionem quandam inter characteres et res, et diversorum characterum, easdem res experimentium relationes inter se.

(GP 7.192; VE 1.63)

The meaning of each character comes to depend either on its integration in a formal structure – its "usus et connexio" – or on the correspondence or "proportio" between this structure and the structure of the real which it aims to represent. That is to say, representativity would now be played out fundamentally on the level of syntactic structures; it is the form of relations between characters that is seen as analogical with things in the form of their relations.<sup>50</sup>

Of course, the complex problem of the ontological status of relation clearly remains to be solved.<sup>51</sup> Are relations real entities or "mere mental", as Leibniz puts it in his letter to Des Bosses (21 April 1714).<sup>52</sup> In the latter case, how could a *mere mental* entity constitute the anchorage point of the multiple relations established within the proposition? And what, then, would be the ontological correlatum of syntactic relations?

(C) Monadological Representativity

On the other hand, if Leibniz can conceive relation as a "mere mental", it is because he reduces it to a series of modifications of singular beings as substantial nuclei of their own predicates. Would it not also be possible, on the level of language, to view signs as poles of irradiation of syntactic relations, reducing the latter, in the same way, to different types of modification of the former? But, in this case, the expressive representativity of an *a priori* universal language made up of such signs would again come into being not between structures (syntactic and natural) but between elements: between the singular individual (containing relations as its predicates) and the character, as a sign which, through its own flexion, would exhibit the multiple relations of the thing.

As Leibniz says in the fragment *Characteristica Geometrica* (10 August 1679)

Quanto autem characteres sunt exactiores, id est quo plures rerum relationes *exhibent*, eo majorem praestant utilitatem, et si quando *exhibeant* omnes rerum relationes inter se, quemadmodum faciunt characteres Arithmetici a me adhibiti, nihil erit in re, quod non per characteres deprehendi possit.

(GM 5.141; our emphasis)

It is now again each character, and not only the relations between characters, that is to express the relations which individual entities contain as their predicates. For that reason, in the same fragment, Leibniz further defines the character as "<...> quibus aliarum rerum inter se relationes exprimuntur" (GM 5.141), a thesis which it may be legitimate to consider as constituting a subtle variation within the model of representativity of the sign which we have designated as "expressive".<sup>53</sup>

Then, if the primacy given to structural analogy is what both characterizes this model (the expressive) in general terms, and, simultaneously, distinguishes it from the other two models we have referred to (the figurative and the essentialist), it is, nonetheless, possible to distinguish within it the three tendencies which we have just expounded. In the first (diagrammatic) tendency, the structure is purely formal; in the second (the structural tendency, in the strict sense), the structure becomes a source of meaning because, in itself, it imitates the real conceived as a structure; in the

third, the structure is absorbed by the sign, and it is through the sign that it becomes expressive.

If in the diagrammatic tendency the semantic level tends to be entirely reduced to the syntactic, and in the strictly structural tendency priority is clearly given to the analogy between the formal structures of language and the structures of the real, the third and last tendency recovers (from the figurative and essentialist models) the requirement of the semanticity of the sign itself. In the diagrammatic model of expressiveness, the significative elements are reduced to empty poles of convergence (points) of an abstract multiplicity of relations (lines), thus sliding, as we have seen, towards a radical formalism which Leibniz cannot accept; in the structural model of expressiveness, it is syntax itself, through its analogy with the supposed structure of facts, that tends to become semantic; while, the third and last model of expressiveness, which may perhaps be termed "monadological" (given that the character absorbs the entire expressive function into itself, into its in(ex)teriority, becoming the stable point of semantic organization) recovers the requirement of a space that should be minimally filled, symbolically differentiated and, as such, indicative of the signified reality.

We are left, then again, with that enigmatic indicative power of the sign which Leibniz aims to safeguard at all costs, and which the various models of representativity that we have discussed are intended to elucidate.

If Leibniz hesitated, up to the end of his life, with regard to the sign-system to be adopted, it was precisely because it was always his intention to reconcile the rigour guarantee by the *operativity* of the sign with the meaning which only its *representativity* can permit - that is, because he never accepted the idea of constructing a language that would be totally formalized, and as such, separated from the world by an impassable barrier. Long before our own days, Leibniz was well aware how *everything that is rigorous is meaningless*.<sup>54</sup>



Conclusion

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Conclusion

Nemo autem vereri debet, ne characterum  
contemplatio nos a rebus abducat, imo  
contra ad intima rerum ducet.

Leibniz (GM 4.461)

## Conclusion

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### 1. The Revelatory Power of Language or the Possible Unity of the Three Great Leibnizian Strategies for the Construction of a Universal Language

Our central objective over the course of this study has been to interrogate, as systematically as possible, the multiple reflections made by Leibniz concerning the constitution of a universal and philosophical language. We have shown how this highly ambitious project, heterogenous in itself, is linked to many other aspects of Leibniz's vast and diverse activity and research into the phenomenon of language: that of the philologist and historian of human languages who aims to determine the evolutionary series and the patterns of similarities and affinities among these very ancient "monuments des peuples";<sup>1</sup> that of the researcher into the origin and nature of natural languages who, "cratyléennement",<sup>2</sup> attempts to comprehend the imperceptible ties which bind language to the world it confronts; that of the speculative but also comparativist grammarian who pursues the syntactic invariables that underlie the diversity and the particularities of each linguistic continent, the plural effects of an operability that is common to all languages; and, finally, that of the semiologist who interrogates the methodological and epistemic scope of symbolism in general, and tries to determine the set of characteristics which should govern the choice of a sign-system that will be adequate to the expression of the real.

We have also tried to show (in part I) how, prolonging some of the most important vectors of the linguistic thought of modern times, these multiple points of view from which Leibniz examines language, and which cover diverse areas that, even today, cannot be easily connected, are not, in his thought, resolved into any simple or undisturbed kind of internal unity, whether in relation to their grounding in general and unitary theory of symbolism, or with regard to their role in the construction of a homogeneous project for a Universal Language.

In fact, in our research (in part II) for a systematic semiology which might provide a principle of original unity for Leibniz's different kinds of research into language, we were confronted with an ineluctable ambiguity concerning the gnoseological status of the sign - an ambiguity which serves further to reinforce the element of disparity. Similarly (in the third

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part), amid a near-chaotic set of fragmentary and dispersed indications, instead of a homogeneous project, we identified three different projects for the construction of the Universal Language, corresponding to three different strategies (the perfection and purification of a natural language - i.e. German; the *a posteriori* constitution of a Rational Grammar via the simplification of Latin grammar; and the *a priori* construction of an universal symbolism), within each of which we discovered a further multiplicity of perspectives which were not always convergent.

A central question must now here be asked, unavoidably: in the face of this apparent irreducibility of dimensions, strategies and perspectives, is there not a basic intention which serves to catalyse and orientate Leibniz's copious and exuberant linguistic research? Is there not an unifying pole around which these different projects revolve?

We believe that there is. As we have repeatedly stressed in the course of this study, there is, we believe, a founding principle which traverses and subsumes this plurality of approaches.

We refer to the thesis that language, constituting itself as a double of real, does not block or disturb the knowledge of the real, but, rather, leads to its *revelation*, its rational penetration, not merely reflecting, but also promoting and clarifying our knowledge of it. As Leibniz says in his letter to Thirnhau (May 1678): "Nemo autem vereri debet, ne characterum contemplatio nos a rebus abducat, imo contra ad intima rerum ducet" (GM 4. 461).

Now, it was precisely this revelatory power contained in language - this power, inherent in the sign, of permitting access to the heart of things ("ad intima rerum") and of revealing them to the mind - that, we believe, *fascinated* Leibniz, simultaneously dazzling, intriguing and challenging him. It *dazzled* him because he discovered it as a given property that had already been achieved by natural languages, in the relation of mirroring and prospective returning of images which each of them maintains with the world it speaks, and which they all, taken as a whole, establish, in their different ways, with the world which exists to be spoken. It *intrigued* him because he strove to understand its secret, its determining law, to comprehend its original root. It *challenged* him, finally, because it instigated him to repeat,



In his search for a Universal Grammar, Leibniz conceived motivation this time from the perspective of the deep structure underlying the grammatical particularities of each language, as "mirroir de l'esprit humain", and from that of the universality of their laws. Implicitly, it was the *principle of pre-established harmony* that finally guaranteed the correspondence (mediated

das die Wort nicht eben so willkürlich oder von ohngefähr herfür-  
kommen, als einige vermeynen; wie dann nichts ohngefähr in der Welt  
als nach unserer Unwissenheit, wenn uns die Ursachen verborgen.  
(D 6.2.28; PU 341)

In §60 of the *UG* Leibniz was even more explicit:

Certam quandam et determinatam inter Res et Verba connexionem esse  
dici nequit; neque tamen res pure arbitraria est, sed causas subes-  
se oportet, cur certae voces certis rebus sint assignatae.  
(C 151; VE 3.497)

mentioned text where he writes:

It is in this context that we should consider Leibniz's remarks in the above-  
mentioned text where he writes:  
In the last instance as the basis of this natural motivation of languages,  
tightly between the thing and its linguistic expression, which was invoked  
was, then, the *principle of sufficient reason*, in the form of a causal con-  
the words *lux* and *fero* which Leibniz gives in the *Dialogus*; (GP 7.192).<sup>9</sup> It  
from the morphological composition of certain words, as in the example of  
addition, trying to determine the forms of relative motivation resulting  
tion),<sup>9</sup> in his search for a direct relation between sound and idea<sup>9</sup> and, in  
production of sonorities originating in the physical world (absolute motiva-  
ticulatory symbolism to onomatopoeia, conceived as the imitative phonetic re-  
tion in natural languages, from the phenomena of phonetic, rhythmic and ar-  
in mente excitabant" (C 151) - that is, he explored various levels of motiva-  
quandam naturalem, ex sonorum consensu cum affectibus, quos rerum spectacula  
tween the sign and the reality expressed, "<h>abent tamen Linguae originem  
ena, in phonetic and articulatory symbolism, and in rhythmic analogies be-  
ticular, Leibniz, as we have seen, located this power in onomatopoeic phenom-  
In the context of his research into natural languages and German in par-

now in a rational and controlled way, the anonymous and unconscious gesture  
of its creation, attempting to gain, for the future Universal Language, the  
essential expressiveness which natural languages have carried within them  
ever since the long-distant, almost divine past.

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by that common grammaticality) between the human mind and reality. In the project for an *a priori* universal language, it was in terms of the representativity of the sign, its "naturalness" (likewise, in *De Arte*, this property which the sign should have - of adequately expressing the idea signified - had already been noted and designated),<sup>7</sup> that Leibniz defended possibility of artificially (re)constructing that motivation, reproducing the indicative transparence of names in the graphic space of characters.

As each of the proposed models of representativity (which we have attempted to identify and present in an ordered fashion) proved to be incomplete and insufficient, Leibniz could do no more than sketch, in a multiple and never-conclusive manner, the constitution of this artificial motivation of the *a priori* Universal Language. In the face of the precariousness of the results obtained in the area of the representativity of the sign, he was even forced to admit (if only on a provisional basis) to start from an arbitrary system of notation:

Cum autem nondum constituere licuerit, quomodo signa formari debeant, interim pro ipsis in futurum formandis exemplo Mathematicorum utamur literis Alphabeti aliisque notis arbitrariis quibuscumque, quas progressus aptissimas suppeditabit.

(GP 7.205)

This is, clearly, not a systematic position, but a *recourse* which is admittedly precarious, and does no more than repeat the pragmatism of the procedures which, as we have seen (in part III, chap. 4), Leibniz adopted in the face of the impossibility of definitive determination of the list of primitive terms. The diversity of the models outlined also indicates the vital importance which Leibniz attributed to the representativity of the characteristic sign of the future Universal Language, as a means of equaling, and, if possible, even of perfecting the motivation of natural languages. In fact, if in the latter motivation is produced essentially by the phonic similarities and analogies which exist between (phonic) signs and some of the particular features of the sensorial realities that they signify, in the case of the *a priori* Universal Language, Leibniz aimed, as has also been shown, to endow it with a fundamentally graphic system of notation which would express (ideographically) the essence of the ideas signified, in this manner attempting to prevent the oscillation and the progressive blurring which the passage of time and the history of numerous human derivations have tended to impose on the original significations,<sup>8</sup> modifying and obscur-

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ing them, thus making it difficult to recognize the design of the original author in all its supreme wisdom.<sup>9</sup>

If the onomaturgical gifts which Leibniz attributes to peoples in general, and to the German people in particular, consisted of, precisely, the faculty of apprehending the most pregnant features of the objects of their daily experience and then reproducing them linguistically, the task of the philosopher would then be to carry out an exhaustive analysis of the totality of human knowledge, and, in order to express that knowledge, to invent a system of characteristic signs which would be equally motivated or "natural". With regard to the German language, Leibniz (as we have seen) had already argued that it was the responsibility of the sage not merely to preserve the original virtues of his language, but also to prolong, develop and perfect the onomaturgical labour of the anonymous people. Similarly, it was up to the sage to recognize the rational structure underlying the disorder, disturbances and redundancies of the national grammars; he alone was capable of defining the specific framework of their *ideal regularity*, and of effecting their final purification. The *a priori* creation of a Universal Language required of the philosopher, not merely that he should preserve the function of popular onomaturgy in his own person, but that he should transcend it. It is as if Leibniz recognized the need to start out from the understanding of the wisdom that was at work in the long-distant past of natural languages - an anonymous, unconscious, instinctive wisdom - in order, subsequently, to prolong and excel it in the prospective, rational reconstruction of a New Language, which would now be Universal, Philosophical and motivated on a higher level.

However, the paradigmatic image which polarizes this displacement undergoes, at the same time, its own transmutation: there is a narrowing of the distance between God, creator of the universe through the word, and man, constructor of a universe of words.

### 2. The Adamic Language and the Philosophical Language

When, earlier in this study - part I -, we pointed out some of the many other aspects which, while apparently marginal to the project for a Universal Language, nonetheless constituted, in the seventeenth century, the basic

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terrain of uncertainties and investigations which, to a large extent, formed the starting-point of this project - elements which went to make up its internal space of reflection, and which were equally covered by the encyclopaedic interests of Leibniz - we placed special emphasis on the myth of an Adamic Language, as both a paradigmatic case (any project for the construction of a universal language is normally based on a theory of the origin of language) and a primary, founding myth.

It is true that this myth, like all the others in general, carried with it a set of rigid constructions, presuppositions and theologemes; but, on the other hand, as a particular form of questioning the origin and intimate nature of language and its relation to the world, it opened up multiple horizons for interrogation, suggesting, in conceptual and problematic terms, a vast and fertile area for reflection.

From the postulated nature of the Adamic Language, the total intelligence which traverses it, and its transparence and essential expressiveness, Leibniz derived both a historical, theological and metaphysical justification for the project of a Universal Language, and the secret paradigm which guides and underlies his wide-ranging research in this area, seeking, as we have seen,<sup>10</sup> not the retrospective recovery but the rational and prospective reconstruction of the Adamic Language of the past in the Philosophical Language of the future.

Like the Adamic Language, the Philosophical Language should establish its universal communicability essentially on two levels: on that of the principles of unity and invariance which determine the specific character of the grammaticality/systematicity of human language (only in this way does the correct expression of thought and of the logical relations among concepts become possible); and on that of the construction/discovery of a set of denominations which are capable of *speaking* reality, since they ultimately maintain a relation of rigorous congruence and co-naturalness with it (in this way the openness of language to the world is supposed to speak would be assured). Leibniz rises fully to the challenge of this double requirement, logical and semantic, aiming to reconcile the two demands by means of a multiplicity of strategies and perspectives, and extending - sometimes with a certain continuity, sometimes with open divergence - many of the investigations carried out before him, both on the plane of philosophical languages

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and on those of primordial, international or even imaginary languages.

The present study is intended simply as a small contribution to the comprehensive elucidation of this project and its historical and mythological roots in a process which is common to all historical periods, that is, the interrogation of the ultimate and original meaning of human language.

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Appendix

**Some Critical Notes on Hobbes's Influence  
on the Leibnizian Project of a Universal Language**

Verba enim non tantum signa sunt cogitationis meae praesentis ad alios, sed et notae cogitationis meae praeteritae ad me ipsum, ut demonstravit Th. Hobbes.

Leibniz (A 6.1.278)

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In one of his masterly essays, Louis Couturat (Appendix II, Leibniz et Hobbes; 1901: 457-472) offers a detailed and exhaustive critique of Tönnies' thesis (1887), according to which, as far as the project of constitution of a Universal Characteristic is concerned, the decisive influence on Leibniz was Hobbes.<sup>1</sup> In his study, Couturat proves exhaustively that this position is unfounded, although this does not in any way imply that he overlooks or forgets those passages in which Leibniz acknowledges Hobbes, always in commendatory terms,<sup>2</sup> as the inspirator for some of his theses.<sup>3</sup>

Our present aim is not to reopen this debate, but merely to specify those aspects of Hobbes' thought which may have, in one way or another, facilitated, prepared for, or simply outlined that project to which seventeenth-century philosophy was especially committed - the constitution of a Universal Language, of which Leibniz was, without doubt, the most celebrated, if not the only defender.

The two aspects which appear most important are the Hobbesian conception of reason as a calculative activity, and the valuation of the mnemonic function of language above its communicative function.

### 1. Reason and Calculus

The work of Hobbes is a particularly eloquent instance of the marked analytic and comparative activity which characterises the emergency of scientific thought in the Modern Age. This is clear from the analytic style of his works (indeed, that of *A Short Tract on First Principles* (1630) may be considered geometrical); from the deductive intent of his system (i.e. his projected global system of philosophy, which was to constitute an organised study of corporeity in its natural, human and social dimensions); and, above all, from his conception of human reasoning as a calculative activity.

Appealing to the etymological origin of the word *ratio* (L 106), Hobbes affirms that

When a man *Reasoneth*, hee does nothing else but conceive a summe totall, from *Addition* of parcels; or conceive a Remainder, from *Substraction* of one summe from another.

(L 110)

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This faculty of calculative reason, according to Hobbes, is not innate, nor can it be acquired merely by experience (L 115). On the contrary,

Reason is <...> attained by Industry; first in apt imposing of Names; and secondly by getting a good orderly Method in proceeding from the Elements, which are Names, to Assertions made by Connexion of one of them to another; and so to Syllogismes, which are the Connexions of one Assertion to another.

(L 115)

For Hobbes, then, reason is an eminently linguistic faculty. Not only is reason psychologically and genetically dependent on the acquisition and mastery of language – as he says, "Children therefore are not endued with Reason at all, till they have attained the use of Speeche" (L 116) – but it is language that, by giving fixed form to the ideas which make up the sequential flow of "Mentall Discourse",<sup>4</sup> provides the elements on which its own calculative activity operates. In this context, Hobbes states:

For *Reason*, in this sense, is nothing but Reckoning (that is Adding and Subtracting) of Consequences of generall names agreed upon, for the marking and signifying of our thoughts.

(L 111)

It is precisely on this specifically linguistic emphasis in the Hobbesian definition of reason that Couturat bases his critique of Tönnies' notion that this definition exerted a decisive influence on the thought of Leibniz. Couturat (1901: 459–460) shows how, given Hobbes' strict nominalism,<sup>5</sup> his formula – to reason is to calculate – could only signify the addition and subtraction of names applied to concrete, particular objects, and not the logical and conceptual operation envisaged by Leibniz.

However, according to Hobbes, the operations of addition and subtraction, to which all the other operations can be reduced, "are not indigent to Numbers onely, but to all manner of things that can be added together and taken one out of another" (L 110), that is, to arithmetic, geometry, logic, but also to politics or jurisprudence. It follows that

In summe, in what matter soever there is place for *addition* and *subtraction*, there also is place for *Reason*, and where these have no place, there *Reason* has nothing at all to do.

(L 110–111)



It is undeniably the case that, at least superficially, this Hobbesian objective of extending a single type of calculative reasoning procedure to all areas of knowledge finds an immediate echo in Leibniz. However, Hobbes' discourse is marked by the absence of any concrete methodological solution (combinatory or otherwise) that would guarantee the efficacy of the calculative regime he proposes. Besides – and as Couturat further stresses (1901: 461) – given Hobbes' defective mathematical education, it would have been difficult for him to conceive the possibility or the value of a universal application of mathematical method.<sup>6</sup>

The Hobbesian thesis of reason as calculus would thus be reduced to a vague indication, an empty formula of which, in Couturat's words, "Hobbes <...> n'avait même pas pénétré tous le sens" (1901: 461). This thesis would then find expression only in the demonstrative style which Hobbes cultivates, and in the deductive intent of his system – aspects which, moreover, are shared by many of his contemporaries.<sup>7</sup>

## 2. The Aims of Science and the Role of Natural Languages According to Hobbes

It may be argued, however, that there is, underlying the Hobbesian concept of reason, or, at least, closely linked to it, an element which, while not directly conveying the project of construction of a universal language (indeed, as has been shown, it is in some ways diametrically opposed to it), may, nonetheless, have inspired it or, at least, paved the way for it.

The element in question is Hobbes' endowment of natural language with the same aims and scientific functions as those pursued by the constructors of universal philosophical languages.

It may be stated, first of all, that if for Hobbes reason is a calculative activity which works on names – "The faculty of Reasoning being consequent to the use of Speech" (L 683) – then without language there can be no science. "By the advantage of names it is that we are capable of science, which beasts, for want of them, are not" (HN 5.4). This is for two reasons: first, because without language we would be unable to reason, that is to calculate, and second, because we would be incapable of transmitting our dis-

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coveries to other generations, which would exclude the possibility of progress, a quality which is inherent to scientific knowledge.

Without names, and particularly without the names of numbers, it would be impossible to carry out the most elementary arithmetical operations, or to undertake any kind of calculation of size, speed, strength, etc. (cf. DH 10.3). Further, it would be impossible to abstract or generalise:

For example, a man that hath no use of Speech at all <...> if he set before his eyes a triangle, and by it two angles <...>, he may by mediation compare and find, that the three angles of the triangle, are equal to those two right angles that stand by it. But if another triangle be shewn him different in shape from the former, he cannot know without a new labour, whether the three angles of that also be equal to the same. But he that hath the use of words <...> will boldly conclude Universally, that such equality of angles is in all triangles whatsoever; and register his invention in these generall termes: Every triangle hath its three angles equal to two right angles.

(L 103-104)

Language is, then for Hobbes, an indispensable instrument of reason and, simultaneously, a decisive factor in the constitution of scientific knowledge.<sup>9</sup> If the consideration of the decisive role of language in the constitution and progress of scientific knowledge could lead (as, in fact, occurred in the majority of cases) to the project of the construction of a universal philosophical language (of scientific utility), in Hobbes the same consideration leads to the inverse conclusion; he argues indeed that it is possible and necessary to use natural language as a rational and scientific instrument.<sup>9</sup> Whereas the constructors of universal philosophical languages reject the hypothesis that vernacular language could take on scientific functions, by reason either of their unavoidable lexical ambiguities and syntactic irregularities or of their inherent regional limitations, and, therefore, propose the construction of new languages which would be free from ambiguities, regular and universal, Hobbes is prepared to accept the regional limitation inherent in natural languages provided that a careful labour of semantic fixing and regularization is carried out on them. This labour, which Hobbes considers to be possible and necessary, would have as its aim precisely the overcoming of the difficulties which were seen as impassable barriers by the constructors of universal languages (except, obviously, in the case of universality).

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For Hobbes, the crucial tasks are the perfection of natural language, the deepening of its qualities as a rational and scientific instrument, and the elimination of the errors and abuses which its use can entail.

It is therefore a great ability in a man, out of the Words, contexture, and other circumstances of language, to deliver himself from equivocation, and to find out the true meaning of what is said.  
(HN 5.8)

To this end, a double labour is necessary: on the one hand, to fix the precise sense of basic terms, defining them clearly and unambiguously; on the other, to avoid all the possibilities of error to which man (and man alone) is subject through the mediation of language (cf. L 112-113).

The aim is, then, in the first stage and in a positive sense, to begin, like geometers,<sup>10</sup> by establishing the sense of all the words used:

<...> in the right Definitions of Names, lyes the first use of Speech; which is the Acquisition of Science.  
(L 106)

If one takes advantage of the possibilities of axiomatization which human language (thanks to its arbitrariness)<sup>11</sup> offers, one can constitute, through a voluntary act, the denotative sense of each word. This first moment is, besides, of crucial importance, since, as Hobbes points out, "the errors of Definitions multiply themselves, according as the reckoning proceeds" (L 105).

In the second stage, given that every subject constantly introduces, precisely by virtue of his subjectivity, new significative tones into the same words (cf. HN 5.8), it is necessary to proceed to the elimination of ambiguity. If science were a solitary enterprise which contented itself with singular pieces of evidence, the first stage would suffice. By means of it, every subject, simply by axiomatically constituting the denotative senses of words, and by filling them with the understanding of the concepts for which they had been created, would be in possession of the necessary elements for the development of science: he would be able to relate names to each other in truthful propositions, articulate those propositions deductively, and attain knowledge of the truths of his conclusions. But science is a social form of knowledge,<sup>12</sup> which is constructed on the basis of an intersubjective agreement; it demands the universal recognition of the truth of its proposals, and implies the possibility of proof (cf. HN 6.3; 14). For this rea-

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son, in order to guarantee the passage from a singular piece of evidence to a recognizable universal truth, a supplementary effort is required, a second stage which consists of the progressive neutralization of the multiple causes of error, the elimination of the various connotative charges which surround names, the removal of the influence of private and sectarian idiolects, until, for every word, a univocal and purely denotative sense is obtained.

Hobbes devotes particular attention to all these aspects, patiently proceeding to the analysis of the multiple causes of error, the exhaustive enumeration of the abuses to which language can lead, and the collection of as many examples of absurd statements as possible.<sup>13</sup> It is true that, for Hobbes, language is a condition of truth - "<...> truth consisteth in the right ordering of names" (L 105) - but he also sees it as a source of error, since, as he says: "<...> words are wise mens counters <...> but they are the mony of fooles" (L 106). Curiously, it is his nominalist position, precisely that which is the object of the most decisive and persistent criticism of Leibniz,<sup>14</sup> and which, according to Couturat (1901: 466ff.), is one of the areas in which the gap between the two thinkers is greatest - that leads Hobbes to his view of the indispensibility of language in the intellectual process, and thus to his attempt to endow it with the qualities required for cognitive functions, in this way favouring (in our opinion, and even if indirectly) the project of the construction of a universal philosophical language.

