

Prepositions and Spatial Relations in Natural Languages According to Leibniz

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Abstract In his 1677 *Dialogue*, Leibniz answers the question of how it is possible that speakers of different languages agree on the same truths by postulating “a certain correspondence between characters and things”. In the mid-1680s, he arguably attempts to specify this “correspondence” by explaining how linguistic particles are connected to our perception of spatial relations among things in the world. Firstly, this paper focuses on the role that, according to Leibniz, signs and characters play in our knowledge. Secondly, it introduces the solution that can be found in the *Dialogue* to the problem of how the same truth can be expressed in different languages. After briefly expounding Leibniz’s theory of natural languages, the paper gives an account of Leibniz’s analysis of the nature of prepositions and of how they contribute, in a natural language, to determine the correspondence between characters and things that is mentioned in the *Dialogue*.

Keywords Leibniz. Natural Languages. Knowledge. Prepositions. Spatial Relations. Tropes.

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1 Introduction

In 1677, Leibniz wrote a short dialogue which was posthumously published in 1765 as an appendix to the first edition of the *New Essays*. Leibniz's title was simply *Dialogus*, but Eric Raspe, who edited the *New Essays*, entitled it as *Dialogus de connexione inter res et verba* [*Dialogue about the Connection of Things and Words*] (*Oeuvres philosophiques*, 507-12). Clearly, the *Dialogue* was written under the influence of Plato's dialogues, even though the two main characters, designed by the letters A and B, are lacking in psychological complexity and 'A' and 'B' are rather labels for characterizing the different theses that are discussed.

In the *Dialogue*, Leibniz states that truth is independent of the natural language in which it is expressed, and consequently he raises the question of how it is possible that speakers of different languages agree on the same truths. To answer this question, he suggests that there must be something "which is not arbitrary" in the use and connection of the words, namely "a certain correspondence [*proportio*] between characters and things, and certain relations among different characters expressing the same things" (A VI 4, 24/L 184, transl. modified). Later, around the years 1685-86, in a series of essays devoted to the rational grammar, Leibniz explains how particles are connected to our perception of spatial relations among things 'in the world'. It seems to me that these essays can be considered an attempt to specify the kind of correspondence that Leibniz imagined to exist between words (characters) in a natural language and the things that are spoken of.

Thus, in what follows I first focus on the role that, according to Leibniz, signs and characters play in our knowledge; then I introduce the solution present in the *Dialogue* to the problem of how the same truth can be expressed in different languages. After a short summary of Leibniz's theory of natural languages, I give an account of Leibniz's analysis of the nature of prepositions and of how they contribute, in a natural language, to determine the correspondence between characters and things mentioned in the *Dialogue*.

In the *Dialogue* Leibniz states that "if there were no characters, we could neither think of anything distinctly nor reason about it" (A VI 4, 23/L 184). By 'character' Leibniz means signs or symbols of some sort, such as, for instance, written words or drawings or diagrams. Obviously, even spoken words are signs or symbols, but they have the drawback of being of little help to memory when one has to develop long and complex thoughts or calculations. Leibniz calls the kind of thinking performed by means of signs 'blind' (*cogitatio caeca*) or 'symbolic':¹

¹ On *cogitatio caeca*, see Favaretti Camposampiero 2007.

Such thinking I usually call *blind* or *symbolic*; we use it in algebra and in arithmetic, and indeed almost everywhere. (A VI 4, 587-8/L 292)

The neglect of things that are truly good arises largely from the fact that, on topics and in circumstances where our senses are not much engaged, our thoughts are for the most part what we might call 'blind' - in Latin I call them *cogitationes caecae*. I mean that they are empty of perception and sensibility and consist in the wholly unaided use of symbols, as happens with those who calculate algebraically with only intermittent attention to the geometrical figures which are being dealt with. Words ordinarily do the same thing, in this respect, as do the symbols of arithmetic and algebra. We often reason in words, with the object itself virtually absent from our mind. (NE 185-6)

The reason why we are forced to employ signs to think, as Leibniz states on several occasions, is that our *body* is interposed between our soul and the 'external world' on the one hand, and between us and the 'pure world' of concepts and ideas, on the other.

