Massimo Mugnai
Scuola Normale Superiore, Pisa – Italy

Leibniz's Ontology of Relations: A Last Word?

1. In his seminal work *A Critical Exposition of the Philosophy of Leibniz* (Cambridge 1900), Bertrand Russell raised the problem of how to interpret Leibniz's theory of relations, which he found at odds with Leibniz's scientific activity as a mathematician and flawed by unsurmountable inconsistencies. Russell attributed to Leibniz the claim that all relations are the work of the mind and argued that this claim would have led to the consequence "that the relational propositions, which God is supposed to know, must be strictly meaningless."

In 1903, the edition of the *Opuscules et fragments inédits* by Louis Couturat made possible a better understanding of Leibniz's logico-grammatical analysis of relational sentences and animated a debate which continues today, even after that a huge quantity of new texts have been published by the Academy Edition in Muenster. This debate has given rise to two main competing interpretations, both based on the attribution to Leibniz of a nominalistic-conceptualist account of relations and differing in the evaluation of how strong the implied nominalism was.

On one hand, we have interpreters who consider Leibniz as a full fledged *anti-realist*, for whom all kind of relations and relational attributes are merely 'mental things'; on the other, there are interpreters who attribute to Leibniz the distinction between *relations* in the proper sense and *relational properties* denoted by relational predicates, and claim that Leibniz denies any reality to the first, but not to the second.

In what follows, my first purpose is that of presenting some basic concepts of the scholastic (and late-scholastic) doctrine of relations, which constitutes the background of Leibniz's ideas on the same subject. Secondly, I will sketch briefly Leibniz's own doctrine and, thirdly, I will attempt to settle the question between the two rival interpretations just mentioned.

2. As is well known, medieval thinkers inherited from Aristotelian philosophy the firm belief that the world was made of individual substances with their (individual) properties or accidents. This ontology was wedded to a logical (and grammatical) analysis of sentences which reduced any elementary sentence to the subject-predicate form (to be more precise to the form: *subject + copula* (the verb *to be*) + *predicate*). Thus, logical analysis fitted ontology quite well: given the sentence "Socrates is wise", this was understood as asserting that the individual substance corresponding to the name 'Socrates' has the property denoted by the expression 'wise'. Obviously, medieval thinkers were well aware that not all sentences *are* in subject-predicate form, but they developed a series of *ad hoc* measures aiming to reduce them to this form. Making recourse to a device found in Boethius, for instance, they usually split up into *copula* and *participle* the verb which appears in a sentence like "Socrates currit ["Socrates runs"]", giving rise to the expression "Socrates est currens ["Socrates is running"]". In general, given a sentence of the form "SΦ", where 'S' is the name of a singular substance and 'Φ' any verb whatsoever grammatically accorded with 'S', this sentence was reduced to another logically equivalent sentence, of the form "S is Φ-ying" (where 'Φ-ying' corresponds to the participle of the verb 'Φ'). With sentences composed by a single verb, like, for example, the Latin sentence "pluit ["it is raining"]", the trick (employed by Leibniz) was that of making explicit the implicit subject: "pluvia cadit ["the rain is falling"]".

In a world made of individual substances with their accidental properties, these latter were said to *inhere* in the substances which were assumed to be properly the *substratum* of any modification. Clearly, if *inhering* in this context is taken literally as a relationship between an accidental property and an individual substance, this implies the allegiance to a realist ontology of some kind. Typically, a nominalist (or conceptualist) would prefer to offer a paraphrase of

inherence in terms of *predication.*

On the basis of this ontology, however, it becomes very difficult to give an account of the nature of relational properties: of those properties, that is, which, from the logical or grammatical point of view seem to link together different subjects. In a nutshell, the problem was the following:

> if a state of affairs made of an individual substance (Socrates) and of an *inhering* property does correspond to the sentence "Socrates is wise", then how can we describe the state of affairs corresponding to a sentence like: "Socrates is wiser than Plato"? What is the ontological nature of the accident corresponding to the expression "wiser than Plato"?