This is primarily because the various philosophical languages projected in the seventeenth century were supposed not only to fulfil the cognitive functions which Hobbes believes can be demanded of natural languages, but also to possess the characteristics with which (excluding universality) Hobbes considers it possible to endow the latter by means of their perfection. It may be added that the universality of the philosophical language should derive, at least in its general tendency, from the philosophical character of that language, rather than constituting, in itself, its central objective. It is, above all, Leibniz who stresses this aspect, indeed making it one of the demarcating principles of his own project in relation to those of his contemporaries.<sup>15</sup>

In conclusion, it is clear that both Hobbes and the constructors of phil-

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osophical languages recognize the need to find a language adequate to the realization and development of scientific knowledge. In both cases, language is seen, not as a factor of disturbance, or as something which could ultimately and ideally be dispensed with, but, rather, as a necessary condition for the constitution and progress of scientific knowledge. Hobbes, however, believes that natural languages can (once their ambiguities and irregularities are overcome) carry out the advanced cognitive functions which language is called to fulfil in the constitution and development of science. The constructors of philosophical languages, for their part, reject natural languages, which they see as characterized by irreclaimable deficiencies, and attempt to construct new, artificial linguistic instruments, adequate to the cognitive functions which they recognize as pertaining to language in the scientific process.

In addition to the above, the following points should be noted: first, Leibniz (and others) directly shared Hobbes' positions (as witness the attempts to turn vernacular languages into philosophical languages). As for Leibniz, in particular, the attempt to transform German into a philosophical language is not merely a project of his youth (as exemplified by his *De Stylo Philosophico Nizolii* of 1670; GP 4.127-162), but also a major line of force which, continually present in his thought, is taken up again in one of his last texts, the *Unvorgreifliche Gedancken* published in 1717 (D 6.2.6-51). Second, in his *Nouveaux Essais* Leibniz is sincere (or cunning) enough to make Philalethe (and through him, Locke - who on this point agreed with Hobbes) endorse the project of construction of a philosophical language previously put forward by Theophilus.<sup>16</sup> In fact, after the latter's exposition of such a project (in this case ideographic in character; cf. NE 4.6.2), Philalethe replies:

Je crois que vostre pensée s'excutera un jour, tant cette ecriture me paroist agreable et naturelle: et il semble qu'elle ne seroit pas de petite consequence pour augmenter la perfection de nostre esprit et pour rendre nos conceptions plus reelles.

(NE 4.6.3)

Does this not suggest that Leibniz may have understood, better than anyone, the similarity between his and Hobbes' position on this matter?

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### 3. Primacy of the Mnemonic over the Communicative Function of Language

There is also a second aspect in which Hobbes' contribution to the Leibnizian project of a universal characteristic may have been even more important: the distinction which Hobbes makes between "sign" and "note" (or "mark"), and the related question of the primacy of the mnemonic over the communicative function of language.

Defining language as the verbal translation of a previous "Mental Discourse",<sup>17</sup> a flow of images formed by the "Consequence", or "Trayne of Thoughts" ("By Consequence, or Trayne of Thoughts, I understand that succession of one Thought to another which is called <...> Mental Discourse" L 94), Hobbes argues that the primary function of language is to establish, within this chain of images, points of reference and orientation, areas of security, "marks" or "notes" whose aim is "the Registering of the Consequences of our Thoughts" (L 101), and the establishment of stable relations, thus facilitating recollection (cf. L 101, HN 5.1.2 and *De Corpore* 1.2.2).

A name is thus, above all, "the voice of a man, arbitrarily imposed, for a mark to bring to his mind some conception concerning the thing on which it is imposed" (HN 5.2; cf. also *De Corpore* 1.2.4). But, since these marks are of purely private use, they have necessarily to acquire an externality as signifiers by which they can be enabled, not only to register the thought of a subject and permit it to be recalled, but also to show, expound and communicate that thought to other subjects. It is in this way that, according to Hobbes, the name acquires the status of sign:

<...> the first use of names, is to serve for *Marks*, or *Notes* of remembrance. Another is, when many use the same words, to signifie (by their connexion and order) one to another, what they conceive, or think of each matter <...>. And for this use they are called *Signes*.

(L 101)

This corresponds to the communicative aspect or function of the word, while the mark or note represents its mnemonic aspect.

Language is thus constituted as a sensory support for thought, providing the material (signifying) conditions required for the development of calcula-

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tion, since it permits the advantageous substitution of the calculation of the consequences of ideas by the calculation of the consequences of the marks or notes of those ideas. If the name, as mark or note, facilitates thought since it permits the registering and recollection of the idea, in calculation this facilitation is even more important; when we replace the calculation of the consequences of ideas by the calculation of the consequences of names, we are, at every moment, preserving the possibility of recollecting the previous consequences, of revising the sequential deductive chain, of thus being able to progress, gradually and in security, from one consequence to another given that, as Hobbes says,

The Use and End of Reason, is not the finding of the summe, and truth of one, or a few consequences, remote from the first definitions, and settled significations of names; but to begin at these; and proceed from one consequence to another.

(L 112)

In contrast to the great majority of his contemporaries, who conceived language only or primarily in terms of its communicative function of externalizing thought (as in the case of Locke, cf. *An Essay Concerning Human Understanding*, 3.5.7, for example), Hobbes distinguishes the mnemonic and the communicative functions of language, and gives primacy to the former:

Cum autem philosophiae ut diximus et notae et signa necessaria sint; nomina utramque rem praestant. Sed notarum prius quam signorum officio funguntur. Nam homini, etsi unicus in mundo existeret, inservirent quidem ad memoriam, cum tamen ad demonstrationem, nisi alius sit cui demonstret, inservire non possent.

(*De Corpore* 1.2.3)

By recognizing the primacy of the mnemonic over the communicative function of language, Hobbes was, in fact, making an important contribution which influenced, for instance, the thought of Leibniz, who fully adopted his thesis. In Leibniz' words,

Verba enim non tantum signa sunt cogitationis meae praesentis ad alios, sed et notae cogitationis meae praeteritae ad me ipsum, ut demonstravit Thomas Hobbes.

(A 6.1.278)<sup>18</sup>

Explicitly recognizing his debt to Hobbes in relation to this important thesis, Leibniz went on to derive from it epistemic consequences of which Hobbes was never remotely aware, primarily through the exploration of the heuristic possibilities offered by the mark in its graphic dimension.

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## Appendix

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The recognition of the primacy of the mnemonic function of language allowed Hobbes to discover its possibilities as an art of demonstration or calculation, as an instrument of reason and a material support to thought. In addition to these advantages, Leibniz, by explicitly analysing the graphic dimension of language, discovered its possibilities as an art of invention, or a fertile method for the finding of new propositions; however, for this to be possible, Leibniz had to go beyond the internal limitations of Hobbes' philosophy of language, forcing its possibilities to the limit. We refer to the fact that, since Hobbes remains bound by a merely evocative conception of the sign, he demands that names should be accompanied by the concepts they designate, that is, that they should be filled with the ideas that correspond to them, Hobbes even vehemently rejects the hypothesis of a simple manipulation of signs, thus condemning, as if in advance, what was to be Leibniz's objective. Without the evocative filling of sign by idea, Hobbes argues, *ratio* would be reduced to *oratio* (cf. HN 5.14), to the mechanical speech of those who reason only with their lips (cf. HN 6.3);

As it is with beggars, when they say their paternoster putting together such words, and in such manner, as in their education they have learned from their nurses, from their companions, or from their teachers, having no images or conceptions in their minds answering to the words they speak.

(HN 5.14)

Now, on the contrary, as Leibniz was to show,<sup>19</sup> to wish constantly to think out the sense of the signs one manipulates is not only a practical impossibility, but, in theoretical terms, implies the blockage of the very possibility of invention (which can only be realized through the abandonment of the spirit to play, within the formal mechanisms it has created).

It is this consideration that leads us to agree with Couturat when (in the study already cited) he concludes that "Leibniz a mieux compris l'idée de Hobbes que Hobbes lui-même" (1901: 461) - a judgement which, for all its extremism, does not deny what to each of the two philosophers is due.





Notes to Introduction

- 1) It is in these terms that Paul Hazard (1968: 7) refers to those years of change of which he magnificently draws the profile; years when, as he says, people were occupied in "repandre, comme s'ils eussent été nouveaux, les problèmes qui sollicitent éternellement les hommes".
- 2) As Leibniz says in his letter to Oldenburg (1673-76; GP 7.12): "si quando hac quam optamus frui fas erit, omnium consensu inter potissima bona habitum iri, quae humano generi contingere possunt".
- 3) Referring to the Universal Language or *characteristica*, Leibniz says: "Itaque repeto, quod saepe dixi, hominem qui neque Propheta sit neque princeps, majus aliquid generis humani bono nec divinae gloriae accommodatus suscipere nunquam posse" (GP 7.188-189).
- 4) "Et comme je suis assuré qu'il n'y a point d'invention qui approche de celle cy, je croy qu'il n'y a rien de si capable d'eterniser le nom de l'inventeur" (C 157; VE 23.13).
- 5) See, for instance, Bréhier (1966: 79-83).
- 6) As Leibniz says in his letter to Tschirnhaus of May 1678 (GM 4.461), "Nemo autem vereri debet, ne characterum contemplatio nos a rebus abducat, imo contra ad intima rerum ducet". For our commentary on this passage, see the *Conclusion* to this study.

Notes to Part I, Chapter 1

- 1) Todorov (1972a: 455-458) also adds a fifth category - phonic poetry (Russian Futurists, Dadaists, etc.), which, although consisting of specific phenomena of sound creation, derives, properly speaking, from the poetic demand of extending the limits of language rather than from the act of creation of a new system of signification. See also Giraud (1972: 405-413).
- 2) On the markedly ideological nature of some projects of universal languages, see below.
- 3) See, for instance, the case of Otto Jespersen, one of the few linguists who has taken an interest in the question of universal language. Indeed, Jespersen (1934: 326-364) considers that the various human languages tend towards a progressive improvement, which is manifest in the fact that linguistic forms are today generally shorter and demand less physical effort and enunciation time, as a result of reduction in vocabulary, and of greater regularity in their morphological and syntactic formation, etc. See also below, ch. 4, n. 42 for the case of Nicholas Marr.

Notes to Part I, Chapter 2

- 1) However, it should be noted that nearly three quarters of the earth's inhabitants speak a mere twenty-two of those languages. See Firth (1966: 207ff.).
- 2) The first important attempts at a naturalistic explanation of linguistic phenomena date from the 16th century. The contributions of physicists and physicians such as Pierre Cardan (1501-1576) or Ambroise Paré (1509-1590) were particularly important, since, by drawing attention to the phenomena of language acquisition and loss, they revealed the anatomical, physiological and articulatory mechanisms of phonation and thus laid the basis for the genetic and positive study of language, which (although still coexisting with the theological explanations), was continued and developed in the 17th century. We shall see how Leibniz's speculation on language lies at the convergence point of these two vectors. Cf. Dubois (1970: 96-120; 131-138).
- 3) *Genesis* 2.19-20 for the Adamic language, and 11.1-9 for the Babel episode. In conjunction with the whole of paragraph 1 of *Genesis* and the first three verses of *St. John's* (which both refer to the creation by the Word), and also *St. John* 2.2-11 (the Pentecostal miracle), these texts defined the matrix of the future theological explanation of linguistic phenomena throughout the Middle Ages and the era of classicism.
- 4) Similarly, Dubois (1970) stresses the situation of marked dependence which characterised the theological interpretation of language up till the 17th century, with regard not only to the Biblical texts but also to the metaphysical presuppositions inherited from Platonism and Neo-Platonism; he shows how this type of interpretation, far from being an obstacle to the development of linguistic studies, actually laid the groundwork for them, inasmuch as it stimulated the development of etymological and comparative studies centered on the rediscovery of the lost Word. Cf. Dubois (1970: 32-37 and 140-141).
- 5) It must be pointed out, however, that this return to *Cratylus* as the starting-point for a historically-based construction of a theory of language that would provide an *a priori* justification for subsequent etymological research, is not without its controversial side. Todorov, for example (1972b: 273-308), argues that the etymologies presented by Socrates - the greater part of which are false, a fact which provides the basis for a specific line of interpretation of this dialogue which takes seriously Socrates's second position, where he opposes the thesis of *Cratylus* which he had initially supported - are not, in fact, genuine etymologies; Socrates's real aim would then have been, not to rediscover the origin of words, but only to specify their articulation in the lexical system; and therefore the text of *Cratylus* would be less an etymological investigation of the origin of language than simply an essay on the diagrammatic properties of language, a study of the affinities between signs. This would explain why Socrates sometimes gives a word two or three different etymologies (e.g. the case of the word *soma* in 400c), or presents several examples of competing semanticisms which the language allows its speakers to choose from (e.g. the case of *ousia*, *essia*).

and *osia* in 401c). For contrary views, Cf. Gadamer (1960: 255-264), Genette (1976: 11-36, esp. 18ff., where Todorov's thesis is explicitly discussed) and Bollac (1972: 309-314). Besides, the Epicureans and the Stoics maintained the importance of returning to the primal roots in order to recognize the natural relationship between name and thing. See, for instance, Epicurus, letter to Herodotus 75-76, in Diogenes Laertius, 10, and Lucretius, *De rerum Natura* 5.1026ff. Cf. also Verbeque (1978: 401-424).

- 6) For instance, Bibliander: "Peccati enim poena est, tot esse linguas" (*De ratione communi omnium linguarum et literarum commentarius*; 1548: 31).
- 7) For a detailed historical study of the development of these conceptions, cf. Kayser's invaluable essay (1972: 337-366).
- 8) This is the theme of the polemic between Gregory of Nyssa and Eunomius in the 4th century A.D. Cf. Kayser (1972: 348).
- 9) Most of the great philologists of the 16th century argue, in fact, that Hebrew is the Adamic language, i.e., the mother tongue from which all others are supposed to derive. For example, Benito Pereyra, in *Commentaria et disputationes in Genesim* (1593-94: 527), states: "Fuisse autem omnium linguarum Hebraeam qua nempe usus sit Adam". The argument in favour of this thesis is essentially pursued on three levels. The first level is that of philological and genealogical studies. This is the case of Postel, *De originibus, seu de Hebraicae linguae et gentis antiquitate, deque variarum linguarum affinitate liber* (1538) who tries to establish the filiation of all languages *vis-à-vis* Hebrew on the basis of vocabulary similarities, and Bibliander, *De ratione communi omnium linguarum et literarum commentarius* (1548) who attempts to find structural affinities which might facilitate communication among the various tongues, and also considers Hebrew to be the historical source of all other languages. The second level is strictly theological, based on the exegesis of the biblical text alone. This is the case, for instance, of Martin Luther, (*Primum Librum Mosis*; 1556), who maintains that the tribe of Heber did not participate in the building of the tower of Babel, and that, therefore, their language - Hebrew, in accordance with the name of the tribe's chief - would have escaped the confusion of tongues. The third level may be represented by the position of the Cabbalists: in their specific context, they too maintained that Hebrew is the original language which therefore offers access to the knowledge of Nature and man; this access is to be attained by the re-establishment of the mysterious relations that link each fragment of creation to the words, syllables and letters of Hebrew, the divine Word that operated the very construction of the cosmos itself. As Claude Duret says, in *Thresor de l'histoire des langues de cet univers* (1613: 142), "<...> ainsi que deuisent les Rabins et Cabalistes furent formez les caracteres Hebreux remplis de mysteres celestes tant par leur figure et forme que par leur nombres et colligances diverses d'harmonie". Cf. also Serouya (1964) and Dubois (1985: 55ff.). But the thesis according to which Hebrew is the mother tongue of all the others also had its opponents who, in spite of defending a monogenetic position, attributed the privilege of antiquity to other languages. Such is the case of Jan van Gorp (Goropius Becanus) who makes all languages derive from Germanic (*Notationes de origine et antiquitate gentis et linguae Cimbricae seu Germanicae*, 1580). One may also refer to the position of Leibniz, who - in an equally monogenetic

perspective - refuses Hebrew the privileged status of primordial language (cf. NE 3.2.1; D 5.545 and 6.2.9), seeing it as merely one of the Arabic languages of the Aramaic group (cf. NE 3.2.1 and *Brevi designatio*, D 5.188). Leibniz, who states that the Adamic language sank almost without trace, leaving only the faintest vestiges in the natural languages, and is therefore not fully recognizable in any of them (cf. e.g., GP 7.205 and .151), nevertheless considers in several passages (in this respect agreeing with Goropius) that Old German (especially Teutonic) comes closer than any other language to the original tongue. Cf. *Unvorgreifliche Gedancken* (D 5.2.26 and 28) and also NE 3.2.1, where Leibniz explicitly acknowledges his closeness to Goropius on this point. For Leibniz's position, cf. Aarsleff (1969: 173-189) and Walker (1972: 299-304).

- 10) Dubois (1970: 63 and 68). One may also refer to the French writers Joachim Périon (*De linguae gallicae origine*; 1554) and Du Bellay (*La defence et illustration de la langue françoise*; 1549) who, although similarly considering the original language to be lost beyond recall, defend, as an intermediate step towards reclaiming the rights of the French language, the equal importance of all languages.
- 11) On the problematic of translation in its religious antecedents, cf. esp. Steiner (1975: 244ff.).
- 12) Cf. Dubois (1985: 55ff.), Secret (1964) and Serouya (1964).
- 13) Dubois (1970: 22-23) even refers to the "cult of Adam" as one of the typical signs of the Renaissance.
- 14) In a parallel sense, the scholastic dispute over the language of the angels, which involved such figures as St. Bonaventure, St. Thomas, Suarez and Duns Scotus, also reveals this type of questioning of human and divine language. As Jean-Louis Chétien shows (1979: 674-689), the language of the angels is conceived as an intuitive form of communication that does not require any signifying mediation whatsoever, since it is perfectly clear, certain and effective, exempt from ambiguities, universal and natural, that is, adequate, and is not the product of any institution - a set of qualities that correspond to the description of the Adamic language, are pursued by the various projects of universal languages, and indeed constitute the ideal horizon of human language itself.
- 15) Similarly, Calvino says: "Chascune espece estoit venue en la présence d'Adam, et leut avoit imposé les noms, non point à la volée, mais par cognoissance certaine" (1564: 20).
- 16) The artisanal metaphor used by Socrates (*Cratylus*, 388c) corresponds, in case of Adam, to the image of baptism - which is, in fact, the ceremony in which a name is bestowed. However, it must be pointed out that this mode of bestowal, generally invoked to explain the arbitrary character of names, is used in this case to emphasize their *naturalness*. On the linguistic occurrence of the concept of baptism, cf. Molino (1982: 17), and also Granger (1982: 32).
- 17) The vehemence of St. Paul's condemnation testifies to the extent to which the practice of *speaking in tongues* was developed among the early

Christians. Tertullian seems to have been the last of the Church Fathers to praise and practice glossolalia. Cf. Compagnon (1979: 824-838) and Lombard (1910).

- 18) This is the case with St. Hildegard of Bingen and St. Elizabeth of Schönau in the Middle Ages, and of Thérèse Newman and Hélène Smith in the 20th century. For more details, cf. Yaguello (1984: 43-44), who suggests that this phenomenon is essentially female in nature; cf. also the whole chap. 8, (1984: 109-139), where the case of the famous medium Hélène Smith is studied. The latter case may be considered exemplary not only because of the high degree of elaborateness and permanence of her linguistic production, but also on account of the quality and rigour of the descriptions and linguistic materials collected by the psychiatrist Théodor Flournoy, professor of psychology at the University of Genève from 1891, who, in *Des Indes à la planète Mars: étude sur un cas de somnambulisme avec glossolalie* (Genève, 1900), recounted his experiences with Hélène Smith over a period of almost six years. Cf. also Todorov (1972).
- 19) This church has around eight million members throughout the world today, mainly in the United States. Its founding dogma derives from the literal exegesis of the passage on the gift of tongues at Pentecost.
- 20) Compagnon (1979: 838) even argues that there can be no such thing as an atheistic glossolalia. He considers glossolalia to be a Catholic phenomenon, since "la vocation catholique, comme le nom l'indique, *Katholikos*, est l'universel du christianisme sans peuple élu, c'est-à-dire sans langue unique".
- 21) Flournoy explicitly places Hélène Smith's "Martian" in parallel with what he calls "une activité 'glossopoiétique' puissante qui ne demande qu'à s'exercer chez l'enfant, puis va s'affaiblissant avec l'âge" (1900: 243).
- 22) For his part, Victor Henry (1901) argues that Hélène Smith's glossolalia is a lexical mixture of various European languages, especially Hungarian, her father's mother-tongue, unconsciously fused with grammatical elements deriving from Sanskrit.
- 23) Cf. Kayser (1972: 341-341, note 11) and Koyré (1929: 19ff.).
- 24) "Dann Gott hat nicht die *Creation* erboren, daß Er dadurch vollkommener würde, sondern zu seiner Selbst-Offenbarung, <...>." (SR 16.2).
- 25) "Darum ist in der *Signatur* der größte Verstand, darinnen sich der Mensch (als das Bild der größten Tugend) nicht allein lernet selber kennen, sondern er mag auch darinnen das Wesen aller Wesen lernen erkennen, dann an der äusserlichen Gestaltniß aller Creaturen, an ihrem Trieb und Begierde, item, an ihrem ausgehenden Hall, Stimme und Sprache, kennet man den verborgenen Geist, dann die Natur hat ledem Dinge seine Sprache nach seiner Essentz und Gestaltniß gegeben, <...>." (SR 1.16).
- 26) "Wenn er was siehet, so gibt er ihm den Namen nach seiner Qualificirung: soll er aber das thun, so muß er sich auch in eine solche Gestalt formiren, und sich mit seinem Schalle also gebären, wie sich das Ding, das er nennen will, gebäret." (AU 19.76). Cf. also AU 18.93, 97-100 and MM 35.56.

- 27) On Böhme's position concerning natural languages, cf. MM 35.72-75 where is clearly asserted their importance and even established the relationship between each language and the qualities of the speaking peoples.
- 28) "Des Menschen Wort fasset sich wol auch in solcher Form, Propertz, Qualität und Geschicklichkeit; allein daß es der halb-todte Mensch nicht versteht; und ist dieser Verstand gar edel und theuer, denn er wird allein in Erkenntniß des Heiligen Geistes geboren." (AU 18.93).
- 29) On Böhme's position concerning the sacred languages, cf. also MM 35.61-62.
- 30) Kayser distinguishes, in the Böhmeian conception of *Natursprache*, not three levels, but rather, two distinct conceptions; the first involves the first two levels which we have proposed, and the second has to do with the concept of *Sensualistische Sprache*. (Cf. Kayser (1972: 338-343). This interpretation (which is justified on the grounds that the Adamic language is no more than the transposition of the language of the *signatura rerum*, while the latter, as Kayser shows (1972: 359), is a formulation that tends to support the traditional thesis of the Adamic language) does not, in our view, contribute to the understanding of the hierarchy of these three elements. This hierarchy (although not clearly and explicitly taken up as such by Böhme) corresponds to the deferred exploration of three progressively weaker routes to the equation of the problems of the language-world relationship. Moreover, such a hierarchy expresses the Lutheran exigency of keeping the possibility of redemption open to man; this implies the acknowledgement of the possibility of access to the essence of the world through the vernacular languages themselves.
- 31) In his invaluable study, Kayser (1972: 351ff.) shows clearly how the notion of signature, deriving from the Renaissance philosophy of nature and theorised above all by Paracelsus, lies at the core of the Böhmeian conception of *Natursprache*. Böhme even retains some elements of the medical and alchemical context in which Paracelsus employs the idea (cf., e. g., SR 2.2-6 or 8.14-15). But it is primarily the application - already established by Paracelsus - of the idea of signature to the domain of language, and particularly to the Adamic language, that is taken up by Böhme. According to Paracelsus, it is because the art of signature gives the right name to each creature in accordance with its hidden properties (cf., Koyré 1929:21), that the physician can both recognize the therapeutic virtues of a plant or organism by its name, and attribute to names themselves the power of exerting an influence over the actual pathological situations in the form of curses, remedies or incantations. The relationship between signature and language is thus established, and it is precisely this relationship, as Kayser also shows (1972: 351), that Böhme explores. It should also be pointed out that this Paracelsian doctrine was extremely influential both with regard to its medical applications - Thurneisser (1531-1596), Khunerath (1560-1605), Crollius (+1609) - and to its connection with the thesis of the Adamic language - as in the case of Arnd (1673-1721).
- 32) Regarding the commonly accepted doctrine that, whether by divine inspiration or thanks to his superior knowledge, Adam bestowed adequate names on the qualities of each particular being, what is new in Böhme and,
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therefore, provides a deeper elaboration of the traditional theses is the fact that he articulates them with the doctrine of the creative character of the divine Word; Adam would have merely *repeated*, in human form, the very movement of creation/nomination through the Word. Cf. Kayser (1972: 359).