2 'Common Sense', Imagination and the Importance of Signs for Thinking

According to Leibniz's theory of knowledge, in human beings there is a fundamental continuity between each sensation and the concept (or concepts) associated with it. Since we are essentially connected to a body, it is only in a few cases that we may have a direct intuition of pure concepts and ideas, not mediated by the senses. As Leibniz writes in a letter to Sophie Charlotte, by means of a merely conceptual analysis, we can reach some "notions of metaphysics, such as *cause, effect, action, similarity, etc.*, and even those of logic and ethics" (GP VI, 501/AG 188, emphasis in the original). We can do so by reflecting on our internal thinking activity, on our different levels of awareness and on the way we relate to objects of knowledge. Clearly, when reasoning *about* these notions, we cannot avoid using of symbols (imagined or spoken in a kind of internal monologue); but because these notions of metaphysics are "distinct, primitive concepts", we may grasp them only by means of an act of intuition (GP VI, 501/AG 188). Leibniz's firm belief, however, is that, with this sole exception, we cannot directly grasp concepts and ideas which are beyond a certain degree of complexity. This point is clearly established in the *Meditations on Knowledge, Truth, and Ideas*, one of the few philosophical papers personally published by Leibniz:

When a concept is very complex, we certainly cannot think simultaneously of all the concepts which compose it. But when this is possible, or at least insofar as it is possible, I call the knowledge *intuitive*. There is no other knowledge than intuitive of a distinct primitive concept, while for the most part we have only symbolic thought of composites. (A VI 4, 587-8/L 292)

The only doorway to the external world at our disposal is offered by what Leibniz calls the *external senses*, i.e., the senses of touch, sight, hearing, etc. Each external sense, first through perception and then by means of sensation (i.e. perception associated with awareness) conveys some information to what Leibniz – in accordance with the Aristotelian tradition – calls *common sense*. The common sense collects and compares this information by employing ideas that derive from ‘pure understanding’:

These ideas which are said to come from more than one sense – such as those of space, figure, motion, rest – come rather from the common sense, that is, from the mind itself; for they are ideas of the pure understanding (though ones which relate to the external world and which the senses make us perceive), and so they admit of definitions and of demonstrations. (NE 128)

In the letter to Sophie Charlotte mentioned above, Leibniz distinguishes common sense from the imagination and attributes to the latter the function of putting together the perceptions of different external senses:

Since therefore our soul compares the numbers and the shapes of colours, for example, with the numbers and shapes discovered by touch, there must be an internal sense where the perceptions of these different external senses are found united. This is called the imagination, which comprises at once the concepts of particular senses, which are clear but confused, and the concepts of the common sense, which are clear and distinct. And these clear and distinct ideas which are subject to the imagination are the objects of the mathematical sciences, namely, arithmetic and geometry, which are the pure mathematical sciences, and their applications to nature, which make up mixed mathematics. (GP VI, 501/L 548)

The imagination plays an important role in Leibniz’s philosophy: it occupies an intermediate place between the senses and understanding and contributes to giving a ‘sensible’ form to the most abstract concepts of mathematics. Again, in his letter to Sophie Charlotte, Leibniz states that there are three levels of concepts: sensible ones, “which are the objects produced by each sense in particular”; those

at once sensible and intelligible, which belong to the common sense; and those which are intelligible only, belonging to the understanding. As Leibniz remarks, concepts of the first and the second type are imaginable, whereas those of the third type “lie beyond the imagination.” The second and third types of concepts are “intelligible and distinct, but the first are confused, although they may be clear and recognizable” (GP VI, 502/L 549).