Clearly, at this point ontology and language seem to diverge: whereas the linguistic expression "wiser than Plato" is perfectly legitimate as a predicate of a sentence, the corresponding ontological property has a nature quite difficult to be determined. In the scholastic tradition, however, at least for what concerns the problems raised by relations, ontology comes first and imposes severe constraints on the logico-linguistic analysis.

According to Walter Burleigh, to give rise to a binary relation, five ingredients are necessary:

1) A subject (i.e. an individual substance)
2) A *foundation* in the subject (i.e. a property inhering in the subject)
3) A *terminus* of the relation (i.e. a correlate of the subject)
4) A foundation in the terminus (i.e. a property inhering in the subject)
5) The relation itself.

A standard example of a binary relation was that of the *similarity* subsisting between two individual substances. If Socrates and Plato are wise, then the two accidents, respectively, of being wise in Socrates and of being wise in Plato are the foundations on which the relation of *similarity* rests. If one is considering the similarity of Socrates towards Plato, then Socrates is the *subject* and Plato the *term* of the relation; things, obviously, are the other way around if one considers the similarity of Plato towards Socrates. The relation of 'being similar' (in respect of Plato) was said *to inhere* in Socrates through the fundamental accident of being wise, and an analogous relation was said to inhere in Plato (in respect to Socrates) through the same accident *in kind* (*in specie*)[1]. A constraint imposed on the foundation by the tradition was that the foundation had to be an *absolute* accident, not a relational one. As Walter Burleigh remarks:

> […] a relation inheres in a substance through some more perfect accident only. And this accident through which the relation inheres in the subject is called the foundation of the relation.[2]

"More perfect" here means *absolute*, the degree of perfection being determined by the degree of dependence on substance. Indeed, whereas an absolute accident depends directly, without any intermediary, on an individual substance, a relation implies a kind of twofold dependence: on the absolute accident in which it inheres, on one hand, *and* on the substance itself (through the absolute accident), on the other.

To properly understand the traditional doctrine of relations just sketched, however, some additional remarks are in order. First, the two Latin words *relatio* ('relation') and *respectus* ('respect') were ordinarily employed to designate three different items: (a) the relation in the proper

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[1] I.e. the two accidental properties on which the relation rests were conceived as not individually the same, or as the same in number.

[2] Walter Burleigh, *Expositio super librum Praed.*, fol 29 vb: "[…] relatio non inest substantiae nisi mediante aliquo accidente perfectiori. Et illud accidens mediante quo relatio inest substantiae dicitur fundamentum relationis."

sense, understood as a polyadic property (for instance: *father* as a property 'connecting' David and Solomon); (b) a property grounded in a given subject only and 'alluding' or referring to another subject (for example, *father* as a relational accident grounded in David and alluding to another individual substance (Solomon) 'outside' him); (c) the so-called 'transcendental relation'. According to the scholastic-Aristotelian definition of *accidental property* (*accidens*), only a relation in the sense specified by (b) was worth considering as an accident. Indeed, a relation in sense (c) was connected to the *essence* of a thing, thus excluding its being an accident[3], whereas a relation in sense (a) violated a fundamental principle clearly expressed by Thomas and shared by the great majority of the philosophers of the western tradition (Leibniz included):

> (P) The same accident "never extends beyond the subject in which it inheres."[4]

Even people belonging to the opposite fields of the nominalists and the realists are in perfect agreement concerning this claim. In the XIV Century, Peter Aureol (1280-1322) explicitly recognized the existence of polyadic predicates, but at the cost of attributing them the nature of 'merely mental things'[5]. As we will see, the same move will be made by Leibniz three centuries later.

Thus, when in a text belonging to the scholastic tradition the problem is raised of the reality of relations, the 'relations' involved are those associated with sense (b) above. That relations in sense (a) were not real, i.e. that nothing did correspond in the external world to a polyadic predicate, was a common opinion of the Aristotelian tradition, taken for granted even by almost all the philosophers who, in the XVII century, fiercely reacted to the Aristotelian doctrines.