- 33) It is fundamentally via his concept of *Sensualistische Sprache* that Böhme recovers the Cabbalistic tradition – not with regard to the notion of Hebrew as the language *par excellence*, the tongue through whose letters the divine creation of the cosmos would have been effected (we did not find in Böhme the attribution of any special privilege to Hebrew – cf. above, notes 27 and 29), but with regard to the idea of the secret correspondence that might provide a link between the cosmic plane of divine construction and the structure of a vernacular language; to the recognition of the ultimate semanticism of the sign, seen as a fragment of creation; to the need to proceed to an inner hermeneutics of the sign itself by bringing out its meaning and thus uncovering the divine secrets it encloses; and, finally, to the importance Böhme attributed to articulatory and phonetic phenomena. Cf. Kayser (1972: 355–358 and 363–365).
- 34) In his letter to Morel, October 1st, 1697, Leibniz says of Böhme: "Il a assurément quelques pensées sublimes et solides" (in Baruzi 1907: 497). Cf. also his letters to Morel, November 1697 and May 4–14, 1698 (B 344–346).
- 35) "Sed talem linguam vel omnino intercidisse, vel in ruderibus tantum nonnullis superesse oportet, ubi artificium deprehendere difficile est" (C 151; VE 3.497). Note, however, that Leibniz's references to the survival of the Adamic language always admit of some ambiguity. See, for instance, GP 7.205, NE 3.1.5 or D 4.187–188.
- 36) For Leibniz's position with regard to the German language, cf. below, part III, chap.2.
- 37) See NE 3.2.1, where Leibniz speaks of the "instinct naturel" of the old Germans (GP 5.261; A 6.6.289).
- 38) Cf. also NE 3.2.1 and *Brevis designatio* (D 5.186–189).
- 39) Indeed, etymological and philosophical studies were probably, of all the the linguistic problems that occupied his attention, those to which Leibniz devoted most attention; cf. Leroy (1966: 193–203). On the importance of etymological studies in Leibniz, see, especially, Aarsleff (1969: 173–189). Besides innumerable references and discussions in several texts (see, for example, NE 3.2.1 and *Brevis designatio meditationum de originibus gentium ductis potissimum ex indicio linguarum*; 1710), particular attention should be given to the two volumes of *Collectanea etymologica*, published in 1717 by Eccard, in which Leibniz presents an extraordinary collection of etymological examples from different languages.
- 40) Cf., for example, SR 15.23–45 and MM 35.61, 63–66 and the whole of chapter 36.
- 41) *Aurora* is probably the text in which this pedagogic intention most clearly appears. Böhme constantly addresses the reader, attacks him, questions him directly, tries to bring him face to face with knowledge. Cf.,

- e.g., AU 18.87 and 19.13. Cf. also Koyré (1929: 24-28).
- 42) Cf., e.g., SR 14.1.
- 43) Cf. Böhme, SR 15.40-41 and 44-45, and also MM 36.74.
- 44) In the same text, *Causa Dei*, §123, Leibniz writes: "<...> Deo *Philanthropiam* qui omnes ad veritatis agnitionem pervenire, omnes a peccatis ad virtutem converti, omnes salvos fieri serio voluit, voluntatemque multiplicibus Gratiae auxiliis declaravit" (GP 6.467).
- 45) See, for example, the very interesting text *Dialogus inter theologum et misophum*, where Leibniz says: "<...> principia logica et metaphysica sunt communia divinis et humanis, quia agunt de veritate et de Ente in genere, quod est commune Deo et creaturis. Tale principium metaphysicum est: non posse idem simul esse et non esse; totum esse majus parte, item Principia logica seu formae syllogisticae, quae etiam Deus atque angeli vera esse admittent" (GR 1.20; our emphasis).
- 46) "Pour ce qui est de savoir ce que c'est la *veritable raison*, je reponds que cela n'est pas difficile et qu'il serait dans le pouvoir des hommes de la suivre, s'ils voulaient seulement se donner de la *patience*". (B 347; letter to Morel, September 29th, 1698; our emphasis).
- 47) In his letter to H.W. Ludolf of October 2-12th, 1697, Leibniz writes: "<...> et un homme de bien est comme un aimant qui communique sa direction aux autres corps magnétiques qu'il touche" (B 146).
- 48) "Depuis ma jeunesse, mon grand but a été de travailler à la gloire de Dieu par l'accroissement des sciences, qui marquent le mieux la puissance, la sagesse et la bonté divines" (B 150; letter to Golofkin). We here are face to face with the greatest objective of Leibniz's work, in which the very project for an Encyclopaedia is inscribed. Cf. GP 7.180 and C 33. See also B 230-231, where Leibniz presents the singular idea of reforming monastic life by enlisting the religious orders in the service of science.
- 49) Cf. also *Discours préliminaire de la conformite de la foy avec la raison*, especially §29 where Leibniz refers to the need of justifying the authority of scripture before the "Tribunal de la Raison" (GP 6.67). On Leibniz's anti-fideism, cf. Naert (1968).
- 50) In this context, one may refer to Knecht's interpretation of Leibniz's thought, which he classifies as a mystical intellectualism (1981: 358). Baruzi (1907) also stresses the religious and mystical ends of Leibniz's thought - a thesis which he supports with a vast assemblage of quotations and an invaluable selection of texts. Approximately, Friedman classifies Leibniz's thought as a "rationalisme élargi" (1962: 202), and, suggestively enough, characterizes him as a "Paracelsus de la fin du XVII siècle qui aurait bénéficié de la discipline acquise par cent années de science moderne" (1962: 335). For an opposite perspective, see Guitton (1951: 96-99) and Naert (1959: 198-231).
- 51) As Belaval says (1977: 63), "tandis que les nostalgiques de la nature ou de l'Éden en font (de la langue adamique) l'origine trahie des nos idiomes, Leibniz en fait la réminiscence à venir de ces idiomes". The same
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direction is taken by Knecht (1981: esp. 161) and by Jean F. Courtine (1980: 378ff.), who consider that it is by the reference to the ideal of an Adamic language that the specificity of the Leibnizian project of a universal language can be defined.

- 52) Cf. also GP 7.198-199, C 429, *UG* §8 (D 6.2.8) and NE 3.9.9. (GP 5.317).
- 53) "C'est une grande et belle entreprise que l'harmonie des langues" (D 5. 545; letter to Sparvenfeld; 1695). Cf. also FNL 7.442.
- 54) Significantly, it is in the English school, which tends to be conventionalist, that the firmest opposition to the existence of an Adamic language is found. Taking up the conventionalist position adopted by Aristotle (cf. *Peri Hermeneias* 2.16a. 20-22), Hobbes, for instance (cf. *Leviathan* 100-101 and *De Homine* 10.2) and Locke (*An Essay concerning Human Understanding* 3.6.42-51), in spite of preserving the reference to the concept of the Adamic language, endeavour by every means to empty it of real content, whether by emphasizing the fact that it was lost at Babel (as in the case of Hobbes: "But all this language gotten and augmented by Adam and his posterity, was again lost at the tower of Babel <...>. And being hereby forced to disperse themselves into severall parts of the world, it must needs be, that the *diversity of tongues that is now is, proceeded by degrees from them*" (L 101; our emphasis); or establishing a direct parallel between the freedom of Adam and that of men in the attribution of names (as in the case of Locke: "The same liberty also that Adam had of affixing any new name to any idea, the same has anyone still, especially the beginners of languages, if we can imagine any such (*Essay* 3.6.51).

Notes to Part I, Chapter 3

- 1) The frequent recourse to the invention of neologisms - of which James Joyce's writing is a paradigmatic example - whether by deforming words of existing languages or by creating words that are totally devoid of signification (though not of sense, since in literature, in contrast to philosophy or science, nothing is totally meaningless; an untranslatable or uninterpretable word at least affirms the refusal of its own intelligibility), inasmuch as it is a poetic attempt to go beyond the inherent limitations of language, may at times draw decisively near the phenomenon of creating a new language.
- 2) See Rabelais, *Pantagruel* (1532: IX,9). For an analysis of Rabelais' conception of language, cf. Rigolot (1972) and Starobinski (1963). See also Pons (1931).
- 3) Curiously, in the *Civitas solis poetica idea reipublicae philosophicae* (1604) of Campanella, and the *New Atlantis* (1624) of Francis Bacon, there are no significant references to the languages of their inhabitants - which in Bacon's case is rather surprising, since in other texts, particularly in *The Advancement of Learning* (1605) and *De augmentis scientiarum* (1623), we find important considerations on the need to construct a system of real characters that would express not letters and words, but things and notions. Cf. part I, chap. 4, below.
- 4) For more detailed information on More's imaginary language, cf. Pons (1930; 1979: 722-723).
- 5) The *Terra Australis* was located in the torrid zones south of the Equator before the voyage of Vasco da Gama, and, later, in South America, New Guinea, the Solomon Islands and the western coasts of the Australian continent, already explored but not altogether identified by Dutch navigators (Cook only discovered Australia, properly speaking, in 1770).
- 6) Except for the case of Vairasse (1677), which does not present any precise geographical localization. See Seeber (1945).
- 7) On Swift's linguistic utopia, cf. Pons (1957).
- 8) See Yaguello (1984: 79-92; 209-213)
- 9) For an analysis of the question of universal (intergalactic) language in contemporary fiction (literature, cinema and science fiction) see the interesting study of Yves Hersant (1979: 813-823).
- 10) We are referring to the extreme ethno-linguistic relativism that results from the confluence of the linguistic positions of Edward Sapir (1885-1939) and Benjamin Lee Whorf (1897-1941).
- 11) For an analysis of Orwell's conception of language and his notion of 'Newspeak', cf. Pons (1979: 734-735).
- 12) On Godwin's influence over Wilkins, cf. Pons (1979: 725). Moreover, one

must point out that it is only in the work in question that Wilkins presents the hypothesis of using musical notes to express, not the letters of the alphabet as Godwin wished, but things and ideas. Subsequently, in *An Essay Towards a Real Character and Philosophical Language* (1668), the solution proposed by Wilkins would be different. Cf. part I, chap. 5 below.

- 13) Cf. NE 3.1.1 and, in a more detailed way, the fragments *Lingua generalis* (1678) and *Lingua universalis*(?), C 277-279 and 279-280 respectively. Knecht (1981: 169, n.99) even refers to a small note in which Leibniz mentions those "autor volantis", possibly Godwin or Cyrano de Bergerac, to whom he refers in NE 2.23.14.
- 14) Cf. Ronai (1964: 31-32).
- 15) Arnauld and Lancelot in fact posit both the rationality of the various natural languages (which is the basis of the very possibility of their grammaticality) and a universal functionality common to all languages (without which it would not be possible to explain the particularities that make them diverge). Cf. Foucault (1969) and Canto (1979: 709-719).
- 16) Cf. Valrasse (1677), cit. in Yaguello (1984: 203).
- 17) Cf. *Essais d'analyse gramaticale*, C 284.
- 18) Foigny (1676), cit. in Yaguello (1984: 202).
- 19) For example: "Ils nomment l'homme Uel, ce qui signifie une substance partie aérienne, partie terrestre, accompagnée d'humidité" (Foigny; cit. in Yaguello 1984: 202).
- 20) In another fragment, with no date or title, C 186, Leibniz supports the view that the number of possible propositions is infinite.
- 21) "L'invention de cette langue dépend de la vraie philosophie; car il est impossible autrement de dénombrer toutes les pensées des hommes et de les mettre par ordre ni seulement de les distinguer en sorte qu'elles soient claires et simples" (Descartes to Mersenne, 20.11.1629; AT 1.81); see part II, chap. 1 below.
- 22) "Cependant quoyque cette langue depende de la vraye philosophie, elle ne depend pas de sa perfection. C'est à dire cette langue peut estre établie, quoyque la philosophie ne soit pas parfaite: et à mesure que la science des hommes croistra, cette langue croistra aussi" (C 28).
- 23) See, for instance, the following text of Cyrano de Bergerac, *Les états et empires du soleil* (1622: 202): "il me discourut pendant trois grosses heures en une langue que je sais bien n'avoir jamais oui'e, et qui n'a aucun rapport avec pas une de ce monde-ci, laquelle toutes fois je compris plus intelligiblement que celle de ma nourrisse".
- 24) "Qui rencontre cette vérité de lettres, de mots, et de suite, ne peut jamais en s'exprimant tomber au-dessous de sa conception: il parle toujours égal à sa pensée"; (Cyrano de Bergerac, 1622: 203).
- 25) "Le premier homme de notre monde s'était indubitablement servi de cette

Notes to Part I, Chapter 3

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langue matrice, parce que chaque nom qu'il avait imposé à chaque chose, déclarait son essence" (Cyrano de Bergerac, 1622: 203).

- 26) Inversely, one could equally ask if today, under our very eyes, an opposite phenomenon is not taking place when science itself, on board its spaceships, sends out into stellar space taped messages in musical, figurative, pictorial, binary languages, etc. See Hersant (1979).

Notes to Part I, Chapter 4

- 1) It was only in 1510, by the determination of Louis XII, that French became the compulsory language of criminal trials, and (in 1539) of the entire royal administration. Cf. Mounin (1967: 121).
- 2) Such was the prestige of Latin even among vernacular writers and poets that it was often considered to be a synonym of language in general. Cf., for example Le Goff (1972: 342).
- 3) The prestige of Hebrew came from the fact that it was the language of Moses in which the books of the Old Testament were written. However, it was far less widely disseminated than Latin - essentially only the philologists (Biblander, Postel, Goropius, Gessner, etc.) knew Hebrew. Cf. Mounin (1967: 126) and Dubois (1970: 64-65).
- 4) Such is the thesis argued by Norbert Wiener (1960: 109-110), according to which the decline of Latin as a language of culture was fundamentally due to the restorative purism of the Humanists themselves.
- 5) Pietro della Valle was in India, Postel in Constantinople, Busbec in the Crimea; Thévet described the languages of Brasil, the Jesuits collected precious information in China and Japan, etc. On the importance of the Jesuits in this area, cf. Baruzi (1907: 83ff.), David (1965: 29-34) and also Mounin (1976: 125-126).
- 6) For Scaliger's theories, see Stefanini (1977).
- 7) As Madelaine David shows (1965: 46), the Egyptian hieroglyphs are considered an excellent, sublime and mysterious language that could only be deciphered symbolically and allegorically.
- 8) On Kircher's works in this area - which are neither unique, nor even the most important in his multifaceted production (cf. below, (B) for those concerning pasigraphic research, and Part I, Chapter 6, where his main works are referred to) - cf. especially David (1965: 43-56), and also Rossi (1960: 195-196) and Carreras Artau (2.3: 9-13).
- 9) *A Common Writing, whereby two, although not understanding on the other's language yet by the help thereof may communicate their minds one to another* (1647) and *The groundwork, of foundation laid (or so intended) for the framing of a new perfect language and an universal or common writing* (1652); cf. Cohen (1954: 54).
- 10) In the *Nouveaux Essais*, Leibniz refers to him as follows: "Feu M. Erhard Weigel, Mathématicien de Jena en Thuringue, inventa ingénieusement des figures, qui representoient des choses morales. <...> Mais ces figures sont une maniere d'Allegorie à peu près comme la *Table de Cebes*, quoique moins populaire et servent plus tôt à la memoire pour retenir et ranger les idées, qu'au jugement, par acquerir des connoissances demonstratives" (NE 4.3.19 = A 6.6.385). In other passages, Leibniz points out the advantages of following words with "petites figures <que> vaudraient mieux que de longues descriptions" (NE 3.11.25 = A 6.6.354) or even of substituting them ("petites figures à place des mots, qui representassent

les choses visibles par leurs traits, et les invisibles par des visibles qui les accompagnent" (NE 4.6.2 = A 6.6.398)). Cf. David (1961: 39-50) and Kneale (1966: 204-216).

- 11) Thus for example, in *De Arte Combinatoria* (1666), Leibniz considers that one of the possible applications of the combinatory art is in the construction of a polygraphy (cf. GP 4.73). Similarly, in *De stylo philosophico Nizolii* (1670), Leibniz states: "<...> neque enim omnia omnibus prostituenda sunt" (GP 4.149). As for cryptography, Leibniz was very interested in it (cf. e.g., C 174), even to the point of seeing in it the model for the *Ars Inveniendi* (cf. NE 4.12.13)
- 12) During this period he may have had direct contact with Cabbalistic ideas. Cf. Baldensperger (1943: 523-526).
- 13) Unlike Egyptian hieroglyphs, which were nearly always thought of as figurative signs of a symbolic nature, Chinese characters were perceived as purely artificial and non-representational signs. Cf. David (1965: 31-34 and 79-80). This opposition is referred to by Leibniz, who in NE 3.1.1, explicitly mentions the opinion of Golius, and stresses the artificial character of the Chinese language, "inventé toute à la fois par quelque habile homme". This same hypothesis is reaffirmed later: "Il y a peut-être quelque langues artificielles qui sont toutes de choix et entièrement arbitraires, comme l'on croit que l'a été celle de la Chine" (NE 3.2.1 = A 6.6.278). Cf. also, in the same direction, C 151. On Leibniz's position regarding the Chinese language, see Roy (1972: 120-146 esp.).
- 14) In fact, the writing that corresponds to literary Chinese, or Mandarin, is of a supra dialectal nature, which explains why various East Asian peoples have adopted it. Indeed, Chinese is the best example in the history of natural languages of mutual independence of the written and phonetic registers. For more detailed information on Chinese, cf. Meillet and Cohen (1952,1: 589-608), A. Llorach (1968: 516-568) and Granet (1950: 32-44).
- 15) Between 1664 and 1877, 161 systems are reported. Cf. Mounin (1969: 146) and Couturat/Léau (1903: 5-15).
- 16) Cf. David (1965: 51-52), Firth (1966: 63-64) and Rossi (1960: 212-214; 222).
- 17) In *De arte combinatoria*, after giving a detailed description of this project of Becher's, Leibniz criticizes it as impractical, owing to the difficulty of establishing exact synonymic correspondences, to the existence of semantic ambiguities, to the syntactic differences in sentence construction between the various languages; and to the need of constant, painstaking recourse to the dictionary (cf. GP 4.72). For a more detailed description of Becher's project, cf. Couturat (1901: 52-53) and Rossi (1960: 241-242).
- 18) In the dictionary reserved for the emission of messages, the words are alphabetically ordered, and to each one corresponds a figure made up of its page number (in Roman numerals) and line number (in Arabic numerals). In the dictionary reserved for the reception of messages, the synonyms in the five languages are arranged in parallel columns according to the alphabetical order of the Latin words. For more details, see David



(1965: 51ff.) and Couturat (1901: 51-53, and 541-543).

- 19) In fact, the translator's dictionary comprises ten divisions (proper names, place-names, adverbs, prepositions, etc.). Cf. Couturat (1901: 53 note 1). Subsequently, in his *Ars magna sciendi seu nova porta scientiarum*, 1669, a work presented as an improvement on Lull's *Ars Magna*, Kircher categorizes the concepts into four classes, each containing nine categories. Cf. David (1965: 51ff. and 61-65) and also Chapter 6 below. For Leibniz's position concerning Kircher, whose project is also referred to in the same passage of *De Arte combinatoria* where Leibniz mentions Becher (GP 4.72), cf. also C 536 and the Letter to Oldenburg of July 1670 (GP 7.5), where Leibniz says he is awaiting Kircher's new work called *Tower of Babel*, which, as Kircher himself had informed him, was being prepared under the auspices of the Emperor Ferdinand III.
- 20) Graphic semiotic systems which are devoid of the linear characters that are typical of linguistic representations, and whose application is limited to certain domains, such as, for example, telegraphic signal codes, maritime signals, etc.
- 21) As Beck clearly states in his preface (1657), such a universal character would be "a singular means of propagating all sorts of learning and true religion in the world".
- 22) It is even possible to classify all these projects as Baconians, as Cohen (1954: 51-52) and, in his wake, Knecht (1981: 147), do. Cf. Part II, Chapter 1 below, for Descartes' celebrated letter to Mersenne of 20th November 1629, in which the former comments on a project for a universal language that Mersenne had sent him, defending, in opposition to Bacon, the need to start out for a small number of characters in order to build a universal philosophical language, an idea that was to inform every subsequent philosophical project, including that of Leibniz - which is precisely what lead Cohen and, after him, Knecht to classify them as Cartesian.
- 23) Leibniz is here referring to the *Grammatica Linguae Universalis*, published in 1663 by R. P. Labbé. As Walker notes (1972: 297), one should not reject the hypothesis that the possibility of constructing a universal language on the basis of Latin was suggested to Leibniz through his contact in Paris with the abovementioned Dominican and through his readings of R. P. Labbé's project.
- 24) See Part III, Chapter 3, *below*.
- 25) Among the most significant texts in this context are the works of De Brosses, *Traité de la formation mécanique des langues*, 1765, and of Court de Gébelin, *Histoire naturelle de la parole*, 1766, which examine the articulatory bases and phonetic mechanisms of the derivation of languages. See Genette (1976: 85-118; 119-148, respectively).
- 26) In particular, Condillac (1714-1780) in his *Essai sur l'origine des connaissances humaines*, 1746, develops a sensationist basis for the thesis of the language of action (cf. II, I, chapters 1 to 4), studies its transformation into the language of words (cf. II, I, chapters 2 and 9 to 13) and, in line with Hobbes and Leibniz, proposes the construction of a language based on calculation (cf. II, II, and also *Cours d'études*

- pour l'instruction du prince de Parme*, 1775, II). On this subject, cf. Hasnaoui (1977: 97-129). Later on also Rousseau (*Essais sur l'origine des langues*, 1761) would defend (though in the opposite sense, i.e. arguing that language accompanies the decline of peoples) the natural, gestural and interjectional origin of language. Cf. in particular, chapters 1 to 5; cf. also Starobinsky (1971: 356-379).
- 27) We refer to the works of Vico (1668-1744), *Principi di una Scienza nuova d'intorno alla comune nature della nazione*, 1725, which presents a theory of the evolution of languages in three periods (hieroglyphic or sacred, heroic or poetic, and epistolary), and William Warburton, *The Divine Legation of Moses*, 1744, which establishes a parallel between the three stages of languages (action-based, metaphoric, abstract) and the three stages of writing (pictorial, hieroglyphic and alphabetical), (cf. in particular pp. 5-25). For a study of Warburton's system, cf. David (1965: 95-103). Subsequently, in the 19th century, Darwin's influence on the study of language evolution would be felt: for example, Schleicher, in *Compendium der Vergleichenden Grammatik der Indogermanischen Sprachen*, 1861-1862, makes a parallel between the genealogical tree of species and that of Indo-European languages. Cf. Manessy-Guilton (1968: 818).
- 28) *The origin of languages and nations*, 1764, *Hieroglyphic*, 1768, and especially *The circles of Gomer: an essay towards an investigation and introduction of the English as an Universal Language*, 1771.
- 29) Cf. Couturat/Léau (1903: 29-32). Also significant is the fact that some projects for some universal languages are accompanied by studies concerning the constitution of a gestural language for the deaf and dumb, and closely articulated with the thesis - so characteristic of the period - of the gestural origin of human language. This is the case of the *Institution des Sourds-Muets par la voie des signe méthodiques* (1776), by the abbot de l'Épée (1712-1789) who had, however, his predecessors in the 17th century: Wallis, Holder, and above all, Dalgarno, *Didascalacophus, or the deaf and dumb man's lector* (1680). Also Leibniz, in a marginal note to the fragment *Lingua generalis* (1678), foresees the possibility of a universal language to be used by the deaf and dumb. Cf. C 279.
- 30) We here cite an example, merely to give an idea of the scope of this phenomenon: in 1880 Volapük, the language invented in 1879 by Schleyer, which, along with Esperanto, was among the most successful, had about one million practitioners throughout the world, 283 societies and twenty-four Volapükist newspapers. See Ronai (1964: 43). Cf. also Couturat/Léau (1903: 128-163).
- 31) Its constitution as an autonomous discipline was due to the joint influence of the works of Friedrich Schlegel, *Über die Sprache und Weisheit der Indier*, 1808, Ramus Rask, *Investigation sur l'origine du vieux norrois ou irlandais*, 1814, and especially Franz Bopp, *Ueber das Konjugationssystem der Sanskritsprachen in Vergleichungen mit der griechischen, lateinischen, persischen und germanischen Sprache*, 1816. Cf. Mounin (1967: 157-180).
- 32) Although it was previously known to some missionaries, it was only through Sir William Jones's *Third Anniversary Discourse on the Hindus*, 1786, that Europe would become acquainted with Sanskrit. Jones was the

- first clearly to affirm the kinship between Sanskrit, Latin, Greek, Gothic, Celtic and, perhaps, Persian. Cf. Manessy-Guilton (1968: 818-819).
- 33) For example, the *Universal Language* of Scotos Ochando (1852), the *Spokil* of Dr. Nicholas (1887) and the *Blue Language* of Bollac (1896). Cf. Couturat/Léau (1903: 59-112).
- 34) For example, the *Anglo-franca* of Holnix (1889), the *Mundolingua* of Julius Lott (1890), the *Komun Language* of Kürschner (1900), the *Neutral* of Rosenberger (1912). Cf. Couturat/Léau (1903: 393ff.).
- 35) In accordance with the principle formulated by Jacob Grimm (cf. Couturat/Léau (1903: 121-127), according to which the basis for the universal language should be the Indo-European *radicarum* itself - already common to most European languages, to some Middle Eastern ones and to some Asian ones. Attempts in this sense include the already mentioned *Volapük* and Zamenhof's celebrated *Esperanto* of 1887, which are undoubtedly those that attained the greatest success.
- 36) Examples of Latin-based international languages are Volk and Fuche's *Weltsprache* (1883), Hendersen's *Latinesce* (1890), Peano's *Latino sine flexione* and *Interlingua* (1903 and 1910 respectively) and Monte Rosso's *Neolatinus*. Cf. Couturat/Léau (1903: 262ff.).
- 37) It may be noted that the view of Latin as a language that should be renewed still had its adepts in the 20th century. After the First World War and the ensuing hopes of peace that spread across Europe, in 1925 the League of Nations appointed a committee to study the various projects for universal languages, and this committee ended up proposing the adoption of a simplified version of Mediaeval Latin. Cf. Berger (1946: 18). Later, in 1958 and 1959, the first and second International Congress for Living Latin were held, which attempted, without success, to proceed to the necessary grammatical simplification and vocabulary renewal. Cf. Couturat/Léau (1903: 515-545). As Ronai notes (1964: 107), the abandonment of the project seems to have been confirmed by the decision of the ecclesiastical authorities, in 1963, to limit the use of Latin in the Catholic Mass.
- 38) Mounin (1958: 92-94) gives as examples, Peano's interlanguages (cf. note 36 above), Edgar Wahl's *Occidental* (1922), Alexander Gode's *Ila* (1952) and Hughe Blair's *Interlanguage* (1951), which benefited from the contribution of the linguists Sapir, Jespersen and Martinet.
- 39) In spite of its Indo-European-based lexicon (served by an elaborate derivation system that allows the formation of a large number of words from a limited basic vocabulary, simple grammar, and phonetic writing and pronunciation), the linguistic superiority of Esperanto seems, nevertheless, not to have been the only, or even most important, reason for its relative success. In his paper *Kial Venkis Esperanto?* (1979: 661-673) Jean-Claude Michea suggests that the main reason is the fact that, from the very beginning, the first Esperantists (including Zamenhof himself) had understood that it was a question less of technical communication than of affirming the contractual will to install an ideological community of which Esperanto would be both the symbol and the unifying link. Indeed, its creator laid down the irenic principles by which the Esperantist Society ought to abide and hence, from the start, his followers

were aware of the ideological, political and religious character of the movement. (As Zamenhof said, creating a language is almost like creating a new religion). In fact, the movement was reinforced by the persecution suffered by its Tolstoyan adepts from 1895 onwards in Czarist Russia. It spread all over Europe, had its first international congress in 1905 in Bologna, was officialised in 1908 through the creation of the Esperanto Academy (of which Couturat was a member), and gave rise to countless magazines, translations and original literary works (about 33.000 works, counting both translations and originals). In 1921 there appeared in Prague an "Esperantist Left" which was to be supported by the Soviet revolutionary government and, since it reflected in itself all the contradictions and conflicts of the time, would be constituted, according to Michea (1979: 670), as true "version miniaturisée des aventures du mouvement ouvrir". Cf. also, Couturat/Léau (1903: 304-363).