We may grasp concepts of the third type only in a few cases and by means of an act of intuition, as when, for example, we conceive the concept of ‘I’:

The thought of myself, who perceives sensible objects, and the thought of the action of mine that results from it, adds something to the objects of the senses. To think of some colour and to consider that one thinks of it are two very different thoughts, just as much as colour itself differs from the “I” who thinks of it. And since I conceive that other beings can also have the right to say “I”, or that it can be said for them, it is through this that I conceive what is called substance in general. It is also the consideration of myself that provides me with other notions of metaphysics, such as cause, effect, action, similarity, etc., and even those of logic and ethics. Thus it can be said that there is nothing in the understanding that did not come from the senses, except the understanding itself, or that which understands. (GP VI, 501/AG 188)

Writing to Walter von Tschirnhaus in May 1678, about twenty years before his letter to Sophie Charlotte, Leibniz seems to believe that besides the kind of thought that we develop by means of symbols (and which he identifies with calculation in the proper sense), we have the possibility of developing a way of thinking based on what he calls ‘meditation’. In this letter, Leibniz suggests that thinking and computing are analogous, insofar as both are based on the use of characters:

You are entirely of my opinion when you say that in very composite matters a calculus is necessary. For this is the same as if you had said that characters are necessary, for a calculus is nothing but operation through characters, and this has its place not only in matters of quantity but in all other reasoning as well. (GM IV, 462/L 193)

He then suggests that it is possible to reason “without a prolonged calculation, that is without paper and pen”:

Meanwhile I have a very high regard for such problems as can be solved by mental powers alone insofar as this is possible, without a prolonged calculation, that is, without paper and pen. For such

problems depend as little as possible on external circumstances, being within the power even of a captive who is denied a pen and whose hands are tied. Therefore we ought to practice both in calculating and in meditating, and when we have reached certain results by calculation, we ought to try afterward to demonstrate them by meditation alone, which has in my experience often been successful. (GM IV, 462/L 193)

It is difficult to tell whether Leibniz here considers it possible to develop some metaphysical thoughts without employing symbols (i.e., without recourse to any language whatsoever). Certainly, in the letter to Sophie Charlotte, as we have seen, he claims that we may grasp some fundamental notions of logic, ethics, and metaphysics by means of intuition. Outside these cases, however, when we compose thoughts and chains of thoughts, we can reach the most abstract notions only by employing some characters, i.e., some signs or symbols formed through the faculty of the imagination.

In the letter to Tschirnhaus, Leibniz stresses again the importance of characters for thinking:

No one should fear that the contemplation of characters will lead us away from the things themselves; on the contrary, it leads us into the interior of things. For we often have confused notions today because the characters we use are badly arranged; but then, with the aid of characters, we will easily have the most distinct notions, for we will have at hand a mechanical thread of meditation, as it were, with whose aid we can very easily resolve any idea whatever into those of which it is composed. In fact, if the character expressing any concept is considered attentively, the simpler concepts into which it is resolvable will at once come to mind. Since the analysis of concepts thus corresponds exactly to the analysis of a character, we need merely to see the characters in order to have adequate notions brought to our mind freely and without effort. (GM IV, 461/L 193)

3 Against Hobbes's Thesis that Truth Is Arbitrary

Thus, according to Leibniz, imagination helps us to build signs and symbols that are - 'in our present state', as a medieval thinker would say - indispensable tools for grasping and developing thoughts.

Signs and symbols, however, pose a serious problem to Leibniz: to see what kind of problem it is, let me quote some lines from the *Dialogue*:

- A. Certain learned men think that truth arises from decisions people make, and from names or characters.
- B. This view is quite paradoxical.
- A. But they prove it in this way: Isn't a definition the starting place [*principium*] for a demonstration?
- B. I admit that it is, for some propositions can be demonstrated only from definitions joined to one another.
- A. Therefore, the truth of such propositions depends on definitions.
- B. I concede that.
- A. But definitions depend upon our decision.
- B. How so?
- A. Don't you see that it is a matter of decision among mathematicians to use the word 'ellipse' in such a way that it signifies a particular figure? Or that it was a matter of decision among the Latins to impose on the word '*circulus*' the meaning that the definition expresses?
- B. But what follows? There can be thoughts without words.
- A. But not without some other signs. See whether you can do any arithmetic calculation without numerical signs, I ask. (A VI 4, 22/AG 270)

These 'men' to whom A alludes are Hobbes and his followers. In the *New Essays* Leibniz will attribute to Hobbes the claim that "truth depends upon the good pleasure of men" (NE 396). To condense Leibniz's question in few words: if we cannot think without characters (words or other signs), then, because the meanings of words (and other signs) are arbitrary, it follows that even sentences that we consider true are only arbitrarily true. But this seems to be contrary to the received view that truth is independent of the human will.