3. What I have called the 'scholastic doctrine' concerning relations is in fact a simplified version of a theory prevailing amongst philosophers of the 'realist' attitude: Ockham, for example, considers the word *foundation* "not very philosophical" and not in line with the authentic Aristotelian teaching. Moreover, in a typical nominalistic vein, he assimilates what in the prevailing tradition is considered as the relation of *inherence* of a property in a subject as an attribution of a predicate to a subject, i.e. as an act of *predication*.[6] What is at stake in his theory are *names* not real properties. Ockham, however, gives a very clear account of the traditional *realistic* doctrine about relations:

> On that view every relation is a thing really distinct from its foundation, so that the similarity by which white Socrates is like white Plato is a thing really and totally distinct from both Socrates and the white which grounds the similarity. The same sort of account holds in the case of paternity, filiation, and all the other things that are placed in the genus of relation. Thus, although 'foundation of a relation' is not a piece of Aristotle's philosophical jargon, proponents of this view claim that every relation has both a foundation and a term and that it is really distinct from both.[7]

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[3]   Qui dire qualcosa sulla relazione trascendentale.

[4]   "[…] accidens enim non extendit se ultra suum subiectum": Thomas, *In quatuor libros Sententiarum*, II, d. 27, q. 1, ar. 6. For another version of the same principle, cfr. II, d. 42, q. 1, ar. 1: "[…] unum accidens non potest in diversis subiectis esse ["the same accident is not in different subiects"]".

[5]   Cfr. Peter Aureoli's *Scriptum super Primum Sententiarum*, fols. 318ᵛa-b (translation in G. Brown, *Medieval Theories of Relations*, 'The Stanford Encyclopaedia of Philosophy", p. 00: "It appears that a single thing, which must be imagined as some sort of interval (*intervallum*) existing between two things, cannot exist in extramental reality, but only in the intellect. [This appears to be the case] not only because nature does not produce such intervals, but also because a medium or interval of this sort does not appear to be *in* either of the two things [it relates] as in a subject, but rather *between* them where it is clear that there is nothing which can serve as its subject." Cfr. Henninger 1900.

[6] *Logica,* p. 653: "Notandum est hic quod per 'inesse' intelligitur 'praedicari'."

[7]   *Logica*, p. 176.

In the sixteenth and seventeenth centuries, the realistic account or, at least, the realistic jargon about relations seems to be the prevailing one: only few people explicitly accept a genuine nominalistic point of view, and the discussion on the ontological nature of relations takes place in a framework largely inspired by a doctrine which goes back to Burley and to other medieval 'realists'.[8] This doctrine lasted till the second half of the Nineteenth Century, when Charles Peirce and Gottlob Frege, as is well known, proposed a new paradigm to interpret relational sentences. As one may easily ascertain examining the logic texts in the Herzog August Library of Wolfenbuettel, this doctrine constituted the received view on relations even at Leibniz's time.[9]

If we compare what these texts say about relations to the traditional scholastic view on the same subject, we find almost the same ideas expressed in almost the same order. Jacob Martini, for example, in his introductory text to logic, writes that "the subject of a relation is always a substance, like, for instance, Sophroniscus and Socrates, of whom the first is the father, the second the son," whereas the foundation "is some absolute accident, in virtue of which the terms refer to each other".[10] That the foundation is an absolute accident is emphasized even by Caspar Bartholinus: "The *foundation* is the reason or the cause *according to which a relation belongs to a subject and it is an absolute accident* [...]".[11] A clear account of the relationship between the foundation and the relational accident resting on it is given by Pierre Du Moulin:

> Every relation belonging to this predicament is grounded on some absolute accidents
> by means of which it is inherent in the substance: thus a thing is said to be small or
> big by quantity; a friend is a friend in virtue of a quality (for instance: benevolence);
> father and son are predicated in virtue of generation, left and right in virtue of place.
> We call absolute all those accidents which are not related and which can be known
> by themselves without the help of any accident: such an absolute accident is the
> foundation of the relation.[12]

In a text belonging to the year 1664, at the very beginning of his philosophical career, Leibniz explicitly endorses the 'standard' view according to which a relation needs a foundation. He distinguishes, however, between the *foundation* on which the relation rests and the *reason of inhering* (*ratio fundandi*):