- 40) Louis Couturat (1868-1914), who, at the start of the present century, was a great dynamizer of the interlingual movement, would try to re-define the question of an international language in logical terms, in so doing, reviving the Port-Royalist and Leibnizian notion of linguistic universals. Cf. Couturat et al. (1912a: 47-84), for Couturat's thesis presentation and subsequent discussion (with the participation of, among others, Lalande, Lévy-Bruhl, Parodi, Weber, Vendryes, Meillet and Lachelier) of a thesis built on the basis of the following propositions: a) there exists a general grammar whose categories are common to all human languages; b) these grammatical categories may correspond to logical ones; c) from the former it is possible to construct an artificial language that would be infinitely simpler and more regular than natural languages. For more details of the discussion of this thesis, cf. the *Revue de métaphysique et de morale* (1908: 761ff., 1911: 509ff. and 1912b). For Peano (1858-1932) see, above, n. 36.
- 41) It was essentially after the First World War, and against the explicit determination of the Linguistic Society of Paris (founded in 1866), which states in its second article: "La société n'admet aucune communication concernant soit l'origine du langage, soit la création d'une langue universelle", that modern linguists entered the process - especially Jespersen (1860-1943), to whom we owe the delimitation of interlinguistics as a discipline of the science of language, whose object would be precisely the study of artificial languages, as well as of the very neologism used to designate itself. In the thirties Sapir, Cohen, Martinet and Ogden and Richards would proceed to the development of Basic English. Cf. also n. 38 above and n. 43 below.
- 42) Edward Sapir (1885-1939), the famous North American anthropologist and linguist, clearly and realistically recognized the two great advantages of a universal language: that of permitting *basic* communication, especially in commerce, and that of furthering *international entente*. For the political and ideological importance which this project can assume, cf. n. 39 above. Note the paradigmatic case of Nikolaj Jakolevitch Marr (1863-1934), in its official connection with Stalinism; Marr defends the thesis that the various human languages are developing towards total unity, towards the single language of the future society without classes or nationalities.
- 43) Thanks to certain political and cultural determinants related to the economic development of the English-speaking countries, English is today
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the language that has finally come to play the role of auxiliary international language over a large part of the globe, not literary or erudite English but only its Basic form (*British American Scientific International Commercial*), as devised by C. K. Ogden and I. A. Richards in the 1930 (with only 600 nouns, 150 adjectives, 100 prepositions, conjunctions and adverbs, 18 verbs and a small number of grammar rules). Today, English is the world's second most widely spoken language (approx. 180 million speakers). It is still much less widely spoken than Chinese (approx. 430 million speakers) but it is undeniably the first official language. Cf. Firth (1966: 207-208).

- 44) The term is Michel Pierssens's (1976: 7-12).
- 45) Cf. Couturat/Léau (1903: VII-XXVI and 71ff.) for the vicissitudes of the movement.

Notes to Part I, Chapter 5

- 1) Cf. chap. 4.1 above.
- 2) As seen above (chap. 1) this is, for Couturat and Léau the aspect that makes it possible to distinguish philosophical projects from all other projects of construction of a universal language.
- 3) Fernando Gil (1979a: 239-321) shows how in the seventeenth century the Platonic ideal of a *mathesis universalis* was constituted as an integrated form of organization of knowledge, which aimed to replace the disciplinary regime of Aristotelian inspiration. Through a careful study of the reasons and assumptions underlying the Aristotelian rejection of a single universal science, and of the arguments invoked and the consequences of this rejection, the author shows how the *mathesis universalis*, which breaks with the medieval organization of disciplines, finds its original metaphor in the tree. The case of Llull (as well as those of Bacon and Descartes) is then analysed in detail.
- 4) In fact, the mathematization of the real which is at the core of modern science, is in every case guaranteed by the original Pythagorean and Platonic conception of the mathematical nature and structure of creation. See the cases of Galilei, Descartes, Kepler and Leibniz. On Kepler as an exemplary case, cf. Gil (1979a: 277-282).
- 5) As Knecht points out (1981: 101), actual progress in mathematics (the unifying process of arithmetic and algebra carried out by Vieta, and that of geometry and algebra undertaken by Descartes and Leibniz) may have been one of the decisive cornerstones of the very idea of a universal language.
- 6) It is in this sense that F. Gil (1979a: 266-301) considers the *mathesis* as physical and categorical, and not in any way as definitional and demonstrative - a formula that condenses and summarizes his previous categorization of the presuppositions underlying all the projects that point to a single, universal science as ontological and categorical assumptions which postulate a more or less remote affinity between the order of being and that of language/thought.
- 7) Cf. chap. 4 above.
- 8) For the position of Descartes, cf. chap. 4 above and especially part II, chap. 1 below.
- 9) It is on the basis of this opposition between Bacon and Descartes that Cohen (1964: 49-63) divides the projects for the construction of universal languages into Baconian and Cartesian; in the former category he includes the works of the English pasigraphists and in the latter the philosophical projects. Cf. chap. 4, note 22 above.
- 10) This is what leads Kretzmann (1964: 381) to classify the numerous artificial languages planned during the Enlightenment era as Cartesian or Leibnizian according to whether they were intended as mere tools for the registration and communication of knowledge or as heuristic instruments.

Cf. also Tymieniecka (1963: 370-391).

- 11) "Any book written in characters of this kind can be read off by each nation in their own language" (1605: 6.1.439). Further on, Bacon says of the philosophical grammar that it could serve "for an antidote against the curse of the confusion of tongues" (1605: 6.1.440-441).
- 12) Cf. Dascal (1976: 188-218) and Rossi (1960: 204-206).
- 13) For an analysis of Bacon's influence on the movement for the constitution of a universal language in late seventeenth-century England, cf. Rossi (1960: 203-210). For Leibniz's references to Bacon, cf. *Plus Ultra* (GP 7.49), *Initia et Specimina Scientiae Generalis* (GP 7.57) and *Initia et Specimina Scientiae novae Generalis* (GP 7.64). Cf. also GP 7.52-53.
- 14) For Comenius' influence on the English school, and particularly on Wilkins, cf. De Mott (1955: 1068-1081) and also Rossi (1960: 211-216).
- 15) For an analysis of Comenius' proposals with regard to the project of a universal language, cf. Formigari (1970: 129-135) and the next work of Jana Přivatská, *Comenius on Language*, which is waited to be published soon by Nodus Publikationen, Münster, where new and important issues of recent research on Comenius' linguistic thought are going to be presented. For Leibniz's references to Comenius, cf. *Judicium de scriptis Comenianis* (D 5.181-182). Cf. also GP 7.13 and Couturat (1901: 571-573).
- 16) Cf. note 8 above.
- 17) A letter partially transcribed in Descartes (AT 1.572-573).
- 18) Except for the propositions which, in his *Traité de l'Harmonie Universelle* (1637), Mersenne dedicates to the problem of its phonetic bases.
- 19) Sir Thomas Urquhart, the translator of Rabelais and a famous joker, declares that a complete glossary of his universal language had disappeared at the battle of Worcester in 1650. Cf. Steiner (1975: 200).
- 20) Quoted in Cohen (1954: 55).
- 21) For a more detailed description on this project, cf. Formigari (1970: 101-106) and Cohen (1954: 55-56). Cf. also Couturat/Léau (1903: 18).
- 22) Note that Leibniz seems not to have known this work of Ward, of whom he only refers the work *Tentamen Metaphysicum* (Cf. C 178 and 191; VE 4.690 and VE 4.700).
- 23) For an analysis of Ward's proposals, cf. Formigari (1970: 111-116) and also Rossi (1960: 209-210).
- 24) Cf. Ramón Ceñal (1946).
- 25) A project which Leibniz had known from the exposition given in the work *Technica curiosa, sive mirabilia artis* (1664) of the Jesuit Caspar Schott (+1666), the same work through which Leibniz knew of Becher's project which, perhaps for that reason, he associates to that of the *Hispanus quidam*.

- 26) According to Couturat (1901: 58, note 5 and 62-63), this system proposed by Dalgarno may have given Leibniz the idea of the project presented in the fragment *Lingua Generalis* (1678) (C 277-279), in which Leibniz also conceived a system for the translation of figures into words.
- 27) The *Ars Signorum* ends with the translation into the philosophical language of: the first chapter of Genesis, five psalms, and two of Aesop's fables. Furthermore, Dalgarno notes, as advantages of his philosophical language, its suitability for shorthand and the fact that it might permit the instruction of the deaf and dumb. In this connection, it should be pointed out that Dalgarno was also the author of one of the first works to propose a methodical attempt at educating the deaf and dumb. Actually, in *Didascalocophus, or the Deaf and Dumb Man's Tutor* (1680), Dalgarno presented a gestural alphabet that was to be used in France and Holland. - The problem of the language of the deaf and dumb, which Dalgarno articulates with that of a universal language, and which in this sense also finds an echo in Leibniz (cf. C 278), was subsequently to be taken up by the Abbé de L'Épée (1712-1789) and by his disciple the Abbé de Sicard (1742-1822), both of whom had, already in the eighteenth century, conducted their labours under the aegis of the theory of gestural anteriority of human language, which had recently been defended by Condillac, thus maintaining the connection with the idea of a universal language. Cf. Mounin (1967: 130) and Firth (1966: 65). For a more detailed description of Dalgarno's philosophical language, cf. Couturat (1901: 544-548, "Sur l'Ars Signorum de Dalgarno"), Rossi (1960: 218ff.), Couturat/Léau (1903: 15-18), and Formigari (1970: 111ff.) who makes a detailed analysis of the processes underlying the logical-semantic classification proposed by Dalgarno.
- 28) We refer to the more complete and extensive fragments of the Encyclopaedia planned by Leibniz which, according to Couturat, must have been written between 1702 and 1704. Cf. C 437-510.
- 29) Cf. especially, Couturat (1901: 544), where the comments made by Leibniz in the margin of his *Ars Signorum* are transcribed. For other references made by Leibniz to Dalgarno, cf. also C 285, 436 and 509.
- 30) Cf., e.g., the letters to Haak of 1679/80 and 1680/81 (GP 7.16 and 19, respectively).
- 31) Likewise, in *De connexione inter res et verba*, Leibniz considers: "Ex institutio rem fluxisse, non potest dici, nisi de Linguis quibusdam artificialibus, qualem Golius Sinensem esse suspicatus est, et qualem Dalgarnus, Wilkinsius alique confixere" (C 151; VE 3.497). The same idea also appears in the *Brevis designatio* (D 5.186-187).
- 32) A work that, according to Couturat (1901: 58) was probably one of the sources of inspiration of the *Ars Signorum* of Dalgarno.
- 33) As Cohen points out (1954: 58), this work could have been published earlier if the manuscript had not been partially destroyed in the Great Fire of London of 1666.
- 34) The London Academy even set up a committee (including Robert Boyle, Christopher Wren, John Wallis and Robert Hooke among others) on May 14,
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- 1668, to examine the usefulness of Wilkins's project; supported both in its realization and in its publication by the London Academy, Wilkins's work influenced some of the Academy's later works, especially the *Thesaurus* (1852), compiled by its Secretary at the time, Peter M. Roget. Cf. Firth (1966: 65).
- 35) Indeed, it is needed, in Wilkins's words "a regular enumeration and description of all those things and notions to which names are to be assigned" (1668: 20). Note that Wilkins's collaborators were a botanist, a zoologist and a lexicographer. Cf. Cohen (1954: 58).
- 36) For a more detailed description of the project of Wilkins, see Couturat (1901: 548-552, "Sur la langue philosophique de Wilkins"). Cf. also Cohen (1954: 58-59).
- 37) For a more detailed description of this other projects of Wilkins, see Couturat/Léau (1903: 19-22). Curiously, there is some similarity between this kind of proposals and some primitive tongues. For instance, in Manjaca, the nouns of consanguinity begin with A, those of rational beings with NA, those of fruit with PE, etc. Cf. Carrera/Marques (1947: 30-37).
- 38) As is well known, Chinese is the natural language that comes closest to an ideal ideography. It has retained certain traces of figuration (the most ancient Chinese writing seems to have been pictographic) and occasionally alludes to phonic expression, which, however, it never represents; it utilizes, even today, some 2.000 ideograms (dictionaries may register some 50.000 different characters, most of them obsolete). A great many of these characters are complex graphemes that can be analysed into minimal elements, both lexical (about 500) and syntactic (situational and time indicators, etc.) Cf. chap. 4, note 14 above for bibliographical references.
- 39) Cf. letter to Rödiken (1708; GP 7.32). Leibniz would also point towards this position in certain fragments: if, on the one hand, he recognizes that the written form is better suited to memorization, demonstration and invention, on the other, he also acknowledges that speech facilitates communication. As we shall see, Leibniz's position in this respect is ambiguous: sometimes he considers it an advantage that the universal writing to be constructed should also be speakable (cf. e.g., C 277-278), at other times he considers the question to be of minor importance (cf. GP 7.12-13, .22 and .26), and at other times again he definitely values writing more than speech (cf. GP 7.32 and C 285). Cf. also part III, chap. 4, note 91 below.
- 40) "Malim linguam quam characterem, posset lingua scribi characteribus communibus <...>. Itaque poterat Wilkinsius suis characteribus supersedere, qui magis deterrent" (C 290; VE 2.376).
- 41) See together this text with another, earlier, from the *De Arte Combinatoria* (GP 4.72-73), and another one, much later, from the *Nouveaux Essais*, in which Leibniz, referring to the Chinese characters, writes: "Et on pourroit introduire un *Caractere Universel* fort populaire et meilleur que le leur, si on employoit de petites figures à la place des mots, qui representassent les choses visibles par leur traits, et les invisibles par des visibles qui les accompagnent" (GP 5.379; A 6.6.398).
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- 42) It is in that sense that Leibniz says: "Nomen tamen quod in hac lingua imponetur, clavis erit eorum omnium quae de auro humanitus, id est ratione atque ordine sciri possunt, cum ex eo etiam illud appariturum sit, quatenam experimenta de eo cum ratione institui debeant" (GP 7.13). Cf. also GP 7.11.
- 43) Leibniz should have already known of the publication of Wilkins's 1668 *Essay* when he wrote his first letter to Oldenburg (12 July 1670). However, it is only in his second letter (29 April 1671) that Leibniz says he has read the work in question. Cf. GP 7.6.
- 44) "J'ay considéré avec attention le grand ouvrage du Caractere Reel et Language Philosophique de Mons. Wilkins; je trouve qu'il y a mis une infinité de belles choses, et nous n'avons jamais eu une Table des predicateurs plus accomplie" (GP 3.216). Cf. also GP 7.19-20 and especially, GP 7.33-35.
- 45) Cf. letter to Haak, January 1680/81 (GP 7.19), where Leibniz formulates precisely this same critique in relation to Wilkins's project.
- 46) That language, says Wilkins in the *Epistola Dedicatoria* of his *Essay*, will "contribute much to the clearing of some of our modern differences in religion, by unmasking many wild errors that shelter themselves under the disguise of affected phrases, which being philosophically unfolded, and rendered according to the genuine and natural importance of words, will appear to be inconsistencies and contradictions".
- 47) Cf. also GP 7.14, .20, .27 and C 157.

Notes to Part I, Chapter 6

- 1) The same subordination of the communicative function to the cognitive or rational one that repeatedly appears in Leibniz's texts (cf., for instance, GP 7.19 and .32), as we have seen, underlies some of his critiques of the philosophical projects of his predecessors (cf. Part 1, chap. 5, notes 29 and 30, above).
- 2) On the judicial function of the future universal language, cf. also GP 7.23, .26 (where Leibniz defines the universal language as a "juge de controverses") .32, .171, .184, .200 and .204, C 155-156, 176, 221, 286, 338 and GP 3.605). Cf. also Couturat (1901: 95-99), and Gil (1985: 177-178, who shows how, faced with the difficulties of creating the Characteristic (which would provide an infallible criterion for resolving disputes and eliminating controversies), Leibniz elaborates a weaker programme on juridical lines, in which the criterion of the infallibility of the characteristic is replaced by those of probability, verisimilitude and presumption. Cf., on the same subject, Olaso (1973: 7-30).
- 3) On the heuristic function of the future Universal Language, cf. GP 7.12, .14, .17, .19, .20-22, .23, .184, .187 and C 155-157, 159, 361 and 372. Cf. also Couturat (1901: 98ff.), Echeverría (1983), Peursen (1983) and also Schrecker (1947).
- 4) As Leibniz says in his letter to Oldenburg of 1673/76: "<...> menti ipsi age novum Telescopium construamus, quod non sideribus tantum, sed et ipsis intelligentibus nos propiores reddet, nec tantum corporum superficies repraesentabit, sed et interiores rerum formas deteged" (GP 7.14-15). For other references to this image, frequent in Leibniz's text, cf. Part 3, chap. 4, note 29 below.
- 5) Cf. GP 7.16-17, 7.19-20 and 7.184.
- 6) For information of the bibliographical meaning and position of the *Ars Magna* in Llull's monumental *oeuvre*, cf. Carreras y Artau (1939: 272-334) and Ottaviano (1930: 31-104).
- 7) The *Ars Magna*, the idea of which Ramón Llull attributes to divine inspiration, has as its central aim the establishment and infallible demonstration of theological truths. In his fight against the Islamic religion, Llull affirms himself as the ferocious opponent of Islamic philosophy, and particularly of Averroism, which he counters by defending the possibility of proving the truths of faith. But in spite of all its apologetic and missionary endeavours, Llull's work was forbidden through the initiative of the Faculty of Theology of the Sorbonne, and remained banned from European universities for over a century. Cf. Carreras y Artau (1939: 339-344, 1943: 14-44).
- 8) Among the complex collection of signs, tables and diagrams conceived by Llull can be found a set of mobile circles of different radii which are superimposed in concentric rotation, thus allowing multiple combinations among the signs drawn on their borders. For a more detailed description,

cf. the classic work of Carreras y Artau (1939: 345-455). Cf. also Couturat *Note II, Sur L'Ars Magna de Raymond Lulle et Athanase Kircher* (1901: 541-543), for presentation of the tables of categories devised by Llull and Kircher, and their respective symbols.

- 9) For the image of the tree of science and its importance in sixteenth century encyclopaedism, cf. Rossi (1960: 51ff.).
- 10) "<...> a kind of method not worthy to be called a legitimate method, being rather a method of imposture <...> nothing but a mass and heap of the terms of all arts, to the end that they who are ready with the terms may be thought to understand the arts themselves" Bacon (1605: 6.2.454). Descartes, who takes from Llull the idea of a unity of knowledge of which the tree is the symbol, criticises the latter's *Ars* in terms very similar to Bacon; it serves, he says, to "parler, sans jugement, <des choses> qu'on ignore" (AT 6.17). However, the condemnation to which both authors subject Llull's *Ars* is considerably less radical than might seem at first sight; for instance, the image of the tree of science and the ideal of a sole, universal science are themes derived from Llull which both authors revised and took over in their totality. Cf. Rossi (1960: 152-160).
- 11) At first confined to Spain, the influence of Llull's thought spread over the whole of Europe from the early Renaissance onwards. Its penetration into university circles occurred, however, rather later, beginning in the sixteenth century - especially when, in 1515, in defiance of the ban on the teaching of Llull's ideas (cf. note 7 above), the Franciscan Bernard of Lavinheta was called to the Sorbonne to teach his philosophy (for Leibniz's references to Lavinheta, cf. *De Arte*; GP 4.58 and also D 6.3.156ff.). Among the many thinkers influenced by Llull, one may mention, in the fifteenth and sixteenth centuries, Raymond de Sebon, Nikolaus von Kues, Giovanni Pico della Mirandola, Jacques Lefèvre d'Étaples (important popularizer of Llull's mystical works in France, who had them published in Lyon in 1523), Cornelius Agrippa von Nettesheim (author of the *In Artem Brevem Raymundi Lullii Commentaria*; 1531), a commentary which was endlessly republished in the sixteenth and seventeenth century, and to which Leibniz refers in the *De Arte*; GP 4.62), Petrus Gregorius (whose *Syntaxis Artis Mirabilis* (1583) is also referred to by Leibniz (cf. GP 4.64)), and also Giordano Bruno (*De Compendiosa Architectura et Complemento Artis Lullii* (1582), *De Lampade Combinatoria Lulliana* (1587), etc.), whom, again, Leibniz mentions (GP 4.64). For more detailed information, cf. Carreras y Artau (1939-43: 2.101-249) and Rossi (1960: 41ff.).
- 12) For Leibniz's references, cf. GP 4.62. On the influence of Alsted and Sebastián Izquierdo upon Leibniz, cf. Rossi (1960: 179-184), Carreras y Artau (1943: 241-249, 304-309). For further information on Izquierdo, cf. Ceñal (1946) and Carreras y Artau (1943: 304-309).
- 13) For an account of this work, cf. Carreras y Artau (1943: 309-313), Couturat (1901: 541-543) and Rossi (1960: 195-197).
- 14) *Reductio linguarum ad unam* (1660) and *Polygrafia nova et universalis, ex combinatoria arte delecta* (1663). Cf. Part I, chap. 4, notes 8 and 16

above.

- 15) Cf. David (1965: 45) and Knecht (1981: 178; 345-346). Beyond his multifarious interests and research, Kircher also invented a method for the teaching of the techniques of musical composition, *Musurgia Universalis* (1650), of which Leibniz was aware, and to which he refers in the celebrated fragment *Lingua Universalis* (1678?), in which he discusses ways of making the universal language more pleasant and harmonious (cf. C 279-280).
- 16) In the context of his numerous studies of other civilizations, especially the Chinese and the Egyptian, Kircher collects diverse alphabets, signs and symbolic figures of all kind which he presents in comparative tables. For an account of Kircher's work as Egyptologist, polygraphist and collector of types of writing, cf. David (1965: 43-56).
- 17) The two authors' tables of categories are compared in Couturat (1901: 541-542). Kircher does not include a list of virtues and defects. Cf. also Carreras y Artau (1943: 311-313).
- 18) However, this arbitrariness on the level of the alphabet does not occur on the more global level of the actual symbolic structure of the *Ars*, inasmuch as it translates the requirement of building a theoretical construct which, through its elements and operational harmony, would correspond to the elemental organizational harmony of the world. As Knecht says (1981: 259), there might even be a cosmic dimension to the *Ars*. Its elements might maintain an isomorphic relationship with the elements of the world; for example, the rotating circles *vis-à-vis* the celestial spheres.
- 19) Kircher's alphabet is extremely heterogeneous in character, being formed by numbers (for the questions), letters (the initials corresponding to the categories of absolute principles and some of the relative ones), and also letters of the Greek alphabet, small geometrical figures (e.g., a triangle for God), and diversely motivated symbols, ideographic and even figurative. Cf. David (1965: 52-53).
- 20) "Quand j'étoit jeune, je prenois quelque plaisir à l'Art de Lulle", letter to Remond of July, 1714 (GP 3.620). In fact, Leibniz read Llull's *Ars Magna* in a compilation published by Lazarus Zetzner in Strasbourg (1598).
- 21) Cf. notes 11 and 12 above.
- 22) Leibniz is even careful to point out that his own *De Arte* appeared before the *Ars Magna Sciendi* of Kircher, published in Amsterdam in 1664 (cf. *De synthesi et analysi universali seu Arte inveniendi et judicandi*, GP 7.293). On the Leibniz/Kircher relation, cf. David (1965: 61-63).
- 23) Leibniz's papers include a reproduction of Kircher's alphabet. Cf. C 536-537.
- 24) Cf. *De Arte*, § 58-59 (GP 4.62-63; A 6.1.193).

- 25) On the basis of the analogy between the analysis and associative structure of concepts and the decomposition of a whole number into prime factors, Leibniz proposes in *De Arte* to designate each primal idea by a whole number; and each complex idea by a product that would constitute its definition. The knowledge of primary ideas and their combination rules (Leibniz makes binary, ternary, quaternary groupings, etc.; permutations, substitutions, equivalences etc.) would then make it possible to determine all the possible predicates of a given subject and vice versa, i.e., it would be possible not only to recompose all known truths, but to invent or discover new ones as well. Cf. *De Arte Combinatoria*, §§ 64-79 (GP 4.64-68; A 6.1.194-195). For a detailed analysis of the combinatory procedures proposed by Leibniz in *De Arte*, cf. Couturat (1901: 39-45).
- 26) "Per ratiocinationem autem intelligo computationem <...> Ratiocinari igitur idem est quod addere et subtrahere", Hobbes, *De Corpore*, 1.1.2. Cf. also, for the corresponding passage in *Leviathan*, L 110-111.
- 27) Cf. the Appendix below, for a discussion, in the context of the debate between Tönnies and Couturat, of the question of Hobbes' possible influence on Leibniz's project of the constitution of a universal language.
- 28) In a letter to Remond (GP 3.619) he refers to a third party (the Count Jörger) who, he says, would know how to use Llull's *Ars* "nom pas comme le vulgaire pour faire des discours en l'air mais pour mediter et pour en faire des applications aux réalités". On the Leibniz/Llull relation, cf. also Carreras y Artau (1943: 313-322).
- 29) The expression is from Cassirer (1923-29: 1.76), who argues that Leibniz applied this methodological experiment to the construction of a universal language.