In the *Dialogue*, Leibniz offers the following solution to this problem:

[...] I notice that if characters can be applied to reasoning, there must be some complex arrangement, some order which agrees with things, an order, if not in individual words (though that would be better), then at least in their conjunction and inflection. And a corresponding variegated order is found in all languages in one way or another. This gives me hope that we can avoid the difficulty. For though the characters are arbitrary, their use and connection have something that is not arbitrary, namely, a certain correspondence [*proportio*] between characters and things, and certain relations among different characters expressing the same things. And this correspondence or this relation is the ground of truth. For it brings it about that whether we use these characters or others, the same thing always results, or at least something equivalent, that is, something corresponding in proportion always re-

sults. This is true even if, as it happens, it is always necessary to use some characters for thinking. (A VI 4, 24/AG 271)

To fully understand what Leibniz means in this passage, we need to look at his theory concerning the nature of historical languages, like Latin, German, French etc. Thus, let me briefly sum up some features of Leibniz's theory of language, before attempting to figure out what kind of answer Leibniz has given to the above question about the relationship between characters and truth.

4 Onomatopoeia and Similarity: The Origin of Words in Natural Languages

The notion of *affectus* (affect), plays a fundamental role in Leibniz's account of the nature and genesis of natural languages. According to Leibniz, an *affectus* is a kind of reaction that human beings have in response to some stimulus. The Latin word *affectus* is a noun that has the same root as the verb *afficere*, i.e., 'to affect', 'to influence', and in many cases it can be employed as a synonym for *affection*. This may suggest that an *affectus* in Leibniz's sense is the same as an *affection of the soul* according to the semantic theory of Aristotelian origin, but this is not the case. The *affections of the soul* (τὰ ἐν τῇ ψυχῇ παθήματα) of which Aristotle speaks in *De interpretatione* I, were traditionally interpreted as concepts (*animi conceptus*: concepts of the soul), whereas an *affectus* in Leibniz's sense implies (contains) concepts and ideas but cannot be identified with them.² Affects imply a judgment because they are reactions of our mind facing the view that our experience (senses plus intellect) offers of the world. Hunger and thirst, for example, according to Leibniz are not *affectus*, because they do not imply any kind of judgment (see A VI 4, 1414). Moreover, *affectus* are not the same for all human beings. Different people usually have different *affectus*, depending on the circumstances in which they are living and on the constitution of their speech organs.

Leibniz's idea is that human beings, at a primitive stage of their development, gave names to things according to the impressions that these produced on them. Thus, according to a tradition that can be traced back (at least) to the Middle Ages, Leibniz conjectured that the first words uttered by human beings were interjections and simple exclamations:

[...] it is quite reasonable to think that human beings [...] as soon as they began to forge some words, adapted the nouns to their

² Cf. Heinekamp 1972; 1976; Rutherford 1995, 240-8; Mugnai 2018, 198.

perceptions and to their *affectus*; that at the beginning they employed interjections and short particles to express their own *affectus* and that from these interjections as from some seeds all languages were progressively developed. (EP 216)

As we read in a text devoted to philosophical language, interjections are what remains of a primitive way of speaking typical of beasts, and they “either express our judgments and affects or are directed towards other things” (A VI 4, 890). Thus, the first manifestations of a natural language (interjections) contain a subjective element (a judgment) and an objective one, that is a reference to the thing that the speaker intends to denote. Both these elements are connected through *onomatopoeia*:

Every language has a kind of natural origin due to the agreement of the sounds with the affects caused in the mind by the act of seeing things. And I think that this process took place not only in the primordial language, but also in all other languages that emerged partly from the primordial one, partly from a new usage [of the words] introduced by the human beings dispersed all over the world. And of course, an onomatopoeia often imitates nature, as when we attribute ‘croaking’ to frogs, or when we take ‘shh’ as a request for silence or rest, and ‘r’ for designating a running, or when ‘hahaha’ designates laughing, and ‘vae’ pain. (A VI 4, 59)

Between a word and the thing named by it, *onomatopoeia* plays the same role that *similarity* plays between a drawing and the thing drawn: the more similar the drawing is to the thing, the more natural we consider it to be. Thus, the onomatopoeic words of a given language are ‘more natural’ than other words belonging to the same language, insofar as they attempt to reproduce the sounds of the objects named; and from this point of view, they witness a primitive stage in the development of the language, a stage in which human beings were ‘closer to things.’