> The *foundation of a relation* is that in virtue of which the relation inheres in the
> subject, whereas the *reason of inhering* is that in virtue of which the relation is made
> actual.[13]

The distinction between the *foundation* and the *reason of inhering* of a relation is not a very common one amongst the medieval thinkers: it is explicitly theorised, however, by an author with whom Leibniz became familiar: Johann Christopher Hundeshagen (1635-1681). In Hundeshagen's *Logica*, we find the following explanation of this difference:

> The *foundation* is something intrinsic in the subject, in virtue of which the subject is
> suitable to 'hold up' the relation [...] The *reason of the foundation* is a kind of

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8   Nominalism: Obadiah Walker, for example, cf. pp. 000.

9   The logic books of the Herzog August Library are particularly revealing for the present issue, because many (probably all) of them were examined by Leibniz himself, when he was appointed librarian by the local Duke.

10   Jacob Martini, *Institutionum logicarum libri VII. Editio renovata*, Sumtibus Pauli Elwigii Bibliopola, MDCXIV, p. 158.

11   Caspar Bartholin, *Enchiridion logicum ex Aristotele et Optimis eius interpretum [...]*, Argentorati, MDCVIII, p. 163: "*Fundamentum* est ratio vel *caussa ob quam subiecto convenit Relatio; estque Accidens absolutum* [...]".

12   Petrus Molineus, *Elementa Logica*, Paris, 1618, pp. 28-29: "Omnis relatio huius praedicamenti innititur alicui accidenti absoluto, quo mediante inest substantiae: ut parvum et magnum dicitur ob quantitatem, amicus et amicus ob qualitatem, puta benevolentiam; pater et filius ob generationem, dextrum et sinistrum ob situm. Accidentia autem absoluta appellamus omnia quae non sunt relata, et quae possunt cognosci sola, et sine alio accidente: accidens tale absolutum est fundamentum relationis."

13   Cf. *Specimen questionum philosophicarum*, A VI ?, p. 95: "*Fundamentum Relationis* est, per quod inest subjecto, *Ratio fundandi*, per quod inducitur."

intermediate condition between the foundation and the term, without which it is impossible that between the two a relation will emerge. An example of reason of the foundation is *generation*, which must exist between Abraham and Isaac, if Abraham has to be the father and Isaac the son. Let's suppose, indeed, that God immediately creates Abraham and Isaac, who were formerly father and son, with all their absolute qualities: without the intermediation of generation, the first could not be the father and the latter the son.[14]

Moreover, in the 1664 text, Leibniz recognises, as Hundeshagen does, that not all kind of relations need a *reason of the foundation* besides the foundation itself; and that there are relations which directly inhere in the substance, without any need of a distinct foundation. Clearly he thinks, for example, of an identity relation between two individual substances, like Socrates and Plato. In this same text (as in a short remark written at the end of his life), he explicitly accepts that there are relations founded on other relations (for instance the similarity between two ratios).[15]

      Whether Leibniz continued to accept even in the period of his mature thought the distinction between *foundation* and *reason of the foundation,* is not clear. What we may state with certainty is that in 1706 he conformed himself to the traditional doctrine according to which the foundation of a relation is an *absolute accident*:

> The foundation of the relation belonging to the predicaments is an absolute accident.[16]

Like many thinkers of the scholastic tradition, Leibniz uses the (Latin word corresponding to the English) word *relation* to denote two different things: 1) the relational accident belonging to a given subject only and 2) the polyadic property which connects as a kind of 'bridge' the related subjects. To see this, let me consider one of the most frequently commented passages from Leibniz's fifth letter to Clarke. In this passage, Leibniz considers the case of two lines, L and M, with L greater than M and makes the following remark:

> The ratio or proportion between two lines L and M may be conceived three several ways: as a ratio of the greater L to the lesser M, as a ratio of the lesser M to the greater L, and, lastly, as something abstracted from both, that is, the ratio between L and M without considering which is the antecedent or which the consequent, which the subject and which the object. And thus it is that proportions are considered in music. In the first way of considering them, L the greater, in the second, M the lesser, is the subject of *that accident which philosophers call 'relation'*. But which of them will be the subject in the third way of considering them? It cannot be said that both of them, L and M together, are the subject of such an accident; for, if so, we should have an accident in two subjects, with one leg in one and the other in the other, which is contrary to the notion of accidents. Therefore we must say that *this relation, in this third way of considering it*, is indeed out of the subjects; but being neither a substance nor an accident, it must be a mere ideal thing, the consideration of which is nevertheless useful.[17]