Notes to Part III, Chapter 1

- 1) Or mnemonic as Dascal says (1978: 164-168). For an analysis of the metaphysical reasons for the "Cartesian oversight of language", cf. Robinet (1978: 79-103), Cassirer (1923-29: 3.427ff.) and Belaval (1960: 24-83). See also Part II, chap. 2, *further on*.
- 2) Curiously, Noam Chomsky (1966), although recognizing the scant attention given by Descartes to the problem of language (1966: 17), emphasizes the importance of his position on language. Fundamentally, he draws attention to the stress laid by Descartes upon the creative aspect of the use of human language as an instrument of thought and not only as a mere communication device (cf. 1966: 27). To support this view, Chomsky appeals to certain references in Descartes's texts, (especially *Discourse de la Méthode*, V, and two letters, to the Marquis of Newcastle, 1646, and to Henry More, 1649). By examining the views of a series of authors whom he considers to be followers of Descartes, from Port-Royal to James Harris, Herder, Schlegel, Humboldt, etc., Chomsky's fundamental aim is to identify historical roots which would justify his own linguistic stances and provide a firm basis for the critique he directs - quite justly in our view - at modern behaviourist linguistics, which despises the contributions of traditional and classical linguistic thought, ignoring the need to find any *explanation* for linguistic phenomena beyond their description. What is surprising in Chomsky's historical study is the fact that he does not recognize the importance of Leibniz's linguistic views, which could have provided him with far more solid arguments in his favour than Descartes's few and almost merely occasional references. Only once in the whole book does he refer to Leibniz (1966: 99-100), and that in terms which reveal a total ignorance of the scope and importance of the latter's thesis. Indeed, Aarsleff (1970), and also Robinet (1978: 103, n. 2), present a harsh criticism of the "Chomskyan version of the history of linguistics", which they consider "false", the fruit of "serious knowledge and research deficiencies and a hindrance to the creation of a real and significant history of linguistics" (Aarsleff 1970: 570). Moreover, Aarsleff emphasizes the unfounded character of the very designation "Cartesian Linguistics", stressing the negligible extent of Descartes' influence on the linguistic polemics of his time and the abusive parallel established by Chomsky between the Port-Royal grammarians and Descartes; furthermore, (1970: 582-583) he refers to Chomsky's failure to take note of the linguistic thought of Leibniz. Cf. also Belaval (1952: 30-35).
- 3) One of the many projects for a universal language that have circulated from 1620 on. Cf. David (1966: 36). According to Adam Tannery, this project was publicized in an anonymous placard. On the other hand, J. Cohen says (1954: 52) it is a project of M. Hardy's - the name referred to in the text. Cf. also Knecht (1981: 147; 179, n. 308).
- 4) "Or cette pensée de réformer la grammaire, ou plutôt d'en faire une nouvelle qui se puisse apprendre en cinq ou six heures, et laquelle on puisse rendre commune pour toutes les langues, ne laisseroit pas d'être une invention utile au public" (AT 1.78).
- 5) "Or je tiens que cette langue est possible, et qu'on peut trouver la science de qui elle dépend, par le moyen de laquelle les paysans pourroient

mieux juger de la vérité des choses que ne font maintenant les philosophes" (AT 1.81-82).

- 6) "Mais n'espérez pas de la voir jamais en usage, cela présuppose de grands changements en l'ordre des choses, et il faudroit que le monde ne fût qu'un paradis terrestre, ce qui n'est bon à proposer que dans le pays des romans" (AT 1.82).
- 7) In a letter to Burnett of August, 24th, 1697, Leibniz writes: "mon opinion est que les Characters véritablement reels et philosophiques doivent reprendre à l'Analyse des pensées. Il est vray que ces caracteres presupposeroient la veritable philosophie, et ce n'est que presentement que j'oserois entreprendre de les fabriquer" (GP 3.216). Indeed, it was not through the knowledge of this letter from Descartes to Mersenne that Leibniz became aware of the difficulty pointed out by Descartes. Although it is impossible precisely to date (cf. Couturat 1901: 57) the time at which Leibniz registered his observation, it is legitimate to suppose that it may have been around 1678/79 (at which time he refers to Descartes' letter, writing to Tschirnhaus (cf. GM 4.475); at all events, it was before 1697 (the date of the abovementioned letter to Burnett (GP 3.216)), and after 1657 (the date of Clerselier's first edition). The fact is that ever since *De Arte Combinatoria* (1660) Leibniz had defended the need to start out from a small number of characters. Even for Ward, Pedro Bermudo, Dalgarno or Wilkins, the Cartesian inspiration seems doubtful. Cf. Part I, chap. 5, above.
- 8) Significantly, this reply of Leibniz to Descartes was to be re-echoed and reaffirmed, in almost the same terms, by Frege (1882). For an analysis of the Leibnizian answer to Descartes, cf. Robinet (1978: 82-86) Jolley (1977: 71-72), Couturat (1901: 56-57), Cassirer (1953-57: 1.73-78) and also Moreau (1956: 96-99) who presents a very particular interpretation of the importance given by Descartes to the use of a symbolic support for thought.
- 9) Cf. also *Introductio ad Encyclopaediam arcanam* (C 513-514).
- 10) Cf. *De Synthesi analysi universali seu Arte inveniendi et judicandi* (GP 7.292-295), where Leibniz, precisely in relation to the genesis of his idea of a *characteristica universalis* and the need to construct an alphabet of human thoughts, discusses this question and distinguishes very clearly between real and nominal definition. Cf. also *De Organo sive Arte Magna cogitandi* (C 431-432), which we have quoted above, GP 4.423-425; 450 and NE 3.3.15-17.
- 11) Cf., e.g., *Précepts pour avancer les sciences* (GP 7.165), or *Projet et Essais pour arriver à quelque certitude pour finir une bonne partie des disputes et pour avancer l'art d'inventer* (C 180-182).
- 12) Cf. GP 4.64-68 and Part I, chap. 6, above.
- 13) Cf. GP 4.425; 469 and 292.
- 14) As has been shown above (Part I, chap. 5 and 6), this is the central point of Leibniz's critique of his predecessors.
- 15) For example, Frege (1882-83) who sees himself as a direct follower of



Notes to Part II, Chapter 1

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Leibniz's project of a *Characteristica*. Claude Imbert (1979: 621-665), in his study of Frege's project shows, however, the points in which the *Begriffsschrift* deviates from the Leibnizian *Characteristica* (cf. 1979: esp. 633-640). For a study of the relations between Leibniz and Frege, cf. Kluge (1979: 21-29).

Notes to Part II, Chapter 2

- 1) The same doctrine was to reappear much later in the *Nouveaux Essais*. Cf. NE II.29, esp. .2-.4 (= GP 5.236-237; A 6.6.254-255).
- 2) Cf. GP 4.425. Cf. notes 13-15 below.
- 3) Ideas are, in the first place, clear or obscure according to whether or not they allow the recognition of the thing represented. In their turn, clear ideas can either be distinct or confused, according to whether or not they allow, through the enumeration of its characteristics, the demarcation of the thing defined from all other things. Finally, distinct ideas can be either adequate or inadequate, according to whether or not all the elements that make up the distinct notion are distinctly identified, that is, whether or not the analysis was taken to its ultimate conclusion. Cf. GP 5.422-423.
- 4) Leibniz, in the *Discours de Métaphysique* (23, 24) also designates this type of knowledge as *suppositive*: "Et quand mon esprit comprend à la fois et distinctement tous les ingrédients primitifs d'une notion, il en a une connoissance *intuitive* qui est bien rare, la plupart des connoissances humaines n'estant que confuses ou bien *suppositives*" (GP 4.449-450).
- 5) "Et certe cum notio valde composita est, non possumus omnes ingredientibus eam notiones simul cogitare" (GP 4.423).
- 6) Cf. this text with the *Discours de Métaphysique* (24), where Leibniz designates symbolic knowledge as *suppositive* (cf. note 4 above), takes up the example again and writes: "Par exemple lors que je pense à mille ou à un chillogone, je le fais souvent sans en contempler l'idée (comme lors que je dis que mille est dix fois cent), sans me mettre en peine de penser ce que c'est que 10 et 100, parce que je suppose de le sçavoir et ne crois pas d'avoir besoin à present de m'arrester à le concevoir" (GP 4.450-451).
- 7) Cf., for instance, *Regulae*, 2 (AT 10.364-365).
- 8) "Un mouvement continu et ininterrompu de la pensée, qui prend de chaque terme une intuition claire" (*Regulae*, 3; AT 10.369).
- 9) Cf., e.g., the *Animadversiones in partem generalem principiorum Cartesianum* (GP 4.354-355), a text which also forms part of the debate with Descartes, where Leibniz defends, against the former, the necessity of demonstrating the axioms themselves, and, at the same time, praises Euclid for having turned his basic postulates into the principles of an exact science. Against the scepticism of those who despise the sciences, alleging that they derive from undemonstrated principles, and against Descartes' inconsequent dogmatism ("Nec reprehenderem verisimilitudine subinde contentum, nisi ipse tanta professione severitatis animos erexisset" (GP 4.355)), Leibniz stresses the hypothetical-deductive character of geometry. Cf. also GP 7.165 and C 180-182.
- 10) In general, Leibniz considers that the rules formulated by Descartes have more to do with the excellence of his mind than the efficacy of

his method, and that this explains why his disciples had achieved nothing after him (cf. GP 7.22). For further criticisms of Descartes' method, cf. also the letter to Oldenburg of 1673-76 (GP 7.14), *Précepts pour avancer les Sciences* (GP 7.165) and *Animadversiones* (GP 4, esp. 354-356; 358; 361-364)

- 11) Cf., e.g., GP 7.10. Cf. also note 20 below.
- 12) Cf. also GP 4.469. As Ortega y Gasset suggestively says (1958: 19), for Leibniz to think is to prove. Cf. also (1958: 36ff.).
- 13) On Leibniz's position in relation to Cartesian doubt, cf., esp., *Animadversiones* (GP 4.354-355) and the letter to Foucher of 1676 (GP 1.372-374).
- 14) For further criticisms of Descartes' principle of evidence, cf. *De prima philosophiae Emendatione, et de Notione Substantiae* (GP 4.469) and *Demonstrationes Propositionum Primarum* (A 6.2.479-486) and also the letter to Arnauld of July 14th, 1686 (GP 2.62).
- 15) "Mens scilicet nostra lassata aut distracta non satis rei attendit ad praesentes operationes suas, aut errore memoriae assumit tanquam olim probatum, quod tantum inculcatum saepius aut consideratum fixe, aut optatum studiose, altius in nobis haesit" (GP 4.361).
- 16) "Jam notavi ad artic. 5 errores qui ex defectu memoriae aut attentionis nasci et arithmetiis quoque calculis intervenire possunt (etiam post perfectam methodum repertam ut in Numeris), frustra hic memorari, quia nulla ars excogitari potest, in qua non metui debeant, praesertim cum ratiocinatio longe producenda est, itaque ad examina est recurrendum" (GP 4.358).
- 17) It is in this sense that Michel Serres can affirm that blind thought is more lucid than vision, since it avoids the risks of evidence. Cf. Serres (1968: 2.417).
- 18) Cf. also (GP 7.59; 125).
- 19) "<...> hinc analysin cogitationum possumus sensibilem reddere, et velut quodam *filo mechanico* dirigere; quia analysis characterum quiddam sensibile est" (*Analysis linguarum* of 1678; C 351). Leibniz also uses the expressions *filum cogitandi* (e.g., C 420) and *filum meditandi* (e.g., GP 7.14).
- 20) Referring to the Universal Characteristic, of which, as we know, mathematics is a "échantillon" (GP 7.22), Leibniz writes: "c'est elle qui nous apprend le secret de fixer le raisonnement, et de l'obliger à laisser comme des traces visibles sur le papier en petit volume, pour estre examiné à loisir" (*De la méthode de l'universalité*; C 99).
- 21) As Leibniz says in *Animadversiones ad Weigellium* (FNL 150), "<...> in numeris et figuris et notitiis quae ab his pendent regitur mens nostra Ariadneo quadam *filo imaginationis* atque exemplorum habetque in promptu comprobationes quales Arithmetici probas vocant".
- 22) Leibniz says: "La raison des degrez de facilité est, que dans les premie-

res <pure mathematics> l'expérience et l'imagination peut accompagner le raisonnement de pas en pas <...>, dans les secondes <applied mathematics> l'expérience peut servir d'examen <...>. Dans les troisièmes on ne saurait venir à l'expérience durant le cours de cette vie" (*De l'usage de la Méditation*; GP 7.80). For an excellent comment on this fragment, cf. Dascal (1978: 184).

- 23) "Puis, pour l'analyse des anciens et l'algèbre des modernes <...>, la première est toujours si astreinte à la considération des figures, qu'elle ne peut exercer l'entendement sans fatiguer beaucoup l'imagination; et l'on s'est assujéti, en la dernière à certaines règles et à certains chiffres, qu'on en a fait un art confus et obscur, qui embrasse l'esprit, au lieu d'une science qui le cultive" (*Discours de la méthode*; AT 6.17-18). Further on, Descartes says: "Puis <...> je pensais que, pour les considérer mieux en particulier, je les devais supposer en des lignes <...> mais que, pour les retenir, ou les comprendre plusieurs ensemble, il fallait que je les expliquasse par quelques chiffres, les plus courts qu'il serait possible" (AT 6.20). On the characteristics of this symbolic innovation, or "*intuition algébrique*", as Gaston Granger calls it, cf. Granger (1968: 49).
- 24) Cf. *Regulae*, (3 and 11; AT 10.370; 408, respectively). Cf. also *Regulae*, (7 and 11; AT 10.388; 409).
- 25) Cf. esp. *Regulae*, (14, AT 10.438-441; 450-452). Cf. also *Regulae* (14; AT 10.440-441).
- 26) It may be pointed out, however, that this criticism is mediated by the fact that, for instance, in the fragment *De l'Horizon de la doctrine humaine*, Leibniz argues that the advantages of the algebra of Viète and Descartes derive from the use of a new and more adequate (literal) symbolism (cf. C 531); cf. also C 181.
- 27) Cf. Dascal (1978: 185). For discussion of Leibniz's conception of mathematics, cf. Couturat (1901: chap. 7), Knecht (1981: chaps. 3; 5), Sanchez-Mazas (1983: 662-669) and Serres (1968: 310ff; 352ff.). For a parallel with Descartes' position in relation to the role attributed by the two thinkers to symbolism in mathematics, cf. Belaval (1960: chap. 1, esp. 38ff.), Knecht (1981: 131-149), Sanchez-Mazas (1953: esp. 139-140), Serres (1968: 390ff.) and also Moreau (1956: 96-99).
- 28) "Qui Arithmeticam, et in ea Tabulam Pythagoricam discit, quid obsecro discit: An novi aliquid praeter verba? Cum disco bis duo esse quatuor, an aliud praeter nomen numerale disco, cuius deinde in loquendo computandoque compendiosus sit usus?" (A 6.2.481).
- 29) Further on, referring to blind or symbolic thought, Leibniz even uses the word *necessary*, when he says: "<...> nihil apud homines frequentius aut *necessarium magis*" (A 6.2.481; our emphasis). Cf. Dascal (1978: 228) who clearly points out, in this text, Leibniz's oscillation between attributing an auxiliary or a truly constitutive function to the sign.
- 30) We refer the reader to Ishiguro (1972: 17-34). Cf. also Knecht (1981: 130ff.).
- 31) According to Dascal (1978: 205), in this passage Leibniz would have com-

pletely inverted the direction of legitimation between ideas and characters; his intention would be to point out that: "ce ne sont plus les idées qui justifient les caractères, mais plutôt ceux-ci qui rendent celles-là saisissables par l'intellect humain, et pourtant, légitimables" (1978: 205).

- 32) "<...> Thomas Hobbes, qui, ut verum fatear, mihi *plusquam nominalis* videtur. Non contentus enim Nominalibus universalia ad nomina reducere, ipsam rerum veritatem ait in nominibus consistere, ac, quod majus est, pendere ab arbitrio humano, quia veritas pendeat a definitionibus terminorum, definitiones autem terminorum ab arbitrio humano" (GP 4.158). For Hobbes' texts on this question, cf. L 4.102-105 and also HN 5.5-6. For a study on the Leibnizian critique of Hobbes' nominalism, cf. Couturat (1901: 103-105; 466-470), Dascal (1978: 191-196) and also Knecht (1981: 136ff.). For other texts refuting Hobbes' nominalism, cf. *Dissertatio de stylo philosophico Nizolii* (GP 4.158), *De Synthesi et Analyysi universali* (GP 7.294-295), *Meditationes de cognitione, Veritate et Ideis* (GP 4.425) and NE 4.5.2 (= GP 5.377; A 6.6.396).
- 33) "Deduci hinc quoque potest, veritates omnium primas, ortas esse ab arbitrio eorum qui nomina rebus primi imposuerunt, vel ab aliis posita acceperunt" (*De Corpore*, 1.3.8); cf. also L 105; 115ff.
- 34) Elsewhere, Leibniz opposes his own doctrine of real definition to the "difficulty raised by Hobbes" (GP 7.295); since for Hobbes all definition is nominal, he comes to see truth as dependent on the arbitrariness of language. Now, in contrast, Leibniz argues that nominal definition only becomes sufficient from the moment when the possibility of the idea which is the object of definition is demonstrated by a real definition, or, at least, proved by experience. Cf. especially, *Meditationes* (GP 4.425) and *De Synthesi et Analyysi universali* (GP 7.294-295).
- 35) Cf. L 4.100ff., *De Corpore* 1.2.4; DH 10.1.2 and mainly HN 5.2. Cf. also Appendix, further on, especially note 11. In a somewhat jocose tone Leibniz even says in the *Nouveaux Essais*: "Mais ce que je trouve le moins à mon gré dans votre définition de la Verité, c'est qu'on y cherche la vérité dans les mots. Ainsi le même sens, étant exprimé en Latin, Allemand, Anglois, François, ce ne sera pas la même vérité. Et il faudra dire avec M. Hobbes que la vérité dépend du bon plaisir des hommes <...>. Nous aurons donc encor des vérités *litérales*, qu'on pourra distinguer en vérités de papier ou de parchemin, de noir d'encre ordinaire, ou d'encre d'imprimerie, s'il faut distinguer les vérités par les signes" (NE 4.5. 2-3 = GP 5.377; A 6.6.396-397).
- 36) In relation to this question, Leibniz's position in this text is fundamentally that, while signs themselves are arbitrary, their functions are not, since the latter reflect the necessary order which forms the objective basis of the truth of our knowledge (cf. GP 7.192). This position, while in no way exhausting the complexity of the Leibnizian theses on the non-arbitrariness of the sign - which we shall try to analyse below - (cf. part 3, chap. 4) - points towards the solution later to be found in the theory of expression. It may be added that the *Dialogus* of 1677 (GP 7.190-193) comes only one year before the celebrated text of 1678, *Quid sit Idea* (GP 7.263-264), where for the first time, a rich and broad definition of the concept of expression is offered.

- 37) "B. Vaide *paradoxa* haec sententia est" (GP 7.191, our emphasis).
- 38) Cf. Couturat (1901: 101-102), Knecht (1981: 134), Dascal (1978: 204-205) and also MacRae (1976: 130-131, n. 4), who, while arguing that Leibniz never recognized the essential function of the sign in thought, concludes that it is in the *Dialogus* that he comes closest to such recognition.
- 39) Cf. Dascal (1978: chap. 7 "Signes et raisonnement", 173-231; and also 1977: 387-398). Cf. also the same author (1976: 202-212).
- 40) According to Foucault (1966: 13), in the Modern Age (during which the first great discontinuity of Western culture was formed), language, ceasing to be conceived under the category of similarity (as being written into nature, and thus decipherable), was withdrawn from the realm of being, and entered on its era of transparency and neutrality. Now constituted in the sphere of representation, it came to be seen as the external manifestation of meaning, the instrument of the human activity of comparison and analysis; essentially arbitrary in itself, it is now acquired value only through its evocative character. Cf. Foucault (1966: 71-80). For a critique of the consequences of the application of Foucault's archeological method to the theories of languages of the Ages of Reason cf. Robinet (1978: esp. 8.40-41, n.1; 115-116).
- 41) As Jalabert shows (1960: 156-161), it is primarily in terms of these three determinations that Leibniz defines divine thought. Being atemporal, God can comprehend all ideas and their relations at once, and is conscious both of simple ideas and of all their possible combinations - that is, God's thought can be intuitive and infinite. For texts of Leibniz on the question, cf. *Causa Dei cum caeteris ejus Perfectionibus cunctisque actionibus conciliatam* (13, 15-16; GP 6.440-441), where he defines the science of vision - *scientia visionis* - which characterizes divine thought, and also *Principes de la Nature et de la Grace, fondés en raison* (9; GP 6.602-603). Cf. also note 42 below.
- 42) Cf., e.g., *Réflexions sur l'ouvrage que M. Hobbes a publié en Anglais, de la liberté, de la nécessité et du Hasard* (J 370-381), where Leibniz writes: "Il est vrai que Dieu ne raisonne pas, à proprement parler, employant du temps comme nous, pour passer d'une vérité à l'autre: mais, comme il comprend tout à la fois toutes les vérités et toutes les liaisons, il connaît toutes les conséquences, et il renferme éminemment en lui tous les raisonnements que nous pouvons faire, et c'est pour cela même que sa sagesse est parfaite" (J 381). In this text, Leibniz discusses and contests the strict physical determinism of Hobbes, which leaves no room for moral necessity (cf. J. 372) or even logical necessity (cf. J 380), and tends towards the emptying of any meaning out of the very concept of God (cf. J 372; 367; 380-381), or else the reduction of the deity to a tyrannical, absolute and arbitrary power (cf. J 380) or even a chimera whose only role is to intimidate the people (cf. J 380). Curiously, the adjective *aveugle* appears here repeatedly, designating a quality, inherent to the Hobbesian conception of divinity, which Leibniz rejects altogether and, indeed, places in opposition to the divine nature (cf. J 372; 376; 380).
- 43) In terms of general interpretation of this aspect of Leibniz's thought, Dascal seems to have decisively chosen this order of reasons. Cf. (1978: 210), for instance. Cf. also note 39 above.
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- 44) Cf. part I, chap. 2, esp. notes 45-46. Cf. also *Causa Dei* (98-100, 120-123; GP 6.453-454; 456-457), and *Monadologie* (83-84; GP 6.621).
- 45) On this matter, cf. Dascal (1978: 179-180; 214-218), Couturat (1901: 83-87), Knecht (1981: 141; 218; 300-306), Serres (1968: 184-210; 233-239; 255-263; 346-348), Costabel (1968: 105-117) and also Belaval (1960: 254-278; chap. 5).
- 46) As Leibniz says in his letter to Foucher of 1687, "il ne faut pas s'imaginer que nous puissions toujours pousser l'analyse à bout jusqu'aux premiers possibles, aussi ne l'est-il pas nécessaire pour la science" (GP 1.392).
- 47) As seen above, it is here that there lies the secret of mathematics, which, precisely, Leibniz aims to extend to all areas of thought. Cf. notes 17-18, 20-22 above.
- 48) Cf. *De arte* (GP 4.70-71) and also *Generales inquisitiones de Analysis Notionum et Veritatum* of 1686 (C 358-360), *Introductio ad Encyclopediam Arcanam* (C 514-515) and *Termini Simpliciores* (GP 2.542). Couturat (C 400-401) also refers to two other tables of primitive concepts, without, however, reproducing them. In order to obviate the difficulty of establishing a definite list of primitive terms, Leibniz proposes a provisional solution, similar to that employed in mathematics in relation to undemonstrated axioms (cf. note 9 above); while the elementary ideas ("Termes absolument primitifs"), cannot be discovered, it is possible to start from the basis of ideas provisionally assumed to be primitive ("Termes primitifs à nostre egard"); (*Projet et Essais pour arriver à quelque Certitude pour finir une bonne partie des disputes, et pour avancer l'art d'inventer*, C 176; VE 4.687-694). Cf. also C 220-221.
- 49) In the *Meditationes de Cognitione, Veritate et Ideis* (GP 4.422-426), Leibniz even warns against the dangers and contradictions to which symbolic thought can lead when the signs used fail to correspond to the ideas they signify: "Saepe enim vocabula ista singula utcunq[ue] intellegimus, aut nos antea intellexisse meminibus, quia tamen hac cogitatione caeca contenti sumus et resolutionem notionum non satis prosequimur, fit ut lateat nos contradictio, quam forte notio composita involvit" (GP 4.424). Similarly, in *Analysis Linguarum*, as seen above, it is because each character corresponds to a thought that it is possible and useful to undertake the analysis of characters. In the *Unvorgreifliche Gedanken*, §5, Leibniz also refers to blind thought, in the following terms: "wenn er viel zu dencken hat, dass er nehmlich Zeichen dafür brauchet, damit er nicht nöthig habe, die Sache iedesmahl so oft sie vorkommt, von neuen zu bedencken. Daher wenn er sie einmahl wohl gefasset, begnügt er sich hernach oft, nicht nur in äusserlichen Reden, sondern auch in den Gedancken und innerlichen Selbst-Gespräch das Wort an die Stelle der Sache zu setzen." (UG §5 = D. 6.2.7-8; Pietsch 1908: 328-329).
- 50) As Knecht shows (1981: esp. 125-135), although Leibniz's work contains various aspects which tend in the direction of a formalist position (especially the demand for the construction of a symbolic system distinct from ordinary language, the definition of formal rules for the construction and substitution of symbolic expressions, and the very conception of logic as an autonomous discipline), his position is, nonetheless, in-

compatible with the kind of strict formalism which would identify meaning with formal structure, that is, reduce meaning to syntax. Joseph Moreau (1968: 265-272), in his discussion of this question, also concludes that there is no real formalism in Leibniz, offering two reasons: first, because the acquisition of knowledge requires, for Leibniz, an attention to experience which cannot be reduced to logical calculation (since the very operation which permits the application of calculation to experience is irreducible to that calculation); and second, because the rigorous logical control to which he attempts to submit all assertions and reasonings does not eliminate metaphysical reflection, but, rather, tends to facilitate it.

- 51) As we have seen, this line of interpretation is represented by Cassirer, who sees in the Leibnizian conception of the relations between sensibility and understanding the basis of the theory of symbolic thought and of the positiveness which Leibniz attributes to it. Cf. Cassirer (1923-29: 1.76ff.).