Besides onomatopoeia, other ‘ingredients’ of Leibniz’s theory about the genesis and development of natural languages are the rhetorical tropes of *synecdoche*, *metaphor*, and *metonymy*.³ These tropes, applied to the basic onomatopoeic words, contribute to expanding their meanings and enable the speaker to perform the transition from ‘sensible to insensible things’, that is from the speech about concrete things to speech about abstract things:

³ In NE 282-3, Leibniz adds *irony* to the classical tropes, according to the simplified list proposed by Ramus’s school.

I remember too that in the Credo written for the Hottentots, it was necessary to use their words for a gentle and pleasant wind to translate 'Holy Spirit'. This is not unreasonable since our Greek and Latin words *pneuma*, *anima*, *spiritus* primarily signify simply the air or wind which one breathes, as being one of the most rarefied things that our senses acquaint us with; one starts with the senses in order to lead men gradually to what is above the senses. (NE 104)

In Spanish, *ricos hombres* signified nobles or chiefs. This also shows how words have passed by means of metaphors, synecdoches and metonymies from one signification to another, without our always being able to follow the trail. (NE 282-3)

The rhetorical tropes are even responsible for the shift of meaning underlying the use of prepositions:

This analogy between sensible and insensible things, which has been the basis for figures of speech, is worth exploring. We will understand it better if we consider the very widespread examples provided by the use of prepositions, such as 'to', 'with', 'of', 'before', 'in', 'out', 'by', 'for', 'on', 'toward', which were all derived from place, distance and motion and were subsequently carried across to all kinds of changes, orders, sequences, differences, and conformities. 'To' signifies approach, as when we say 'I am going to Rome'. But also to tie something down we make it approach the thing we want to join it to, and so we say that one thing is tied to another. Also, since there is an immaterial tie (so to speak) when one thing follows from another according to moral reasons, we say that what results from someone's movements or decisions belongs or attaches to him, as if it tended to cling to and go along with him. (NE 277)

So, the onomatopoeic words that at an earlier stage denoted some sensible things (and the effect they produced on us), later became the roots of other words, giving rise to new meanings:

Thus the Latin *coaxare*, applied to frogs, corresponds to the German *couaquen* or *quaken*. It would seem that the noise these animals make is the primordial root of other words in the Germanic language. Since these animals make a great deal of noise, we connect it with chatterers and babblers, whom we call by the diminutive *quakeler*; though it seems that this same word *quaken* used to be taken in a favourable sense to signify all kinds of sounds made with the mouth, even including speech. And since those sounds or noises of animals testify to the presence of life, and tell us that

something living is there before we can see it, in old German *quek* signified life or living; we can find this word in the oldest books, and vestiges of it still remain in the modern language, for *quek-silber* is *quicksilver*, and *erquicken* is to succour – i.e. revive or enliven after some weakening or great exertion. In Low German certain weeds are called *Quaken*, that is, alive and running, as they say in German, spreading and seeding themselves easily in the fields to the detriment of the grain; and in English *quickly* means promptly and in a lively manner. (NE 282)

5 Prepositions and Our Perception of Spatial Relations

Leibniz believes that the attribution of names to things on the basis of *onomatopoeia* is contingent, because it depends not only on the different *affectus* of different individuals, but also on the historical and natural circumstances in which people found themselves living:

Indeed, the different people who first imposed the names, attributed different words to the same things, according to the different qualities by which they were struck, to the different circumstances and relations in which they were situated, to their own affects, to the occasions, and to their proper advantage [...] (EP 215-6)

This variability of the attribution of words, however, is counterbalanced by the stability of the perception of spatial relations, which Leibniz assumes to be the same for all human beings. To clarify this point, we need to consider Leibniz's explanation of the nature of words representing particles.