Here, Leibniz mentions "*that accident which philosophers call 'relation'*" (emphasis mine), to denote the *relational accidents* 'greater' and 'lesser' inhering, respectively, in the line L and in the line M. At the same time, he contrasts these two accidents with the *relation* understood as something "out of the subjects", i.e. as a property that, having one leg in one subject and the other

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[14]   Hundeshagen 1674, p. 22.

[15]   Cf. *Specimen questionum philosophicarum*, A VI ?, p. 95.

[16]   M 1992, p. 161: "Fundamentum relationis praedicamentalis est accidens absolutum." This shows that Plaisted's claim that, for Leibniz, relational accidents like *father* and *son* are the foundations of the relation subsisting between David and Solomon is in plain contrast with the textual evidence (cf. Plaisted, 2002, p. 10: "I believe that, for Leibniz, <paternity> and <sonship> are the very properties of the related individuals that provide the foundation for the common relation in this case." The claim is repeated on p. 69. "I further argue that the intrinsic denominations upon which relations simpliciter are founded are actually relational accidents.")

[17]   L 704; GP 7, 401 (*Correspondence*, 144-45).

in the other, cannot be an accident in the proper sense.

Regarding relations "out of the subjects", i.e. polyadic properties, Leibniz states in the passage above that these are merely mental things: this claim, which, as we have seen, is in perfect agreement with the doctrine currently held in the scholastic tradition, is repeated on many other occasions. The following quotations show that in a clear way:

> A *relation* is an accident which is in several subjects […][18]

> If relations were real beings in things, endowed with a reality different from that arising from the fact that they are thought, then they would be accidents in two subjects simultaneously, because a relation has the same right of being in both […][19]

> A being is either a *substance*, and in that case it can be only a subject, or it is an *attribute*, and in that case it constitutes the predicate of another being. So learning is just what gives rise to the fact that someone is learned; action that someone acts. But we may ask whether there is a third possibility, since time and place, for instance, are not subsistent things nor are their attributes. The same applies to the number and to order: so 'ten' is not an attribute of anything. In fact one cannot predicate 'ten' of a single aggregate or of singular things. The same applies to a relation which is common to many subjects, such as the similarity between two things. So there are attributes which are inherent in several subjects at once. Of that kind are, for example, order, time and place.[20]

The last one of these three texts is quite remarkable, because in it Leibniz admits that, besides individual substances and their (monadic) attributes, there are even attributes "common to many subjects". It is precisely the polyadic nature of these attributes, however to reveal that they are 'purely mental beings': what matters, for Leibniz, is to recognize that no multiple inherence is admitted in the real world. We find an analogous attitude in an introductory book to logic belonging to the Herzog August Library in Wolfenbuettel. It is a book written by Obadiah Walker (1616-1699), on the first page of which Leibniz has make the curious remark: "I suspect that the author is Wilkins, because I see that he is quite well acquainted with natural sciences and mathematics; moreover he makes frequent use of examples from theological matters."[21] Walker's book, as explicitly announced in the title, is written according to the nominalistic doctrine and contains the following claim concerning the reality of relations:

> Relative words denote several absolute things, thus father denotes the same as the words 'man having a child' […] Thus, similarity, for instance, denotes Socrates and Plato and their whitenesses, not a true being between the two, because such a being does not exist. Indeed, everything which exists (we are speaking about created things) is absolute, i.e. it is denoted by means of an absolute term. A father is not father thanks to fatherhood (i.e. to some relative thing) […] Several incorrect expressions of this kind, however, are used by people who claims that a relation is something distinct from all the absolute beings and who multiply beings according to the multiplicity of terms.[22]

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[18] VE, p. 406: "*Relatio* est accidens quod est in pluribus subiectis […]".