Notes to Part III, Chapter 1

- 1) Most of the more important commentators and experts on Leibniz's thought, recognizing the unsystematic character of his texts, have tried to locate a central nucleus which would allow the apparent heterogeneity of the multiple areas of his thought to be reduced to some kind of concealed unity. This is the case with both Couturat and Russell, who aim to identify logic as the dominating centre of Leibniz's thought - cf. Couturat (1902: 19-46), where he discusses precisely this question, and Russell (1975) - see the interesting preface to the second edition, where Russell reads Couturat as confirming his own thesis. Similar arguments are put forward by Baruzi (1907), in relation to the religious problematic, Gueroult (1967), in relation to dynamics as the key element of the system, and (though with considerable reservations) Dascal (1978), in relation to semiology (see, esp. 1978: 8, where Dascal refutes, in anticipation, this reading of his interpretation). For his part, Michel Serres (1968), by proposing the model of the network, or "réseau" of multiple and concurrent entries and criss-crossings (cf., 1968: 13ff.), places so much stress on the descentred character of Leibniz's thought as to run risk of denying, once again, its specific and irrefutable systematicity. Curiously, Leibniz himself was not only aware of the profoundly systematic nature of his thought (cf., e.g., GP 6.545), but also recognized the oceanic nature of the "bulk" of his writings, and the prolific abundance of his creation. The following quotation, transcribed by Baruzi (1907: 105), is particularly eloquent in this respect: "il me vient quelque fois tant de pensées le matin dans une heure, pendant que je suis encore au lit, que j'ai besoin d'employer toute la matinée, et parfois toute la journée et au delà pour les mettre distinctement par écrit".
- 2) On the position of Couturat, cf. Couturat/Léau (1903: 24-25).
- 3) In the wake of Couturat, Carreras Artau, for example (1946: 28-35), also divides the Leibnizian projects for the construction of a universal language into three types, the first two being *a priori*, under diverse influence (Lull and Kircher for the first - *De Arte* - Wilkins and Dalgarno for the second - between 1673 and 1676, during Leibniz's stay in Paris), the third *a posteriori*, as a result of the difficulties encountered. Cf. also Sousa (1967: 425-446), who attempts, precisely, to establish a periodization of Leibniz's logical thought, according to which the Characteristic would occupy an intermediate phase between the combinatory and the logical calculus.
- 4) Cf. part 3, chap. 3, below.
- 5) Herbert Knecht who, unlike other commentators, interprets Leibniz's position on natural languages as being fundamentally critical, only gives three short quotations (C 71; 338; GP 7.205). Cf. Knecht (1981: 131-133; 168).
- 6) In the *Nouveaux Essais*, too, Theophile stresses not only the "philosophical disorder" reigning in the use of general terms, but also the uncertainty that prevails in relation to the names of the most simple ideas, which, owing to their simplicity, Philalethe considered to be less vulnerable to error. Cf. GP 5.319.

- 7) "<...> il faudroit du changement dans le langage" (GP 5.320; A 6.6.339).
- 8) "Je crois qu'il n'y a pas tant de mots insignifiants, qu'on pense, et qu'avec un peu de soin et de bonne volonté on pourroit y remplir le vuide, ou fixer l'indetermination" (GP 5.321; A 6.6.340).
- 9) Later, Leibniz adds: "Je crois qu'on pourroit venir à bout des à present dans les discussions par écrit, si les hommes vouloient convenir de certaines reglemens et les executer avec soin." (GP 5.320; A 6.6.339).
- 10) This is a major theme of Leibniz's thought, which there is no room to develop here. In these two chapters of the *Nouveaux Essais*, Leibniz refers to it several times; thus the passage cited in note 8 above is immediately followed by several definitions exemplifying the mode of fixing indetermination (e.g. "La sagesse ne paroist estre autre chose, que la science de la felicité" (GP 5.321. Cf. also GP 5.316). In the same context, one may mention an illuminative passage in a text of Leibniz's youth, the *Confessio philosophi* of 1673, in which, after affirming that the main sources of the interminable controversies and confusion in human dialogue are the equivocal use of language, the tortuous signification of words, and the universal sophism of the tongues of all nations, he proposes as a solution - an unwanted remedy and a prescription for the cure of errors, the banishment of darkness and spectres, the dissolution of difficulties into thin vapour - the definition of words. Cf. S 58ff.
- 11) Cf. NE 3.9.9 (GP 5.317-318 = A 6.6.334-340), as cited immediately above in the text.
- 12) Cf. n. 8 above.
- 13) See, e.g., in *Analysis linguarum* (C 352), Leibniz's defence of natural languages as means to the transmission and discovery of science. Cf. part 3, chap. 3, n. 48 below, where the relevant passage is transcribed.
- 14) Cf. NE 3.9.21 (GP 5.320 = A 6.6.339), cited above in the text.
- 15) For a detailed study of the debate between Locke and Leibniz on the problem of language, cf. Aarsleff (1982: 42-83).
- 16) This question has already been discussed above, in the account of Leibniz's position in relation to the Böhmeian thesis of the Adamic language. Cf. part 1, chap. 2, § 5 above.
- 17) This is an extremely significant example which, from the *De Arte* onwards, is used with great frequency by Leibniz (cf. GP 4.50ff.), and which also appears in the texts on the *Characteristica Universalis* (Cf., e.g., GP 7.13; C 50-55; NE 3.3.18; .9.14; .11.24). As Brice Parain (1942: 176) shows, in his commentary on precisely this passage, it is because Leibniz believes that words designate not a mental content but an essence - defined by the latter as "la possibilité de ce qu'on propose" (NE 3.3.15) - which is, as such, independent of our thought (NE 3.3.14), that, he argues, their meaning goes far beyond our conception of them. On the status of this universe of possibility signified in the act of naming, cf. Pariente (1982: 50ff.).

Notes to Part III, Chapter 1

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18) Cf. n. 5 above.

19) Cf. also, Appendix, n. 27 below.

Notes to Part III, Chapter 2

- 1) The work in question is the *Anti-Barbarus, seu de veris principiis et vera ratione philosophandi contra pseudo-philosophos, libri IV*, published in Parma in 1563, which, at the suggestion of Boineburg, Leibniz reissued in 1670 with a preface of his own authorship.
- 2) Recognizing the importance of linguistic elegance in capturing the attention of the listener and facilitating memory, Leibniz considers, however, that the fundamental qualities of philosophical discourse are clarity and truth (cf. GP 4.138-139; A 6.2.408). This position is to be reaffirmed later, with the affirmation of the inappropriateness of stylistic figures to philosophical language (cf. GP 4.148; A 6.2.418).
- 3) "Nam Philosophi plebeis non semper in eo praestant, quod alias res sentiant, sed quod sentiant alio modo, id es oculo mentis, et cum reflexione seu attentione, et rerum cum aliis comparatione" (GP 4.142-143; A 6.2.413).
- 4) For instance, in Hobbes (cf. L 5.112ff.).
- 5) It may be noted that Leibniz, who always tends towards conciliation, expressing his readiness to recognize and stress the positive aspects of all doctrines, is here quite incisive in his critique of scholastic philosophy, a fact which is even more surprising considering that, in other texts, as is well-known, he reveals a considerable appreciation of it. It should be added, however, that as early as the *Dissertatio de stylo philosophico Nizolii* written in his youth, Leibniz is careful to distinguish between older and contemporary scholastics, aiming his criticisms solely at the latter, whom he accuses of empty erudition, frivolity and lack of creativity (cf. GP 4.157; A 6.2.427f.). Similarly, he is also careful to liberate Aristotle from the reputation attributed to him by scholasticism (cf. GP 4.155; A 6.2.425).
- 6) "In Germania inter alias causas, ideor fixior est scholastica Philosophia, quod sero, et ne nunc quidem satis, germanice philosophari coeptum est" (GP 4.144; A 6.2.414).
- 7) "<...> Germanica a latina tota coelo distat" (GP 4.144; A 6.2.414).
- 8) "<...> at in Germania nemo hactenus tale quicquam, nisi omnium sibilis exceptus, tentavit" (GP 4.144; A 6.2.414).
- 9) The expression is that of Belaval (1976: 30).
- 10) Cf. GP 4.147; A 6.2.417, where Leibniz recalls the example of Aristotle, who himself only used concrete terms in his writings, and once again condemns the use of abstract terms, which, he says, as the "astute Hobbes" shows, give rise to dangerous abuses.
- 11) We will next consider two texts written some thirty years later (the *NE* and the *UG*) which show the fruit of his labour of development and conceptual grounding carried out by Leibniz over the intervening period. Cf. also Waterman (1978), who, on the basis of the correspondence between Leibniz and Ludolf (1688-1703), analyses Leibniz's positions and

research with regard to the geographical origin of the German people (cf. 1978: 57-59), the theory of proto-language (cf. 1978: 59-61) and the study and development of the German language (cf. 1978: 64-67).

- 12) While Leibniz wrote a considerable amount in German, his principal works are, nevertheless, written in Latin (as with this *Dissertatio* itself), and French, languages which allowed him to reach a far wider audience.
- 13) Whether in his monumental dedication to the continual practice of correspondence, whether in his publishing project of the *Semestria Literaria*, whether, and above all, in his insistent and diversified attempts at founding academies, Leibniz is perhaps the most significant exponent of the powerful movement which, emerging from the cultural revolution of modern times, has aimed, outside the universities, at achieving the necessary institutional support for the development and communication of knowledge. For the highly varied projects drawn up by Leibniz, the characteristics and aims which he envisaged for the academies, and their articulation with the larger Leibnizian project of the Encyclopedia, cf. Couturat (1901: 123-128; 142-149), and especially the fourth appendix to this work, "Leibniz fondateur d'Académies" (1901: 501-528).
- 14) Cf. SO 356; 365-360.
- 15) As is well known, in this movement an especially important role was played by Luther's translation of the Bible into German, and by the work in the area of versification carried out by Opitz (whom Leibniz mentions in the *UG*, §113; D 6.2.51; PU 356). Cf. Polenz (1970: 140ff.) and also part I, chap. 2 above, with regard to the contribution of Jacob Böhme.
- 16) The principal studies before Leibniz, and mentioned by him, are those of Justus Georg Schottel, who, in *Ausführliche Arbeit Von der Teutschen HauptSprache* (1663), praises the German language for its expressive capacity, phonic attractiveness, naturalness, clarity and brilliance, and suggests that it may be directly descended from the Adamic language; Daniel Georg Morhof, who, in *Unterricht von der Teutschen Sprache und Poesie, deren Ursprung, Fortgang und Lehr-Sätzen, wobey auch von der reymenden Poeterey der Ausländer mit mehrern gehandelt wird* (1682), also defends the thesis of the antiquity of German; and, above all, the works of Johann Clauberg (1622-1665), *Ars etymologica Teutonum e philosophiae fontibus derivata* (1663), Gerhard Meier (1646-1708), *Glossarium linguae saxonicae* and Johan Schilter (1632-1705), author of a posthumously published *Thesaurus antiquitatum Teutonicarum* (1726-28). For Leibniz's references to these authors, cf. NE 3.2.1 (GV 264; A 6.6.279-280).
- 17) Cf., especially, Aarsieff (1969: 173-189) and note 27 below. It is not our intention here to claim that the central objective of these studies was the defence of the German language. However, Jean Claude Margolin (1983) affirms, or, at least, suggests that the central objective of Leibniz's historical and linguistic studies is, precisely, the nationalist exaltation of the antiquity and excellence of the German language and people; he shows how, in a historical study dedicated to the question of the origin of the Frankish people (and largely argued on linguistic grounds), Leibniz concludes, invariably and vehemently, in favour of the Germanic origin of the Gauls. Margolin interprets this fact as being symptomatic of Leibniz's excessively pro-Germanic, patriotic tendencies. Cf. also Davillé (1909: 320ff.). We shall also see below (cf.

- note 48) how, even with regard to the German language, Leibniz's position is far less nationalist than might appear at first sight.
- 18) "De sorte qu'il n'y a rien en cela qui combatte et qui ne favorise plustost le sentiment de l'origine commune de toutes les Nations, et d'un langue radicale et primitive" (GP 5.260; A 6.6.281).
- 19) Cf. NE 3.2.1 (GV 260). Leibniz further says: "<...>la langue Germanique <...> a autant et plus de marques de quelque chose de primitif que l'Hebraïque même" (GP 5.264; A 6.6.285).
- 20) Leibniz recalls that the most ancient text in any European language is the *Codex Argenteus*, written in Eastern Gothic, a language which shares a common basis with German. Besides, these languages derive from Celtic, which includes both the German and Celts, and, going even further back, Leibniz discovers the Scythians, people whose languages again show a marked proximity to German; cf. NE 3.2.1 (GV 259). This is, in the end, an abbreviated exposition of the philological theses which are presented in more detail in *Brevis designatio meditationum de originibus gentium, ductis potissimum ex indicio linguarum*, a text published by Leibniz in 1710 in the first volume of the *Miscellanea Berolinensia* (cf. D 4.186-198).
- 21) Cf. notes 25 and 26 below.
- 22) The reference is to Jan van Gorp (Goropius Becanus; 1518-1572) who argues, by means of the bizarre etymologies referred to by Leibniz (cf. NE 3.1.2; GP 5.264; A 6.6.285f.), that all languages derive from Germanic (cf. part I, chap. 1, n. 9 above).
- 23) Cf. part I, chap. 2 above, n. 35 and 37 above.
- 24) In fact, of the 120 or so examples which Leibniz offers, only some 30 are taken from non-Germanic languages.
- 25) For instance, "<...> le latin *coaxare*, attribué aux grenouilles, qui a du rapport au *couaquen* ou *quaken* en Allemand. <...> le bruit des ces animaux est la racine primordiale d'autres mots de la *langue Germanique*. <...> de là est venu que *queck* en *vieux Allemand* signifioit vie ou vivant; <...> On appelle aussi *Quäken* en *bas Allemand* certaines mauvaises herbes" (GP 5.260-261; A 6.6.281-282; our emphasis).
- 26) It should be noted that some of these examples, especially those relating to the letter R, are the same as those employed by Plato in *Cratylus* (cf. 426c - 427c). For other sources for Leibniz's examples, cf. Aarsleff (1982: 66ff.).
- 27) It may be noted that, in Leibniz, etymology implies not only a diachronic, but also a synchronic and comparative analysis. Thus Leibniz does not confine himself to searching for the ancient forms of the words of one language alone, but also provides examples taken from one or more languages, which he compares and analyses without differentiation, in terms of both their sonority and their common signified. For this question, cf. Aarsleff (1969: 173-189), Nef (1979: 742-725), and Todorov (1972b: 289-291), who argues that the present-day concept of etymology is a relatively recent limitation of the older, wider conception of ety-
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mology as not only the study of the historical derivations of words, but also the diagrammatic study of their affinities.

- 28) For the concept of onomatopoeia, its varieties and the problems involved in its definition, cf. Graumont (1901: 97-158). For a most exhaustive analysis of the various theories of the motivation, cf. Miclau (1970: 85-130) and also Todorov (1972a: 446-462), who offers a classification of theories of phonetic symbolism, placing Leibniz among the extra-linguistic and acoustic/semantic theories. This classification is, in our view, extremely reductive in relation to the complexity and tonal multiplicity with which Leibniz conceives the problem of the non-arbitrariness of language, given that it takes account of onomatopoeic theory alone. Frédéric Nef (1979: 741-745) also, quite justifiably, criticises Todorov's classification of Leibniz.
- 29) It should be noted that the mode of passage from the first stage of the etymological analysis (concerning the onomatopoeic origin of names) to the second (concerning the symbolism of sounds) - "*Car il semble que par un instinct naturel <...>*" - even permits us to affirm that Leibniz may not have been aware of the subtle differences between the two registers in which he tried to base the original naturalness of languages.
- 30) Cf. *Dissertatio* (GP 4.142-143).
- 31) Cf. *UG* §10-15.
- 32) "<...> Ich finde aber hierinn die Teutsche Sprache noch etwas mangelhafft und zu verbessern" (*UG* §13).
- 33) Leibniz offers innumerable suggestions, prescribes rules, warns against dangers and obstacles to be avoided, etc. Particularly interesting is the fact that he very often cites examples referring to measures and occurrences from other countries, from which he draws diverse conclusions and suggestions. Cf., for example, *UG* §§ 17-18, 35-39, 55 and 72.
- 34) Thus the Dictionary or Lexicon (*Sprachbrauch*) and the Source of Language or Glossary (*Sprachquell*) should be compiled in alphabetical order, since their objective is to indicate the significations of words; while the Treasury of Languages or cornu copiae (*Sprach-Schatz*) should be drawn up according to the different types of things, whose interrelations will thus be more clearly illuminated (cf. *UG* §§77-78). Cf. also, for the idea of the dictionary in Leibniz, Nef's article, as cited above (1979: 748ff.).
- 35) "<...> dass die Wort nicht eben so willkührlich oder von ohngefahr herfürkommen, als einige vermeynen" (*UG* § 50).
- 36) Leibniz here refers to the pretensions of certain German academics. Cf. Poienz (1970: 178ff.).
- 37) "So solte ich auch dafür halten, dass in gewissen Schrifften, so nicht wegen Geschäfte und zur Nothdurfft, auch nicht zur Lehre der Künste und Wissenschaften, sondern zur Zierde heraus kommen, ein mehrer Ernst zu brauchen und wenige fremde Worte einzulasssen seyn" (*UG* §94); cf. also *UG* §86.

- 38) Cf. UG §§9, 49 and 50.
- 39) Cf. UG §52.
- 40) As Leibniz says: "Wies es mit der Teutschen Sprach hergegangen, kan man aus den Reichs-Abschieden und andern Teutschen Handlungen sehen" (UG §24).
- 41) "Das Haupt-Absehen wäre zwar der Flor des geliebten Vaterlandes Teutscher Nation, sein besonderer Zweck aber und das Vornehmen (oder object) dieser Anstalt wäre auf die Teutsche Sprache zu richten, wie nehmlichen solche zu *verbessern*, *auszuzieren* und zu *untersuchen*" (UG §31; our emphasis). The same idea is further reinforced in the final paragraphs of the text, where Leibniz stresses the necessity and the advantages of the compilation of a German grammar (cf. UG §§102-107), and refers to the writer's tutelary role and his capacity to serve as a model. Cf. also UG §111 and also §93.
- 42) The function of the onomatourge or legislator of the *Cratylus* is effectively described as being that of impressing the ideal signification or form of the object to be named on the malleable matter of varying sounds. Cf. *Cratylus* 389a-e.
- 43) It is in this sense that Plato situates even the figure of the dialectician as auxiliary to (and judge of) the labour realized by the onomatourge. Cf. *Cratylus* 390c-d.
- 44) In the final section of *Cratylus*, it is Socrates who directly formulates the paradox towards which Cratylus' position leads, asking how it could be possible for the onomatourge, without the aid of primitive names, which were then still not established, to have a knowledge of things (whose nature was subsequently to be conveyed through names) which can only be known through the mediation of names (cf. *Cratylus* 437e-438c). It is precisely from this paradoxical situation exposed by Socrates that Plato draws the concluding observation of the dialogue, showing how it is not only *in* but *beyond* words, in the opening of thought to the contemplation of true realities - the immutable forms - that one can aspire to know the truth (cf. *Cratylus* 439aff.). For an analysis of the linguistic aporeias in *Cratylus*, cf. Bollac (1972: 309-314) and also Genette (1976: 11-37), Gadamer (1960: 265ff.) and Wolff (1979: 802-812).
- 45) While recognizing that "<e>s kan zwar endlich eine jede Sprache, sie sey so arm als sie wolle, *alles* geben" (UG §59), Leibniz attributes a decisive role to vocabulary in this text. As he says, "<d>er *Grund und Boden einer Sprache*, so zu reden, sind die *Worte*, darauff die Redens-Arten gleichsam als Früchte herfür wachsen" (UG §32). The same idea is reinforced, both by the fact that all the measures for the perfecting of language refer to vocabulary, and by the placing of abundance and richness of vocabulary as the first of the three qualities that are necessary for a language. Cf. UG §§57, 102 and 110.
- 46) "<...> dass die Sprach ein Spiegel des Verstandes <ist>" (UG §1). For an analysis of the metaphor of the mirror in the *UG* (a metaphor which also appears in other texts; cf., for instance, *NE* 3.7.6), see especially Dascal (1976: 204ff.). It is precisely because this metaphor appears in a text like the *UG*, whose central objective is to show the necessity of
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perfecting the German language, that Dascal interprets it as implying a non-external relation between language and thought. According to Dascal, this metaphor does not mean that language and thought are conceived by Leibniz as entering into a relation of either externality or of mere influence of thought on language (i.e. language as the mirror of thought); but, rather, it implies the thesis of a real influence of language on thought, since there would otherwise be no explanation for its use in a text with the characteristics and objectives of the *UG*. On the metaphor of the mirrors in general, cf. also the interesting study of Schoffer (1982).

- 47) "*<...> dass die rechte Verstandes-Übung sich finde, nicht nur zwischen Lehr- und Lernenden, sondern auch vornehmlich im gemeinen Leben unter der Grossen Lehrmeisterin, nemlich der Welt oder Gesellschaft, vermittelest der Sprache, so die menschlichen Gemüther zusammen füget*" (*UG* §4).
- 48) Curiously, the nationalism underlying this Leibnizian position is here revealed in all its complexity; if we consider that the perfection of the German language proposed by Leibniz is not only carried out through the deepening of its roots and specific qualities, that is, of the national characteristics which precisely define the unique and superior profile of German in relation to other languages, but also implies the introduction of external elements deriving from other languages and people, which can only be discovered through interaction among nationalities and cultures, we may conclude that this nationalism conceals a universalist vocation, which can be seen either as filling the role of counterweight to an extreme nationalism or as, inversely, tending to reinforce that nationalism. Unlike Walker (1972: 301-304), who argues that the *UG* are the fruit of a nationalism and patriotism that may be considered excessive, or at least surprising in a figure like Leibniz (Walker 1972: 303-304 recognizes, however, that compared with the excesses of some of his contemporaries, e.g. Meier, Leibniz's position is actually moderate), we consider this text to be an interesting document for the comprehension of the tension inherent to the possible nationalism of the author of the most consequent and significant projects for the construction of a universal language. On the close link made by Leibniz between the intellectual liberation of the German people and its capacity to think and speak in its mother tongue, cf. Cook (1974: 97ff.).
- 49) It was fundamentally through the conception of language as a popular creation (what Genette (1976: 15) calls a "romantic mimologism" in contrast to "Platonic mimologism" according to which language is the work of initiates) that Leibniz came to inspire the philosophy of language of German thought in the eighteenth and nineteenth centuries. That is the case of Herder (1744-1803) - and, through him, in the whole of German romanticism -, and, especially, of Wilhelm von Humboldt (1767-1835), whose role in the development of modern linguistic thought is of acknowledged importance. For Leibniz's influence on Herder, cf. Cassirer (1923-29: 1.99 ff.) and on Humboldt, cf. Gadamer (1960: 291ff.) and also Cassirer (1923-29: 1.103-111). Starting from the basis of the relationship established by Leibniz between language and people, both Herder and Humboldt tend, however, to emphasize, far beyond anything warranted by Leibnizian thought, the irreducible spiritual individuality of each people and each language. Herder, in *Abhandlung über den Ursprung der Sprache* (1772), after affirming the human origin of language against its divine origin (cf. 1772: 80-87), not only totally identifies reason and language (cf.

1772: 80-81), but also, conceiving the latter as a particular vantage-point on the world (cf. 1772: 144ff.), renounces any aim of searching behind the diversity of natural languages for the universal structure of a mother tongue - in which point, then, his approach diverges decisively from that of Leibniz (Herder even conceives the project of the construction of a general physiognomy of nations on the basis of the comparative analysis of their languages). Humboldt, too, affirms the profound identity between language and the "spirit of the people" (cf., for instance, 1835: 10.179). However, to the extent that Humboldt conceives of language not only as a particular perspective of the world, but also as the echo of the universal nature of man (cf., e.g., 1835: 4.151-152, where he defines the task of the linguist as being precisely the search for the "spiritual dynamism of humanity" or the "internal universal clause" of language, underlying the various languages and linguistic groups), his position is more authentically Leibnizian than Herder's. In the work of Fichte, too, *Reden an die deutsche Nation* (1808), especially in the fourth and fifth discourse, there are certain arguments which are very close to those of Leibniz in their praise of the German language (seen as the closest to the primordial, original language, cf. 1808: 108-109), whose power is considered to derive precisely from its closeness to the original sources (1808: 119). For the Leibniz-Fichte relation, with regard to the superiority of German, cf. Belaval (1976: 35-36). In his turn, Hegel, who was a ferocious critic of the project for the artificial constitution of a philosophical language in general, and the Leibnizian project in particular (cf. *Encyklopädie der philosophischen Wissenschaften im Grundrisse*, the long note to § 459), follows Leibniz in his praise of German as the most suitable language for philosophical work and exposition; but, where Leibniz locates this superiority essentially in the concreteness of its vocabulary, and, therefore, in the univocal relation between each word and the fact or object of the concrete experience of the people that it designates, Hegel, in contrast, argues that it is through the plurivocality of sense that each word of the German language carries and contains, and through the speculative ambiguity of its vocabulary (each term having not only diverse, but even opposite significations) that this superiority is manifested. On the relation between Leibniz and Hegel in relation to the German language, cf. Cook (1974: 97-103) and also Poirier (1979: 651-660).