Particles (conjunctions, prepositions, adverbs and pronouns) are essential for natural languages: they connect sentences, parts of sentences and parts of ideas. In a text on rational grammar, Leibniz states that “vocables [*vocabula*] are either words [*voces*] or particles. Words constitute the matter, particles the form of discourse. [...] Just as prepositions govern the cases of nouns [*nominum*], so conjunctions govern the moods of verbs” (A VI 4, 882/Leibniz 1966, 15). As far as prepositions are concerned, they are strongly linked with our representation of space:

All prepositions signify, in particular, a relation of place [*relationem loci*] and, metaphorically, any kind of relation. (A VI 4, 645-7)

Concerning prepositions, it must be remarked that every preposition employed in our usual languages initially signified some relation to a place and was later transferred by means of some trope to some metaphysical notions less dependent on the imagination. (A VI 4, 890)

In a long essay entirely devoted to the analysis of particles, Leibniz distinguishes two kinds of spatial relation implicit in prepositions: a *simple local relation* (*respectus localis*) and a *local relation containing motion* (a motion of the thing to which the preposition refers or of other things) (A VI 4, 647). A simple local relation is contained, for example, in prepositions like 'with', 'without', 'at', 'about' ('around') and 'between'; a local relation containing motion is found in prepositions like 'across' ('through') and 'towards' (A VI 4, 648-9).

In the *New Essays*, Leibniz generalizes the thesis according to which all prepositions imply some reference to spatial relations:

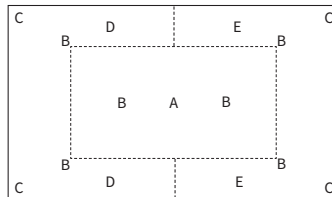
Still, this analogy between sensible and insensible things, which has served as the foundation for figures of speech, is worth exploring. We will understand it better if we consider the very widespread examples afforded by the use of prepositions, such as 'to', 'with', 'of', 'before', 'in', 'out', 'by', 'for', 'upon', 'toward', which are all derived from place, distance and motion and subsequently transferred to all kinds of changes, orders, sequences, differences, and conformities. 'To' signifies approach, as when we say: I am going to Rome. But also, to tie something down we make it approach the thing we want to join it to, and so we say that one thing is tied to another. Furthermore, since there is an immaterial tie, so to speak, when one thing follows from another according to moral reasons, we say that what results from someone's movements or decisions belongs or attaches to him, as if it tended to cling to and go along with him. One body is with another when they are in the same place; but we also say that one thing is with whatever occurs at the same time, or belongs to the same ordering or part of an ordering, or co-operates in one and the same action. If someone is of (from) a certain place, the place has been an object for him by virtue of the sensible things with which it has confronted him, and it is still an object of his memory, which continues to be full of it; and that has the result that objects [of thought] are signified by the preposition of, as when we say: it is a question of this, he is speaking of that; as though the person were of (from) the item in question. And just as what is shut up somewhere or is in some whole, is supported by it and goes where it goes, so accidents are thought of similarly as in the subject - *sunt in subjecto, inhaerent subjecto*. The particle on is also applied to objects [of thought]: we say that someone's mind is on such and such a topic, much as a craftsman works on the wood or stone which he is cutting or shaping. (NE 277-8)

That the meaning of prepositions is determined by our spatial perceptions was a rather widespread theory in the sixteenth and seventeenth centuries; we find a clear reference to it, for instance, in Giulio Cesare Scaligero, an author well known to Leibniz:

Several particles are signs of a motion and denote the starting point from which the movement begins, such as *A*, *De* and *Ex*; to make speech easier, they are modified into *Ab*, *Abs* and *E*. The point of arrival, instead, is denoted by *Ad*, *Ob*, *Usque* [...] There is also a real kind of motion, as in bodies, and a kind of motion that the Greeks call *analogikòs*, as when we say that someone is moving with his mind. Thus, when we say 'I heard this from Davo', there is some kind of motion. And the same happens with 'I am coming round' [...] Thus, *Once* and *Propter* once signified a place. (Scaliger 1580, 388)