[19] LH IV, 3, 5a, Bl. 23v: "Si relationes essent entia in rebus ipsis realia quam per conceptionem, forent accidentia simul in duobus subiectis, nam relatio pari iure in utroque est […]".

[20] LH IV, 7c, Bl. 75-78: "Ens est vel *subsistens* quod tantum subiectum esse potest, vel *attributum*, quod est constituens praedicati alterius Entis. Ut scientia constituit ut aliquis sit sciens. Actio ut agens. Sed nonne datur tertium? Sic tempus, locus neque est subsistens nec attributum. Idem est de Numero, ordine. Sic decem non est attributum ullius rei. Neque enim de aggregato neque de singulis dici potest Numerus Denarius. Idem est de relatione quae communis v.g. similitudo duorum. Datur itaque attributum quod est simul in pluribus subiectis. Talia ergo sunt ordo, adeoque tempus et locus."

[21] "Suspicor autorem esse Wilkinsium; video enim rerum naturalium, et mathematicarum non esse imperitum et passim quoque Theologicis exemplis uti."

[22]Obadiah Walker, *Artis rationis maxima ex parte ad mentem nominalium. Libri tres*, Oxonii, E Theatro Sheldoniano Anno Dom. 1673, p. 40: "Voces autem relativae significant plura absoluta: ut pater significat quantum hae voces, homo habens filium […] Sic similitudo v.g. significat Socratem et Platonem, et eorum albedines; nullum vero ens inter

Walker here makes two claims: 1) every existing thing is absolute, not relative; a word like *father*, for instance, which corresponds to what I have called a 'relational accident' signify or denotes a man and implies the existence of a child, it doesn't denote some *relative* extra-mental entity; 2) the similarity which subsists between Socrates and Plato is "not a true being between the two, because such a being does not exist". It is important to stress, however, that Walker does not mention the usual ingredients of the traditional account of relations: the 'foundation', the 'term' and the relation itself. His concern is not the nature of properties and real accidents, but, in a genuine 'Ockhamist' spirit, the meaning of *words* like 'father' and 'son'. In this respect, Leibniz seems to be more on the side of the traditional account, even though denying the reality of relations, and favouring a kind of compromise between realism and nominalism.

4. From the prefatory remark to the works of Nizolius (1670) till to the end of his life, Leibniz never ceased to express himself in favour of a moderate form of nominalism. In a short paper composed about twenty years after the *Preface* to Nizolius, for example, he writes:

> It seems to me that, the only way to avoid these obstacles was to consider the abstract terms not as [corresponding to] things, but as a kind of shorthand for discourse […] and it is exactly on this point that I am a nominalist, even though only provisionally.[23]

And in the remarks to Temmik's book (1715-16) he states that "The real universals are nothing more than the similarities themselves between singulars."[24] On the same line are the several statements against the use of abstract terms contained in the essays for the *characteristic* and the straightforwardly statement that "things have not to be multiplied in a way contrary to reason."[25] It is quite obvious that this very stance should have some consequences on Leibniz's ontology of relations.

The following text, for example, written in the period of his stay in Paris, shows that Leibniz employed what was later known as 'Bradley's argument' to refute the attribution of ontological reality to relations (polyadic properties):

> It is no wonder that the number of all numbers, all possibilities, all relations or reflections are not clearly understood, because they are imaginary beings to which nothing does correspond in the real world. Suppose, for example, that there is a relation between *a* and *b*, and call it *c*; then, consider a new relation between *a* and *c*: call it *d*, and so forth to the infinite. It seems that we do not have to say that all these relations are a kind of true and real ideas. Perhaps they are only mere intelligible things, which may be produced, i.e. that are or will be produced.[26] –[Ric: This passage is translated in my LoC].

'Bradley's argument' was well known to the scholastic thinkers and was usually employed by nominalists (and conceptualists) against any form of ontological realism about relations.[27]

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utrumque, quia tale ens non datur. Quicquid enim est (de creatis loquimur) *absolutum* est, sive per terminum absolutum significatur. Nec Pater paternitate (i.e. aliqua re relativa) est pater, magis quam columna dextraitate est dextra: sed multae hujusmodi impropriae locutiones usitatae sunt, apud eos, qui asserunt, relationem esse rem aliquam distinctam ab omnibus absolutis, et qui multiplicant entia secundum multitudinem terminorum.".