Notes to Part III, Chapter 3

- 1) Cf. *Lingua rationalis* (GP 7.28-30) and also C 243; 280-281 and 289. Leibniz also uses the designation of *lingua philosophica* (C 152; 288).
- 2) The first dated fragment is from April 1678 (C 280-281), with the attributed title *De Grammatica rationali*; it is followed by *Analysis linguarum*, dated September 1678 (C 351-354). Apart from these texts, Couturat also publishes a series of other fragments on grammatical analysis, which he believes should be dated around the same year. Cf. the fragment with the attributed title *Consequentiae* (C 243-244), the untitled fragment C 280, *Grammatica* (C 281-282), *Grammaticae Cogitationes* (C 286-287) and the untitled fragment C 288-290. Cf. also Couturat (1901: 64ff.)
- 3) "Reducenda omnia alia ad ea quae sunt absolute necessaria ad sententias animi exprimendas" (C 281).
- 4) "<...> hinc analysin cogitationum possumus sensibilem reddere, et velut quodam filo mechanico dirigere" (*Analysis linguarum*, C 351; VE 4.811).
- 5) "<...> scientiae omnes, quae demonstrationibus constant, nihil aliud tradant, quam cogitationum aequipollentias (seu substitutiones)" (C 352; VE 4.811).
- 6) Cf. C 353. Couturat interprets as composed or derived words those which Leibniz designs as non-simple primitive words. Cf. Couturat (1901: 64).
- 7) Leibniz, on two occasions, employs the concept of etymology to characterize this type of reduction of a semantic component to its constituent elements. Cf. C 352-353.
- 8) It may be noted that the expression *grammatical analysis* only appears, precisely, in the final part of the text. Cf. C 353-354.
- 9) In fact, after describing the first part of the text, in our view incorrectly, Couturat limits himself to the comment: "*Puis on étudiera la syntaxe <...>*" (Couturat 1901: 64; our emphasis).
- 10) "<...> intelligentur ergo resolubiles velut definitione quadam, si modus ostendatur, quomodo carere illis, et simplices in earum locum substituere possimus" (C 353; VE 4.813). Leibniz even argues that it is possible to do without the following: adverbs, many conjugations and all interjections, case, tense, and person. We shall see further on, how, within the framework of his logical and grammatical research towards the establishment of a Rational Grammar, Leibniz was to defend even greater reductions and simplifications.
- 11) In fact, Leibniz says: "Hac analysi grammatica absoluta sequitur analysis logica" (C 353).
- 12) This interpretation is, we believe, correct provided care is taken to retain emphasis on the fact that one of the criteria used by Leibniz in the selection of the symbolic system for the *characteristica universalis* is its own operationality. Cf., e.g., GP 7.205, and also *Linguae philosophicae Specimen in Geometria edendum* of 1680 (C 152).

- 13) Couturat (1901: 59-61) even suggests that it was owing to the difficulties which Leibniz encountered in the selection of the system of characters to be adopted that he finally opted in favour of the idea of the *a posteriori* construction of the universal language, i.e., on the basis of existing natural language.
  - 14) Leibniz uses several designations indifferently: *grammatica rationalis* (cf. C 286; 287; 35), *grammatica logica* (cf. C 221), *grammatica philosophica* (cf. GP 7.28; C 221; 511), *grammatica universalis* (GP 7.35; 5.280; C 35) and *grammatica generalis* (GP 7.28).
  - 15) Cf. *Consilium de Encyclopaedia nova conscribenda methodo inventoria* (C 36). On the Leibnizian metaphor of language as a mirror of the intellect, cf. part 3, chap. 2, n. 46 above; for a contemporary revival of this metaphor, cf. Chomsky (1975: 12-14).
  - 16) It should be noted that, as has already been pointed out, Leibniz's etymological studies involve, not only a diachronic, but also a synchronic and comparative dimension. Cf. part 3, chap. 2, n. 27 above.
  - 17) However, the main object of Leibniz's etymological and philological studies is the vocabulary of the various languages (see his projects for the constitution of different types of lexicons and dictionaries of the German languages and dialects; cf. part 3, chap. 2, n. 34 above. His most extensive research in these areas includes the proposal for, and development of, a set of comparative procedures and other specifically linguistic, methodological suggestions of undeniable importance and modernity. On the rigorous character and pioneering nature of the linguistic research methodology used by Leibniz, cf. Ramos (1949) and Leroy (1966).
  - 18) This expression is used by Belaval (1977: 45-47) to characterize the belief, which was widespread in the seventeenth century, in a strict correlation between logical and grammatical categories. This thesis, which is today still under debate, has been, apparently, refuted by both anthropological and psychological studies and by strictly linguistic research. See, for instance, the studies of Lévy-Bruhl (1910), Piaget (1972), Serrus (1933) and the classic article of Benveniste (1966: 63-77). On the other hand, it constitutes the starting-point (after diverse reformulations) for such essential and various studies as Husserl's project for the constitution of a Pure Logical Grammar or Chomsky's Transformational-Generative Grammar - projects which, significantly enough, their authors place in the tradition of the classic studies of the Port-Royal school. Cf. Husserl (1913) and Chomsky (1966: esp. 60-85; 1965: 10-21).
  - 19) This is the assumption which underlies Leibniz's research in this area and also most of the studies of the logicians and grammaticians of the seventeenth century, among which may be mentioned those of the Port-Royal school, the *Grammaire générale et raisonnée* of Arnauld and Lancelot (1660) and *La Logique ou l'art de penser* of Arnauld and Nicole, whose first edition (incomplete and anonymous) appeared in 1662. Cf. Foucault (1966: 4.3-4; 1969), Chomsky (1966: esp. 60-85) and Canto (1979: 709-719).
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- 20) Cf. *Consilium de Encyclopaedia nova conscribenda methodo inventoria* (C 35) where Leibniz refers to the Gallic language. Cf. also *Lingua rationalis* (GP 7.28-29).
- 21) For instance, Scaliger, *De causis linguae latinae* of 1540 or P. Labbé, *Grammatica Linguae Universalis* of 1663, to which Leibniz refers in the *Nouveaux Essais* (GP 5.258; A 6.6.279). Cf. part 1, chap. 4 above. However, as Canto (1979: 709-711; 717) shows, the Port-Royal Grammar had already broken with this tradition, by starting out essentially on the basis of the French language in order to establish the general rules of functioning of all languages. French here assumes for the first time (albeit not explicitly) the role of metalanguage, becoming a point of reference for comparisons with other languages; these occur frequently for Latin, sporadically for Greek and Hebrew, and rarely for German, Spanish and Italian.
- 22) It may also be considered that the idea of a simplification of Latin grammar was suggested to Leibniz by contact with the Armenian dominican to which he refers in the *Nouveaux Essais* (GP 5.258; A 6.6.279), doubtless the Armenian P. Anton Nazarean (cf. A 6.6.279). Leibniz himself seems to confirm this hypothesis when, in the *Grammaticae cogitationes* he writes "Et qui linguam loquitur his differentiis neglectis, quemadmodum Dominicanum ex Persia facere audivi Parisiis, nihilominus intellegi" (C 286; VE 2.348).
- 23) "<...> quoniam tamen sunt linguae in quibus scientiae jam magis sunt ex-cultae, qualis latina est, hinc ejusmodi linguam praeferrere utilius fuerit, praesertim cum illa hodie nota sit plerisque scientias intelligentibus" (*Analysis linguarum*; C 352; VE 4.795).
- 24) Cf. also *Linguae philosophicae Specimen in Geometria edendum* of 1680 (C 152). It may also be noted that in other texts, not directly related to the theme of the Rational Grammar, Leibniz had already shown his appreciation of the Latin language. Cf. especially *Initia et Specimina scientiae Generalis* (GP 7.70). However, that does not invalidate the critical position which, from the *Dissertatio de stylo philosophico Nizolii* onward, Leibniz adopts towards the terms of vulgarized Latin. Cf. part 3, chap. 2 above.
- 25) "Grammaticae autem generalis tantum pars est Grammatica Latinae vel alterius cujusque linguae, quatenus regularis est, et anomalis caret" (*Lingua Rationalis*; GP 7.28).
- 26) Unfortunately, the terminological oscillation to which we have referred above (cf. n. 14 above) does not permit a rigorous establishment of the definitive distinction which, in our opinion, is suggested by this text.
- 27) In proceeding to this distribution of the fragmentary and heterogeneous Leibnizian textual corpus concerning the Rational Grammar, we are fully aware that we are proposing an arrangement which obeys expository rather than chronological criteria (which have, however, to some extent, been taken into account in other passages of this study, for instance in the exposition of and commentary on the texts concerning the German language). However, to use chronological criteria at this point would be completely unjustified viewing that many of the texts in question are undated. Nor have we followed systematic or methodological criteria. In

fact, Leibniz does not explicitly establish the relationship of priority between the first and second levels which we have adopted; we believe, however, that it is fully justified.

- 28) This thesis had its defenders in the period, such as Edward Herbert of Cherbury (1633-1633), Ralph Cudworth (1617-1688) and Géraud de Cordemoy (1620-1684). Cf. Knecht (1981: 158-159) and Dascal (1971: 272-290).
- 29) Cf. n. 15, and part 2, chap. 1, n. 1 above, and Dascal (1971). It is true that the Port-Royal grammar exerted an undeniable influence (to which Leibniz himself was not immune), but it is equally the case that similar, and equally significant, positions can be found in many other texts and authors (including Leibniz); one may cite the cases of the *Rhétorique ou l'art de parler* of B. Lamy (1675) and the *Discours Physique de la parole* of Cordemoy (1668). Today, the hypothesis of a universal grammar has been reinforced by genetic studies that stress the probable existence of biological propensities which would be highly specialized from a linguistic point of view. On this point, one may refer to the classic studies of E. H. Lenneberg (1967), which present the result of rigorous neuro-physiological research, which tend, precisely, to favour the existence of a biological matrix of linguistic potentialities, that is, general principles of syntactic organization common to the different languages. Besides, Lenneberg directly links his own work to Chomsky's theses (cf. 1967: esp. chap. 5, 6). Cf. also Lenneberg (1970: 55-92), where he defends the existence of universal structures of phonemization, concatenation and grammatical ubiquity. For a presentation of the debate over Chomsky's positions, cf. Polloc/Jacob (1979: 751-777), who offer a brief but useful summary of the contemporary debate concerning the question of linguistic universals, especially the polemic surrounding the more or less rigid or malleable nature of genetic programming of a linguistic character.
- 30) It would be interesting to determine how far Leibniz's proposals are paralleled in other *a posteriori* Latin-based languages devised much later, for instance, in the languages constructed by Peano (*Latino sine flexione* and *Interlingua*) in 1903 and 1910 respectively. Cf. part 1, chap. 4, n. 36 and 38 above.
- 31) As Couturat points out (1901: 69), the reduction to which Leibniz subjects verbal tenses is particularly drastic; breaking with the traditional definition of verbs as signifying time, and arguing instead that they express only affirmation and negation, and can thus be reduced to the copula *is/is not*, Leibniz shows how nouns, adjectives and adverbs can signify time. Cf. C 289.
- 32) For instance, "Variae declinationes inutiles" (*Grammatica*; C 281).
- 33) As Leibniz writes in the *Nouveaux Essais*, "Les Genres ne font rien dans la Grammaire Philosophique, mais les cas repondent aux *prepositions*" (GP 5.311; A 6.6.330).
- 34) In *Essais d'analyse grammaticale* (C 285), Leibniz writes: "Putem aliis casibus eliminatis genitivum, qui simplicissimum continet obliquitatis respectum, posse retineri", but, e.g., in *Grammaticae cogitationes* (C 287; VE 2.350), he says: "In Grammatica rationali necessarii non sunt obliqui, nec aliae flexiones".
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- 35) Couturat shows how the analysis of Leibniz's various examples indicates that the latter had discovered that the genitive in reality expresses diverse kinds of relations, such as: part/whole (*manus hominis*), cause/effect (*fillius hominis*), possessor/possessed (*equus hominis*), substance/accident (*calor hominis*), subject/predicate (*titulus hominis*). Cf. Couturat (1901: 73).
- 36) In the same text, Leibniz presents further, equally celebrated, examples (*pars domus*; *lectio poetarum*, *Paris amator Helenae*). Couturat shows how it is by one and the same method, that of the decomposition of the proposition into two propositions articulated by the conjunction "while", that Leibniz analyses comparative statements. In fact, in an untitled, undated fragment, (C 280), Leibniz writes: "*Titius est magis doctus Caio sensus est: Quatenus Titius est doctus, et Caius est doctus, eatenus Titius est superior et Caius est inferior*". Cf. Couturat (1901: 73) and also Kneale (1962: 328ff.).
- 37) "*Idem enim homo quod Ens humanum*" (C 289; VE 2.357). Cf. also C 243; 281; 287.
- 38) "*Petrus scribit, id est est scribens*" (C 281).
- 39) "*Verba se habent ad adverbium ut substantiva nomina ad adjectiva*" (C 186).
- 40) "<...> les particules lient non seulement les parties du discours composé de propositions et les parties de la proposition composée d'idées; mais aussi les parties de l'idée, composée de plusieurs façons par la combinaison d'autres idées. Et c'est cette dernière liaison qui est marquée par les *prepositions*, au lieu que les *adverbes* ont de l'influence sur l'affirmation, ou la négation qui est dans le verbe; et les *conjunctions* en ont sur la liaison de différentes affirmations ou négations" (GP 5.310; A 6.6.330).
- 41) "Il est très vrai que la Doctrine des particules est importante, et je voudrais qu'on entrât dans un plus grand détail là dessus. Car rien ne seroit plus propre à faire connoître les diverses formes de l'entendement" (GP 5.311; A 6.6.330; our emphasis). Cf. C 288 where there is a reference to a study (eight folios), with the title *De uso et constructione praepositionum. De constructione conjunctionum et de officio quod praestant in orationibus*.
- 42) Cf. C 290, for a long enumeration (fifteen folios) of Latin particles, defined and listed in alphabetic order.
- 43) "Pour bien expliquer les particules, il ne suffit pas d'en faire une explication abstraite <...>; mais il faut venir à une périphrase qui puisse être substituée à sa place, comme la définition peut être mise à la place du défini. Quand on s'attachera à chercher et à déterminer ces *periphrases substituables*, dans toutes les particules autant qu'elles en sont susceptibles, c'est alors qu'on aura réglé les significations" (GP 5.312; A 6.6.332)
- 44) Cf. NE 3.7.5, where Leibniz offers four elucidative examples, resorting both to comparisons between several ordinary languages and to etymolo-
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gies.

- 45) "Prima est Grammatica, seu *ars intelligendi*" (*Consilium de Encyclopaedia nova conscribenda methodo inventoria*; C 35; VE 3.470).
- 46) For instance, in the memoir on the Encyclopedia cited above, which Leibniz wrote between 1672 and 1679, the Rational Grammar appears in the first place, that is, before logic, which there appears as the second science. Cf. C 35-36; cf. also n. 11 above, and Couturat (1901: 74-75).
- 47) Cf. an interesting passage (C 244) in which Leibniz refers to the need for grammatical analysis to proceed to substitutions *salva sensu* between semantically equivalent expressions, a principle which is therefore equivalent, on the linguistic plane, to the principle of *salva veritate* which should govern all logical substitution. Cf., e.g., *Specimen Calculi universalis* (GP 7.219; 236); cf. also *Generales Inquisitiones* (C 362).
- 48) "<...> variae sunt hominum linguae, et nulla fere est quae non jam satis exculpta sit, ut quaelibet in ea scientiae tradi possint; ideo sufficit unam linguam assumi; unusquisque enim populus scientias domi invenire et ducere potest" (*Analysis linguarum*; C 352; VE 4.812).



Notes to Part III, Chapter 4

- 1) Thus, as late as his letter to Rémond (10 January 1714), Leibniz writes: "<...> si j'avois été moins distrait, ou si j'étois plus jeune, ou assisté par de jeunes gens bien disposés, j'espererois donner une maniere de Spécieuse Generale, où toutes les verités de raison seroient reduites à une façon de calcul. Ce pourroit être en même temps une manière de *langue ou d'écriture universelle*, mais infiniment différente de toutes celles qu'on a projetées jusqu'icy, car les caracteres et les paroles même y dirigeroyent la raison, et les erreurs (excepté celles de fait) n'y seroient que des erreurs de calcul. Il seroit tres difficile de former ou d'inventer cette *Langue ou Caractéristique*, mais tres aisé de l'apprendre sans aucuns Dictionnaires" (GP 3.605; our emphasis). This is simply an example of the complete identification of the *a priori* universal language with the Characteristic, which has been chosen solely because it appears in a text of 1714, but similar examples occur with great frequency in Leibniz's work. Cf. GP 7.12-15, .19-20, .22-23, .26- 27, .184, .187, .198 and C 156.
- 2) Cf. also *De synthesi et Analysisi universali seu Arte inveniendi et iudicandi* (GP 7.297-298), letter to Tschirnhaus (May 1678; GM 4.460), cited below, or the letter to the Marquis de l'Hospital (28 April 1693; GM 3.240).
- 3) This is in the sense in which Dascal (1978) attempts, precisely to read Leibniz's theory of the sign as anticipating modern semiology. Indeed, he argues, there is a real similarity between Leibniz and Peirce, essentially with regard to the conception of signification as not being necessarily social or communicational, cf. Dascal (1978: 59, 120-123, 214, 223-224). For an exhaustive study of Peirce's references to Leibniz, cf. also Fisch (1972: 485-496).
- 4) Referring to the Characteristic, Leibniz writes: "et hujus characteris non nisi corollarium scriptura universalis" (letter to Rōdeken; 1708; (GP 7.32).
- 5) We are less able to agree with the terminological choice of Knecht (1981: 162-164), who distinguishes between the *characteristica universalis* and the *lingua universalis* on the basis of the phonological nature of the latter. Not only is this distinction without textual foundation (Knecht plays on Leibniz's terminological ambiguities and oscillations, but does not quote a single text in which that distinction is clearly made), but, in order to justify it, Knecht resorts to what is in our opinion a fallacious argument, when he writes: "contrairement à la Caractéristique, que son aspect technique voue aux applications purement scientifiques, la langue universelle ne doit pas être réservée aux seuls savants, mais être réellement popularisée et employée par toutes les classes sociales" (1981: 163). Now, not only does Leibniz nowhere say that the Characteristic is reserved only for scholars, but, on the contrary, universal communicability is never its main objective (cf., for instance, GP 7.19), but only the consequence of a linguistic system which, being well-constructed, would be endowed with immediate and universal cognitive accessibility.
- 6) Akio Kikai (1983: 374-383) gives an account of this oscillation, which he interprets as deriving from the central role played by the Character-

istic as a symbolic system directly responding to that essential property of human knowledge which is, in his view, precisely the ability to manipulate a symbolic system.

- 7) This sense should be distinguished from that employed in the *Nouveaux Essais* (NE 3.2.1 = GP 5.258), where Leibniz identifies "artificial" with "arbitrary", referring to the universal languages proposed by his predecessors. As we have seen (cf. part I, chap. 5 above, notes 30 and 40), Leibniz's fundamental criticism of the projects of his precursors lies precisely in the arbitrariness which characterizes them, and which it is his aim to avoid at all costs.
- 8) This is the case of Couturat (1901), who, on the basis of the successive influence undergone by Leibniz, establishes a relative evolution in his different projects for a universal language, considering the first to be under the influence of pasigraphy of his contemporaries (1901: 51-55), the second to be inspired by Dalgarno and Wilkins (1901: 57-62) and all the remaining projects to derive from the internal development of Leibniz's own conceptions and his transcendence of the problems he encountered (1901: esp. 79ff.). Cf. also Carreras y Artau (1946: 28-30) and Moreau (1956: 88-94).
- 9) For an account and analysis on the other anticipations foreseen by Leibniz for the art of combinations, cf. Serres (1966: 113-125).
- 10) It is not our intention to imply that *De Arte* includes all the essentials concerning the universal language, but only that it does already point out the three fundamental stages which, according to Leibniz, should mark its construction. In the texts we have studied, Leibniz seems only once to indicate a different order, in the sense of constituting the grammar before proceeding to the construction of the alphabet (GP 7.187).
- 11) While Leibniz never repudiated *De Arte*, he frequently referred to it as a piece of juvenilia; for instance, in the *Projet et Essais pour arriver à quelque certitude*, referring to *De Arte*, he writes: "<...> il y a quelque choses qui sentent le jeune homme et l'apprentif, mais le fonds est bon, et j'y basti depuis la dessus" (C 175; VE 4.688). For other significant references, cf. also letter to Rémond (1714; GP 3.620). Cf. also GP 7. 186 and NE 4.3.8.
- 12) Cf. part I, chap. 5 and 6, above.
- 13) Cf. part II, chap. 2 above, note 48.
- 14) "Datur tamen et cognitio distincta notionis indefinibilis, quando ea est *primitiva* sive nota sui ipsius" (*Meditationes de Cognitione, Veritate et Ideis*; GP 4.423). We refer the reader, once again, to part 2. chap. 2 ("Symbolism and Blind Thought").
- 15) For a discussion of the meaning of the hypothesis of reduction of the primitive ideas to the unique idea of God, cf. Cassirer (1902: 2. 67ff). Cf. also part II, chap. 2, above.
- 16) In his letter to Bouvet, Leibniz imagines the possibility of constructing "*une caractéristique nouvelle* qui paraîtra une suite de celle de Fofii

et qui donnera le commencement de l'analyse des idées et de ce merveilleux calcul de la raison dont j'ai le projet. Cette caractéristique secrète et sacrée nous donnerait aussi moyen d'insinuer aux chinois les plus importantes vérités de la philosophie et de la théologie naturelles <...>" (D 4.2.6; our emphasis). It should be noted that it was through Bouvet, one of the most important of the Jesuits of the French Catholic missions with whom Leibniz had been engaged in a significant correspondence since 1689 (for more details of the themes of this correspondence and its importance, cf. Baruzi 1907: 55ff.), that, in 1703, Leibniz received a letter containing the reproduction of the celebrated figures of FoHi, in which he recognized a marked similarity to the binary arithmetic he had discovered since 1679 (*De progressionem dyadica*, 15th March 1679; C 574). Leibniz gives a detailed explanation of these facts, and of his own and Bouvet's part in the discovery of the similarity between the two systems, in a memoir entitled *Explication de l'arithmétique binaire qui se sert des seules caractères 0 et 1, avec des remarques sur son utilité, et sur ce qu'elle donne le sens des anciennes figures chinoises de FoHi* (GM 7.223-227). He refers to the symbolic system called *Pa-Kua* (to be found in the *Book of Chances* or *I-Ching*, where it is attributed to the legendary emperor FoHi of the Chou period; c. 800-700 B.C.), which consists of eight trigrams, each of them made up of 64 hexagrams, according to the possible combinations of a mere two continuous broken lines. Leibniz sees hexagrams, which he considers to be most ancient of all symbolic systems (a view today called in question by the discovery of the antiquity of the Sumerian ideograms (c. 3500 B.C.; cf. Nataf 1981: 273ff.), as confirming the universal scope of his binary system (cf. the letter to Des Bosses; 12 August 1709; GP 2.383ff.); this further reinforces the analogy which he had established in 1679 between the the generation of numbers from the characters 1 and 0 and the process of divine creation out of nothingness. For this question, cf. also Couturat (1901: 109, 473-478), Knecht (1981: 141, 180, 212), Baruzi (1907), Walker (1972: 305-306) and Dascal (1978: 218ff.).

- 17) As Knecht (1981: 212) points out, Leibniz's analogy between God and Nothingness and the numbers 1 and 0 is in the line of a mystical tradition originating in Nicholas Cusanus and Angelus Silesius.
- 18) "La Caractéristique que je me propose ne demande qu'une espèce d'Encyclopedie nouvelle. L'Encyclopedie est un corps, où les connaissances humaines les plus importantes sont rangées par ordre. Cette Encyclopedie estant faite selon l'ordre que je me propose, la caractéristique seroit quasi toute faite, cependant ceux qui y travailleroient n'en sauroient pas le dessein: croyant de travailler seulement à une Encyclopedie" (GP 7.40; VE 4.799). — On the vast topic of the Encyclopaedia, which falls outside the scope of the present study (we refer the reader to Couturat (1901: chap. 5) and Knecht (1981: chap. 6)), we will simply point out that Leibniz conceives it as an exhaustive inventory of all the knowledge acquired by humanity, historical and scientific, theoretical and practical, and, simultaneously, as a didactic exposition which, organized in a logical and demonstrative form, could become a guide for future research and, therefore, a factor of scientific progress and a cause of human happiness. This ambitious project was to be progressively reformulated and defined in its general lines and plan of composition, with a persistence that reveals how convinced Leibniz was of its utility and value as a means of unification of the knowledge which humanity was accu-

mulating in all spheres (Leibniz vehemently condemned the disorder and lack of method that characterized the scientific research of his day (cf., for example, GP 7.157-173), and as a form of reorganization and classification of scientific knowledge (cf. GP 7.174-183). For the question of the Leibnizian classification of the sciences, above all as a means of facilitating the advancement of knowledge, cf. Freedman (1983). Cf. also *Nouvelles ouvertures* (C 224-229), *Nouveau plan d'une science certaine, sur le quel on demande les avis des plus intelligens* (C 332-334, 337-509), the most extensive of the fragments of Leibniz's projected Encyclopaedia, and the fragment C 530-533).

- 19) "Je trouva donc qu'il y a des certains Termes primitifs si non absolument, au moins à nostre egard" (C 176; VE 4.688). Cf. also part II, chap. 2, note 48.
- 20) "Signorum igitur numero comprehendo vocabula, literas, figuras chemicas, Astronomicas, Chinenses, Hieroglyphicas, notas Musicas, steganographicas, arithmeticas, algebraicas aliasque omnes quibus inter cogitandum pro rebus utimur" (GP 7.204). For the concept of the sign in Leibniz, cf. Dascal (1978: 77-101).
- 21) It is well-known that, in fact, the notations proposed by Leibniz, which are still in use today, are superior to those of Newton, a fact which Leibniz emphasizes in his discussion of the chronological priority of the discovery (cf. *Consideration sur la difference qu'il y a entre l'Analyse ordinaire et le nouveau Calcul des Transcendantes* (GM 5.307)). As Leibniz says: "Une partie du secret de l'Analyse consiste dans la caracteristique, c'est-à-dire, dans l'art de bien employer les notes dont on se sert" (letter to the Marquis of l'Hospital, 28 April 1693; GM 2.240).
- 22) "<...> hinc manifestum est, illas ipsas veritates in charta ordine exhibitum iri sola characterum *analysis*, seu substitutione ordinata continuata" (*Analysis linguarum*; C 362; VE 4.811). According to Paul Schrecker (1946: 107-116), in his choice of symbolic system, Leibniz activates the principle of simplicity (or least action) and that of total conservation. In addition, Schrecker tries to demonstrate the presence of the principles of continuity and identity of the indiscernibles.
- 23) Cf. part II, chap. 2 above, notes 18, 19, 20 and 21.
- 24) "*Calculus vel operatio* consistit in relationum productione facta per transmutationes formularum, secundum leges quasdam praescriptas factas" (GP 7.206). Cf. also C 154-155.
- 25) We refer the reader to Dascal (1978: chap. 6 "Signes et mémoire"), which contains a most acute and detailed study of this thesis (of Hobbesian origin; cf. also the Appendix, paragraph 3).
- 26) It is in this sense, for instance, in the *Nouveaux Essais*, Leibniz defines Logic as the knowledge of signs ("<...> la *Logique* ou la connoissance des signes, car λόγος signifie parole"; NE 4.21.4 = GP 5.504; A 6. 6.).
- 27) "<...> quoyque beaucoup de tres habiles gens, surtout de nostre siecle, ayent pretendu de nous donner des demonstrations en matiere de physique, de metaphysique, de morale, et même en jurisprudence et en

medecine: neantmoins ou ils se sont trompés, à cause que tous les pas sont glissans, et qu'il est difficile de ne pas tomber, lorsqu'on n'est pas guidé par quelques directions sensibles; ou quand même ils ont rencontré, ils n'ont pas pû faire recevoir leur raisonnemens de tout le monde; par ce qu'il n'y a pas encor eu moyen d'examiner les raisonnemens par quelques preuves aisées dont tou le monde fut capable" (C 155; VE 2.311).