Leibniz, however, distances himself from Scholastic and Renaissance grammarians insofar as he attempts to develop a systematic account of the spatial relations implied by the use of prepositions. One assumption in this account is that all human beings perceive spatial relations in the same way. In the treatise on particles mentioned above, Leibniz draws some diagrams to represent the spatial relations implied by certain prepositions (A VI 4, 648):

As Vincenzo De Risi has shown, Leibniz considers space something merely ideal. This does not mean, however, that different human in-



dividuals may have different representations of space, or that 'our' space could have been different (i.e. a non-Euclidean one). For Leibniz space is not contingent:

Leibniz's definition of space as the order of all *possible* situations necessarily includes, in fact, all the situational configurations determined by the set of monads of the non-existing worlds. Absolute space is one and the same for all possible worlds. What changes is only the specific situational actualization of the order of possibilities. And even that [...] merely consists in a different system of boundaries, and by no means in the determination of the curvature or dimensions of the ambient space, or anything else. (De Risi 2000, 566)

6 A “Certain Correspondence [*proportio*]” Exists “Between Characters and Things”

At this point, we may return to our question of how, according to Leibniz, it is possible for different systems of ‘characters’ to express the same truths. As we have seen, Leibniz thinks that at the ‘first level’ of every historical language there are certain ‘root words’ (*mots radicaux*) of an onomatopoeic nature. Based on these root words, other words are built by applying *tropes* to them that extend their meaning in several directions. These tropes are the same for all human beings. However, besides onomatopoeic words and their derivatives, language has other extremely important words that link single words and entire propositions together to form a speech. These special words are particles. Among them, prepositions play a particularly relevant role, because they do not simply connect words, but refer to something external to language: they express spatial relations and even though the names for a spatial relation may change from language to language, they signify the same relations in different languages. Therefore, as we have seen in the *Dialogue*, Leibniz can argue that even “though the characters are arbitrary, their use and connection have something that is not arbitrary, namely, a certain correspondence between characters and things, and certain relations among different characters expressing the same things” (A VI 4, 24/AG 271).

Inter, tra, entre and *between*, for example, are names of prepositions in different languages – respectively, Latin, Italian, French and English – but they refer to the same kind of spatial relation, and this holds for all prepositions. Leibniz attributes the same perception of space to all human beings, a perception that cannot be altered by the change of occasions and circumstances in which the various individuals are situated. If I see an object A near an object B, I can express this state of things in many ways in different languages, but all expressions will agree in describing a spatial relation that is the same for every human being.

In the final part of the *Dialogue*, Leibniz presents his solution as follows:

But yet I notice that if characters can be applied to reasoning, there must be some complex arrangement, some order which agrees with things, an order, if not in individual words (though that would be better), then at least in their conjunction and inflection. And a corresponding variegated order is found in all languages in one way or another. This gives me hope that we can avoid the difficulty. For though the characters are arbitrary, their use and connection have something that is not arbitrary, namely, a certain correspondence [*proportio*] between characters and things, and certain relations among different characters express-

ing the same things. And this correspondence or this relation is the ground of truth. For it brings it about that whether we use these characters or others, the same thing always results, or at least something equivalent, that is, something corresponding in proportion always results. [...] Therefore, although truths necessarily presuppose some characters, indeed, sometimes they deal with the characters themselves (as with the theorems about casting off nines), truths don't consist in what is arbitrary in the characters, but in what is invariant [*perpetuus*] in them, namely, in the relation they have to things. (A VI 4, 24-5/AG 271-2)

Eight years after the *Dialogue*, Leibniz works out the details of this solution in his paper on the analysis of particles (*Analysis particularum*, 1685-86), explaining how it is possible for some 'characters' to denote a 'reality' that is the same for every human being. This solution is fully in agreement with Leibniz's views about nature and the genesis of the notion of space as a "representational element" in a world of individual substances.

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