[23]   A VI, 4A, p. 996.

[24]   Mugnai 1992, p. 158: "Universalia realia nihil aliud sunt quam ipsae similitudines singularium".

[25]   GM 6, p. 274.

[26]   A VI, 3, p. 399: "Mirum non est numerum omnium numerorum, omnes possibilitates, omnes relationes seu reflexiones non distincte intelligi, sunt enim imaginariae nec quicquam respondens habent a parte rei. Ut si relatio sit inter *a* et *b*, eaque relatio vocetur *c*, et consideretur relatio nova inter *a* et *c*, eaque vocetur *d*. Et ita porro in infinitum, non videtur dicendum omnes istas relationes esse veras quasdam realesque ideas. Forte ea tantum mera intelligibilia sunt, quae produci possunt, id est quae producta sunt aut producentur."

[27]   This is clearly witnessed by the following passage from the *Commentary to the Sentences* of Gabriel Biel, a late

That relations are 'merely mental things' is stressed by Leibniz in many occasions and he coins the particular Latin word 'concogitabilitas' (the possibility of thinking together') to express the act of thought which generate them: "A relation is the *concogitabilitas* of two things"[28]; "We have a *relation* as soon as two things are thought together."[29] In a short text which the critical edition attributes to the period 'Easter 1687 - end of 1696', the main features of the relations are resumed in a quite clear and exhaustive way:

> A *relation* is an accident which is in several subjects and is only a result and supervenes without change made on their part when several things are thought of simultaneously: it is *concogitabilitas*.[30]

Here Leibniz makes three important remarks about relations: 1) relations are accidents inhering in several subjects; 2) relations 'result' and 'supervene' to the related subjects without any change made in these latter; 3) relations are the products of thinking two or more things at the same time. With the first remark, the polyadic nature of relations is explicitly recognized: they are "in several subjects" but, as a consequence of their multiple inherence, Leibniz concludes (point 3) that they are merely mental beings and that they 'result' or 'supervene' (point 2) when two or more things "are thought of simultaneously". From what one is legitimate to infer from this text, supervenience for Leibniz is strictly dependent upon the activity of thought[31].

According to the scholastic tradition, relational accidents, as distinguished from relations as polyadic properties in the proper sense, were denoted by linguistic expressions like *father*, *son*, *smaller*, *greater*, *similar*, etc., and were subsumed to the Aristotelian category of *ad aliud* (*towards another thing*), which was the Latin translation of the Greek word *pros ti*. They were considered *accidents* because they inhere in the subject through an accidental property (the foundation); and it was the change of this fundamental (absolute) accident to determine the change of the *relational* accident itself. As the Latin translation (*ad aliud* [*towards another thing*]) of the Aristotelian category suggests, these accidents did not imply a multiple inherence in the related subjects (as the relations outside the subjects do), but were characterized by a kind of double nature: they were grounded on a fundamental property (the *foundation*, in the proper sense) of a given subject *and* were 'alluding', or referring, to another correlated property and to another subject, at the same time. Thus, when Leibniz writes to Des Bosses:

> I do not believe that you will admit an accident that is in two subjects at the same time. My judgement about relation is that paternity in David is one thing, sonship in Solomon another, but that the relation common to both is a merely mental thing whose foundation is the modifications of the individuals,[32]

scholastic thinker with whom Leibniz was surely well acquainted: "[…] esset processus in infinitum, quia sit diversitas *a*: illa etiam distinguitur a fundamento *b* vel seipsa vel alia que vocetur *c*. Si primum habetur propositum; si secundum queritur de *c* sicut de *d* et erit processus in infinitum […] nec valet quod dicatur quod *a* distinguitur seipsa a *b*, quia *a* non potest esse sine *b*, quia relatio non potest esse sine suo fundamento […]" [[…] and thus we will have an infinite process because, consider the diversity *a*: this surely will be distinguished by its foundation, *b*, either by itself or in virtue of another, call it *c*. If the first, then we have what we want; if the second, one may ask about *c* appealing to a new *d*, and then we will have a process to infinity […]] (Gabriel Biel, *Super Primum Sententiarum*, I, Dist. XVII, q. I art 2B).