- 28) It is also in this sense that one should understand Leibniz's inventions of an arithmetical machine (1672) and algebraic machine (1674), and his project for a cylinder of theorems, as mechanical processes for the realization of logical procedures. Cf. Knecht (1981: 63-66) and Hoffmann (1974: 23-30) who also refers to Leibniz's efforts to present his inventions to the Royal Society of London.
- 29) For the instrument of reason, see GP 7.12, .17, .27; for the eyeglass, microscope and telescope, see 7.14, .20, .187 and C 157, 335; for the Ursa Major, see GP 7.187; for the new organon, see GP 7.20, .32, .187.
- 30) "Je ne sais que dire des Hiéroglyphes de Égyptiens et j'ai de la peine à croire qu'ils aient quelque convenance avec ceux des chinois. Car il me semble que les caractères égyptiens sont plus populaires et sont trop à la ressemblance des choses sensibles comme animaux et autres, et par conséquent aux *allégories*, au lieu que les caractères chinois sont peut-être plus philosophiques" (D 9; our emphasis).
- 31) Cf. part I, chap. 5 above. If in relation to the figuration of flexions and participles Leibniz here seems to follow Wilkins, in the letter to Oldenburg (29 April 1671), in contrast, he regrets not having used Wilkins analogical figures instead of the geometrical ones he had himself proposed. Leibniz may have been thinking of some of the symbols proposed by Kircher (cf. part I, chap. 6 above, notes 16 and 19).
- 32) "<...> les paisans ont déjà certains almanachs, qui leur disent sans paroles une bonne partie de ce qu'ils demandent; et je me souviens d'avoir vû des imprimés satyriques en taille douce qui tenoient un peu de l'Enigme, où il y avoit des *figures signifiantes par elles-memes*, mêlées avec des paroles" (NE 4.6.2 = GP 5.379; A 6.6.399). Cf. also David (1961: 39 -50).
- 33) "Cela serviroit d'abord pour communiquer aisement avec les nations éloignées; mais si on l'introduisoit aussi parmi nous sans renoncer pourtant à l'écriture ordinaire, l'usage de cette maniere d'ecrire seroit d'une grande utilité pour enrichir l'imagination et pour donner des pensées moins sourdes et moins verbales, qu'on n'a maintenant " (NE 4.6.2 = GP 5. 379; A 6.6.398).
- 34) "Fiet igitur omnis talis scriptura quasi figuris geometricis, et velut picturis, uti olim Aegyptii, hodie Sinenses" (GP 4.73).
- 35) At first viewed simply as a summary of human knowledge, a portable library or a public treasury of erudition, the Encyclopaedia was to be conceived and planned by Leibniz in ever vaster and more systematic terms. It was to contain, apart from the theoretical part (which would comprise the Rational Grammar and the abstract and concrete sciences) and the practical part (to contain the applications of sciences considered most useful for the life and happiness of humanity, and all the empirical

- knowledge derived from the various arts and professions), a *Universal Atlas* which would combine all the figures, tables, schemata and other diagrams pertaining to the various sciences, in order to illustrate the Encyclopaedia. Cf. Couturat (1901), the entire chapter on the Encyclopaedia, and for the project of the Atlas, especially (1901: 124, 174); cf. also note 18 above.
- 36) On this subject, cf. the chapter dedicated to Leibniz by Brice Parain in his fine study *Recherches sur la Nature et les Fonctions du Langage* (1942: 161-186).
- 37) Cf. NE 3.3 ("Des Termes Generaux"). We refer the reader to the classic study of Jaques Jalabert (1947) especially part 2, chap. 7, "L'Etre et les phénomènes". For the problems raised by the theory of essence in Leibniz's concept of signification, cf. Costa (1950: 124-132).
- 38) We have already referred to the identification that Leibniz makes between the generation of numbers from the characters 0 and 1 and the process of divine creation (cf. note 16 above).
- 39) Leibniz, in the same text, considers the binary system to be more perfect than any other (including the decimal), precisely because, being a numbering system in which all numbers can be written using only two characters (0 and 1), it brings out the properties of each.
- 40) Leibniz also tries to find an analogy between the dyadic series of first numbers and the seven days of Genesis. Zero would be the void which preceded the creation of Heaven and Earth, while on the beginning of the first day there existed only God (Unity), and on the beginning of the second, Heaven and Earth, created during the first. The number seven, too, which in binary arithmetic is written 111, would represent the most perfect day, the Sabbath, since, as it does not contain zero, it signifies that all is complete. Cf. Baruzi (1907: 81) and Knecht who stresses the Pythagorean inspiration underlying this discovery, which, again in his opinion, may have been inspired by Leibniz's master Erhard Weigel, a noted representative of Baroque Neo-Pythagoreanism. Cf. Knecht (1981: 212, 244). Cf. also note 17 above.
- 41) Leibniz's position on the chemical symbols of his day is, in general, negative, (cf., for instance GP 7.204). However, given that, today chemical formulae are compact abbreviations of the essential qualities of an object (cf. Dubarle 1977: 164), from whose composition, corresponding to that of the designated compound, the properties of that compound can be deduced, it may be suggested that the development of chemical notation has been marked by the quest for this type of representativity. Cf. also Granger (1975), for the formation and evolution of chemical notations.
- 42) The central idea of the combinatory is thus here taken up again. Cf. part I, chap. 6 above, note 25.
- 43) This is a double example, presented in parallel with that of Man as a rational animal (2 x 3 or 6), which we have used here to maintain the reference to the example of gold, so often employed by Leibniz.
- 44) In fact, Leibniz very often offers geometrical examples for the relation of expression. Cf., inter alia and apart from the passage quoted, NE 2.
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- 8.13 (GP 5.118; A 6.6.131) and the letter to Arnauld, 9 October 1687 (GP 2.112). For the geometrical origin of the notion of expression and its relations with projective geometry and the theory of perspective, cf. Knecht (1981: 138).
- 45) "Unde patet non esse necessarium ut id quod exprimit simile sit rei expressae, modo habitudinum quaedam analogia servetur" (*Quit sit idea*, GP 7.264; VE 3.454).
- 46) For presentations of the theory of expression in Leibniz, cf. Ghio (1979: 333-343), Deleuze (1968), McRae (1976: chap. 3). Marie Carliou (1978) dedicates a few most illuminative pages to the genesis of Leibniz's theory of expression and its importance in the demarcation from atomism (1978: 117-133). For a study of the sources of the theory of expression in Leibniz, cf. Ghio (1979: 338-341) and Knecht (1981: 138).
- 47) For the writing/speech relation in natural languages, cf. Llorach (1968: 513-568), Venryes (1968: esp. 343-372), Granger (1975) who studies the problem not only on the level of natural languages, but also, and fundamentally, on that of scientific discourse, for which writing is, as he says, no longer a mere code, but the very material of language, and Coquet (1972: 395-404). On the relations between writing and speech in Leibniz's thought, cf. Verburg (1968: esp. 567ff.) and Derrida, who in *De la Grammatologie* (1967), that great meditation on the possible primacy of writing, claims that the Leibnizian project of a Universal Characteristic just opened a breach in logocentric certainty (1967: 147). However, Derrida goes on to argue that the Leibnizian project, while not essentially phonetic, does not truly interrupt logocentrism; on the contrary, it confirms it, insofar as it is grounded in an infinitist theology (1967: 117).
- 48) Leibniz repeatedly emphasizes these advantages, drawing important consequences from them, whether on the level of the *ars mnemonica* (cf., for instance, GP 4.358-362), on that of the *ars judicandi* (cf., for instance, GP 7.204, .521 and NE 3.9.21), on that of the *ars inveniende*; (cf., for instance, GP 7.204). For a discussion of the importance of writing as a vehicle of invention and discovery, cf. Gil (1979b: esp. 42ff.).
- 49) It is essentially these advantages deriving from the spatial nature of writing, permitting a more rigorous and regulated utilization of the various dimensions of signification, that Frege emphasizes in the case of written signs. While recognizing that the advantages of audible signs include the independence of their production in relation to external circumstances, and their affinity to the facts of consciousness, with which they have in common the feature of temporal form, Frege emphasizes, in favour of written signs, the following advantages (to be concretized in the *Begriffsschrift*): their clear and differentiated delimitation, which permits a clearer apprehension of the designated meaning, their more prolonged duration in the face of endless flux of thoughts, and above all, their two-dimensional spatiality, which is capable of expressing a greater and more varied multiplicity of relations (cf. *Que la science justifie le recours à une idéographie*, in: Frege (1882: 63-69). For a study on the similarities between Frege's ideographic projects and the Leibnizian project of a characteristic language, especially, we would say, in its diagrammatic version - similarities which Frege quite openly admits and stresses (cf. *Sur le but de l'idéographie*, in: Frege (1882a:

esp. 71-72)) - cf. Kluge (1979: 21-29) and Imbert (1979: 621-665). Both Kluge and Imbert agree that, apart from the similarities, the two projects should be fundamentally distinguished from one another by the fact that Frege, leaving to the sciences the labour of defining their own concepts, rejects the close articulation established by Leibniz between the characteristic language and the encyclopaedia.

- 50) Kneale (1966: 204-216) defends the existence of a marked proximity between this Leibnizian theory and that which, two hundred years later, the young Wittgenstein would present in the *Tractatus logico-philosophicus* (cf. proposition 2.1ff.), according to which the power of a picture or logical proposition to represent reality in its own way derives from the fact that it shares the same form of representation ("Form der Abbildung") with that reality. Kretzmann (1964: 382), too, lays particular emphasis on this Leibnizian thesis, which, he believes, inaugurates a new type of semantic relation, suggesting, for the first time, that the real character of symbolism may lie, not in the similarity between elements, but in the similarity between the *schemata* of symbolic expression and the structure of what is expressed. Cf. also Echeverría (1983: esp. 151ff.).
- 51) Kneale (1981: 210-214) also stresses this fundamental obstacle which the precarious status conceded by Leibniz to relation poses to the possibility of a real analogy between the form of the proposition and the structure of the facts.
- 52) "Ita de Relationibus censeo, aliud esse paternitatem in Davide, aliud filiationem in Salomone, sed relationem communem utrique esse rem mere mentalem, cujus fundamentum sint modificationes singulorum" (GP 2.486). For the problematic of relation in Leibniz, cf. Fremont (1981: 106ff.).
- 53) See the following passages: "Lex expressionum haec est: ut ex quarum rerum ideis componitur rei exprimendae idea, ex illarum rerum caracteribus componatur rei expressio" (BH 80-81).
- 54) The expression is from René Thom (1979: 791). For this aporeia of the Leibnizian project for a universal language, cf. the entire text of the abovementioned article by Thom (1979: 790-800), and, in the same number of *Critique* (36) (which is, besides, wholly dedicated to thy myth of the universal language), the interesting study of François Récanati (1979: 778-789).



## Notes to Conclusion

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- 1) "Et les langues en general estant *les plus anciens monumens des peuples*" (GP 5.264; our emphasis).
- 2) The expression is taken from Roland Barthes (1967), whose aim is to signify, not so much a direct doctrine taken from *Cratylus*, as that "grand mythe séculaire qui veut que le langage imite les idées et que, contrairement aux précisions de la science linguistique, les signes soient motivés" (1967: 158).
- 3) Indeed, these two levels are described without distinction in the *NE* 3.2.1.
- 4) This is the goal of the text cited above. Cf. also *Brevis designatio meditationum de originibus gentium ductis potissimum ex indicio linguarum* (D 4.186-189).
- 5) For an analysis of the different types of motivation, cf. Miclau (1970: 85-192), Rey (1973: 1.127-128) (the latter argues that Leibniz's work implies a specific form of logical motivation, conceived as a proportionate relation between language and the real) and Todorov (1972b: 273-308). Cf. also Cassirer (1923-29: 1.94ff.) and Genette (1976: 59-70) who have offered quite detailed studies of Leibniz's position on the motivation of natural languages. This thesis, which is as old as human reflection on language (cf. Cassirer (1923-29: 1.94-111, 1.127-129), appeared to have been refuted completely by the modern school of linguistics based, to a large extent, on the intransigent defence of the arbitrariness of the linguistic sign, as established by Saussure in *Cours de Linguistique Générale* (1916: part 1, chap. 1.2). However, now that linguistics has moved beyond behaviourist euphoria and the dogmatic solution of the Saussurean demarcation of language as an autonomous area suitable for scientific treatment, and in the face, further, of the impossibility, as revealed by the subsequent debates, of definitively reaching agreement over the actual nature of this postulate (cf. the interesting studies of R. Engler (1962: 5-66 and 1964: 25-32), which extensively and minutely analyse and review more than a hundred titles pertaining to the postSaussurean debate over the arbitrariness of the sign, identifying the most controversial points, specifying the terminological fluctuations, and clarifying the conceptual distinctions introduced, over more than forty years of polemic, by linguists of the most diverse currents. Cf. also Benveniste (1966: 2.49ff.), for his celebrated displacement of the arbitrariness of sign from the relation signified/signifier on to the relation sign/ thing, and Naert (1947: 5-11)), the thesis of the non-arbitrariness of the sign has reappeared, gaining a surprising degree of consensus among the most distinguished exponents of linguistic science. For instance, R. Jakobson, without doubt one of this century's most eminent analysts of linguistic phenomena, in a brilliant article (1965: 22-38), denounces the total neglect to which some linguists consign the central problem (for the understanding of the essence of human language) of the connection between sound and sense and the linking effect exerted on them by the supposed innovation of the Saussurean concept of the sign, and shows how agreement on Saussure's dogma is not as firm as might be thought, and how the problem is not, in fact, fully resolved in Saussure's own work (see the distinction the latter marks between absolute and relative autonomy, (cf. 1916: part 2, chap. 6.3);

#### Notes to Conclusion

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- cf. also Starobinski (1971a), who reveals the existence of a "cratyléen" element in Saussure's manuscripts). In the same study, in which the various arguments against the thesis of the arbitrariness of the sign are summarised (cf. also (1976), (1969: 120-130) and also the famous study *Closing statements: Linguistics and Poetics* in (1963: 209ff.), Jakobson also shows how the distinction made by Peirce between icon, index and symbol is based on the predominance (not the presence or absence) of the factors of similarity, contiguity and institutional order.
- 6) "Les langues sont le meilleur miroir de l'esprit humain" (NE 3.7.6; GP 5.313; A 6.6.333).
  - 7) "Commodum autem erit notas quam maxime fieri naturales" (GP 4.73).
  - 8) "Car il me semble en effet que presque toutes les langues ne sont que des variations, souvent bien embrouillées, des mêmes racines, mal qu'il est difficile de reconnaître, à moins que de comparer beaucoup de langues ensemble" (*Conjectures de M. Leibniz sur l'origine du mot Blason* (1692); D 6.2.185). We have already referred to the importance of etymology in Leibniz's linguistic thought (cf. part I, chap. 2, note 39, above and part III, chap 2, notes 17-27). We will here add only that it is perhaps the search for the motivated origin of words in their roots that constitutes the central goal of Leibniz's numerous etymological studies.
  - 9) "<...> car si nous avions la langue primitive dans sa pureté, ou assés conservée pour être reconnaissable, il faudroit qu'il y parût les raisons des connexions soit physiques, soit d'une *institution arbitrale, sage et digne du premier auteur*" (GP 5.260; our emphasis). It must be noted that the word "arbitrary" should here be understood in the context of the absolute divine wisdom, owing to which its sense can only be that of a radical non-arbitrariness.
  - 10) Cf. part I, chap. 2, notes 35, 37 and 38, above. Cf. also Wolff (1979: 802-812).

Notes to Appendix

- 1) Couturat subjects Tönnies' arguments, one by one, to detailed analysis, examining all the works of Leibniz on which Tönnies bases his interpretation, and offering, for each text, a different (less literal) interpretation, based on a profound knowledge of Leibniz's thought, and therefore, on the context in which the latter's references to the author of *Leviathan* should be considered. Couturat even affirms that, in spite of the laudatory tones of his references to Hobbes, Leibniz in fact progressively distanced himself from Hobbes' main theses, in the areas of physics, politics, logic and theology. Cf. Couturat (1901: 462-426), and also part 2, chap. 2, n. 42 above.
- 2) As is well known, Leibniz never ceased to acknowledge, quote and praise all the writers to whom he owed any idea or inspiration. As Knecht (1981: 29) notes, Leibniz even tends to "projecter dans le passé ses découvertes les plus personnelles et de se chercher des précurseurs, illustres ou non". Hobbes was, in fact, one of the writers who Leibniz read earliest in his career, and also one of those through whom he was made aware of that mechanism of the moderns with which Hobbes' name will always be linked. Cf. *De Arte* (GP 4.64), and also the first and third Letters to Thomasius (GP 1.8; 10).
- 3) It should be noted, however, that although Leibniz was only twenty-four when he wrote this letter to Hobbes, who was by then over eighty (and, incidentally, did not even deign to answer), he was quite willing to show his disagreement with certain ideas of the English writer, in spite of the latter's established prestige. Cf. also Leibniz's second letter to Hobbes of 1673 (GP 1.86-87).
- 4) Hobbes suggestively defines "Mental Discourse" as a "Trayne of Thoughts". Cf. L 94-95.
- 5) As has been shown, Leibniz subjects this nominalism to a thoroughgoing critique. Cf. part 2, chap. 2, n. 32 above.
- 6) Leibniz was fully aware of these deficiencies (cf. GP 4.162; C 178). On this point, see the interesting study of Breidert (1979: 415-431), which includes an analysis of Hobbes' arguments with the great mathematicians of his day (Wallis, Ward, Boyle, and Huygens). As Breidert (1979: 426) persuasively argues, Hobbes' position in relation to mathematics was that of a rejected lover who wants his rivals to see him as the protector of his beloved.
- 7) This style, and this intention, were recognized by Leibniz. Cf., for instance, *Projet et Essais pour arriver à quelque Certitude pour finir une bonne partie des disputes et pour avancer l'art d'inventer*, where Leibniz includes Hobbes among those who have tried to offer proofs outside the area of mathematics: "<...> Thomas Hobbes, entreprit d'écrire d'une maniere demonstrative tant en Morale qu'en physique." (C 178; VE 4.690).
- 8) As Dascal (1978: 143) notes, Hobbes identifies and hierarchizes a set of possible uses or utilizations of language: first, the progress of science; second, the formation, transmission and accumulation of concepts; third, the constitution of knowledge itself; fourth, the fixing or stabilization of thoughts; and, finally, the expression of desires and propo-

sitions, and the innocent pleasure of wordplay.

- 9) In an article entitled *Ennōsis of Language in the Seventeenth Century Philosophy*, Verburg (1968: 558-572) even argues that Hobbes was the first to identify what he designates as the "theorem of the ennōsis of language", that is, that Hobbes not only identified the basic function of language as noetic, but also argued that this function can (and should) only be realized by means of natural language systems; according to Hobbes, only the use of the words of natural languages as noetic marks would permit the constitution and development of authentic scientific knowledge. According to Verburg, this theorem - disastrous for the development of the theory of language - derives from the mutual assimilation of natural language and the mathematical symbolism which infant science had proved to be an indispensable factor in scientific research (an assimilation for which Galileo, in particular, had paved the way, with his comparison between geometrical symbols and the alphabet). Verburg further argues (1968: 563-566) that it was Leibniz who most rigorously developed the theory of the ennōsis of language, in his attempt to construct, with the *Characteristica Universalis*, a new *organon* or reason.
- 10) "And therefore in Geometry (which is the onely Science that it hath pleased God hitherto to bestow on mankind) men begin at settling the signification of their works; which settling of signification, they call Definitions" (L 105); cf. also DH 10.5.
- 11) The arbitrariness of language is, for Hobbes, an unquestionable postulate. (cf. part 2, chap. 2, n.35 above). In fact, Hobbes turns the arbitrariness of language not only into the keynote of the essential distinction between humans and animals (DH 10.1), but also the starting-point from which man, escaping the determinism of his environment, can set in motion the artificial mechanisms which underlie the constitution of the social body. Cf., e.g., chapter 14 of *Leviathan*, esp. 139-197, where Hobbes clearly defends the linguistic nature of the social contract. For this question, cf. Polin (1977: 5-9) and also Robinet (1979: 482-483). In this context, Hobbes is extremely careful in his refutation of the anti-conventionalist thesis, which he goes as far as to call "puerile" ("What others say, however - that names have been imposed on single things - is childish", DH 10.2), presenting, to this end, a new exegesis of the biblical text, through which he aims to empty the sense out of the passage concerning the Adamic origin of language, on which the defenders of the anti-conventionalist thesis tried to have their positions (cf. DH 10.1.2 and also L 100-101). For this question, and also the resistances which Hobbes' systems offers to an authentic grounding of the arbitrariness of language, cf. Pombo (1985: 45-61). It may further be noted that, according to Verburg (1968: 564), it was precisely because Hobbes considered language to be arbitrary that he was able to accept and develop the convergence established by Galileo between language and mathematical symbolism.
- 12) On the equivalence which Hobbes makes between the social and the scientific, see Dascal (1978: 141-142).
- 13) Cf. L 102; 108-110; 114-115; DH 10.3; HN 5.7.8.
- 14) Cf. part 2, chap. 2, n.32 above.

#### Notes to Appendix

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- 15) "Scripturam autem rationalem ajo potissimum rationis instrumentum fore, minimumque ejus censeri debere commercium inter gentes lingua dissitas" (Letter to Oldenburg of 1673-76; GP 7.12); cf. also the letter to Haak, January 1680-81 (GP 7.19) and the letter to R deken of 1708 (GP 7.32).
- 16) Cf. Locke, *An Essay Concerning Human Understanding*, III.9-11 esp.
- 17) "The general use of Speech is to transferre our Mentall Discourse, into Verbal" (L 101); cf. also *De Corpore* 1.2.1. On this concept of *transference*, possibly the most obscure point of Hobbes' philosophy of language, cf. Robinet (1979: 452-483).
- 18) The same distinction between sign and note also appears in the *Nouveaux Essais*, 3.9.4 (= GP 5.315; A 6.6.335).
- 19) We refer the reader to part 2, chap. 2 above, where, precisely, this aspect of Leibniz's thought is analysed.

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Far from being complete bibliographical information concerning the problem of the Leibnizian project for a universal language - something which can be found in Ravier (1966), Dutz (1983) and Müller/Heinekamp (1984) - the works presented in this bibliography, mainly within the area of English and French literature, are those effectively quoted, mentioned and consulted.

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phicum hactenus inauditam quo quilibet suam legendo vernaculam di-  
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populorum, quam argumentum hoc postulare videbatur.  
Tiguri apud Christoph. Frosch.

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- AU      Aurora, oder Morgenröthe im Aufgang/ das ist: Die Wurtzel oder Mutter der Philosophiae, Astrologiae und Theologiae, aus rechtem Grunde/ oder Beschreibung der Natur/ Wie alles gewesen/ und im Anfang worden ist: wie die Natur und Elementa creatürlich worden sind, auch von beyden Qualitäten, Bösen und Guten; woher alle Ding seinen Ursprung hat, und wie es jetzt stehet und wircket, und wie es am Ende dieser Zeit werden wird; auch wie Gottes und der Höllen Reich beschaffen ist, und wie die Menschen in jedes creatürlich wircken. Alles Aus rechtem Grunde und Erkenntniß des Geistes im Wallen <!> Gottes/ mit Fleiß gestellt durch Jacob Böhmen/ in Görlitz/ im Jahr Christi 1612.  
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- SR      De Signatura Rerum oder Von der Geburt und Bezeichnung aller Wesen: Wie alle Wesen aus einem Einigen Mysterio urständen, und wie sich dasselbe Mysterium von Ewigkeit in Ewigkeit immer in sich selber erbäre, und wie das Gute ins Böse, und das Böse ins Gute verwandelt werde; Item, Wie die äussere Cur des Leibes, aus der Kranckheit, durch seine Gleichheit wieder in das erste Wesen müsse geführt werden; was leades Dinges Anfang, auch Zerbrechung und Heilung sey. Darbey Gleichniß-weise der Stein der Weisen, zur zeitlichen Cur, mit dem heiligen Eckstein der Weisheit, Christo, zur ewigen Cur der neuen Wiedergeburt, eingeführt wird; Eine sehr tiefe Pforte der ewigen und auch anfänglichen äusserlichen Natur und ihrer Gestaltnissen. Geschreiben durch Jacob Böhmen. Im Jahr 1622.  
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- MM      Mysterium Magnum, oder Erklärung über Das Erste Buch Mosis, Von der Offenbarung Göttlichen Worts durch die drey Principia Göttlichen Wesens, auch vom Ursprung der Welt und der Schöpfung, Darinnen das Reich der Natur und das reich der Gnaden erklärt wird. Zu mehrerm Verstande des Alten und Neuen Testaments, was Adam und Christus sey; und wie sich der Mensch im Licht der Natur selber erkennen und betrachten soll, was Er sey, und worinnen sein zeitliches und ewiges Leben, auch seine Seligkeit und Verdammniß stehe. Eine Erklärung des Wesens aller Wesen: Dem Liebhaber in Göttlicher Gabe weiter nachzusinnen. <1622-1623>.  
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Olga Pombo

LEIBNIZ  
AND THE PROBLEM OF A UNIVERSAL LANGUAGE

Contents

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