[28]BlLH IV, 7c, . 35v: "*Relatio* est *concogitabilitas* duorum".

[29]AVI, 4A, p. 28: "*Relatio* est secundum quod duae res simul cogitantur".

[30]A VI, 4A, p. 866: "*Relatio* est accidens quod est in pluribus subjectis, estque resultans tantum seu nulla mutatione facta aliis supervenit, si plura simul cogitentur, est concogitabilitas."

[31]In *Abstract Particulars*, Keith Campbell writes: "Call the thesis that accounts for relations by reference to foundations alone Foundationism. According to foundationism, for *all* relational facts there are corresponding foundational facts, and in every case the relational facts call for no ontology beyond that involved in the foundational facts themselves. Leibniz is perhaps the most celebrated foundationist, but […] he made the mistake of introducing a *mental act of comparison* over and beyond the foundations. Relations have in general no more mental nature than monadic properties. Had Leibniz said just that relations supervene on foundations, he would have espoused the view being explored here."
[Completare la nota!]

[32]   GP 2, p. 486: "…".

he operates a distinction widely held in the scholastic and late-scholastic tradition. To avoid the conclusion that David and Solomon share a common accident connecting the one to the other, Leibniz states that 'paternity' in David and 'sonship' in Solomon are two distinct properties each inhering in a different subject (i.e. they do not 'coalesce', giving rise to a *unique property*). *Paternity* in David and *sonship* in Solomon are two instances of *relational accidents*, each conceived as inhering in its own foundation only, and *really* separated from any other individual. If the accident of being a father applies to David, then this means that somewhere David must have a child; and if Solomon is a son, then he must have (or have had) a father, but what the expressions *father* and *son* denote are *absolute things* (David, Solomon), not some 'extra-mental' relative object. In the 'external world' there are only individual substances with their internal properties.[33]

5. In the seventeenth century, all the controversies about the ontological status of relations were mainly concentrated on the peculiar nature of the bond connecting the fundamental accident and the relational one. At the two extreme of the scale, the realists considered the relational accident *really distinguishable* from its foundation, whereas other authors strongly influenced by nominalistic ideas, considered it simply *identical* with the foundation. What was common to all the disputants, however, was to speak of the foundation of the relation as if it were a *real property* inhering in the (related) subject. Between these two extremes, a wide range of intermediate positions were possible: some philosophers, for example, as Martinus Smiglecius observes in his *Logica*, consider the relational accident as *distinguishable* from its foundation, but only by means of a distinction made by reason:

> There is a second opinion, opposite to the first, which says that a relation cannot be distinguished in any way from its foundation, on the basis of a real distinction, but only in virtue of a distinction of reason[34].

Others, such as Jacob Martini, propose a more elaborate account: a relation is real, but only in virtue of its foundation and, not being really distinguishable from the foundation, it cannot give rise to something really composite:

> A relation, if added to a subject, doesn't make a real composition. A relation indeed is not said a being real by itself, but in virtue of its foundation, from which it is not really distinguishable: therefore it cannot constitute a real composition with this latter. Concerning this point [there is to observe that], even though each real being added to another real being gives rise to a composition, a relation does not produce any composition at all.[35]

This approach, even though quite unorthodox from the nominalistic point of view, finds some precedent in Ockham himself who, indulging to the jargon that he refuses in his *Logica,* states in the XXX that "it is not necessary to postulate some relation belonging to the genus *relation* distinct from the foundations, because as soon as the foundations exist, then the relative denomination exist."[36]

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[33] Cf. Burdick 1991, p. 8: "The ideal relation (such as being the father of) has associated with it relational accidents (such as being a father and being fathered) which are in different subjects (such as David and Solomon)."

[34] *Logica Martini Smiglecii S. J., S. Theologiae Doctoris Selectis Disputationibus et quaestionibus illustrata, et in duos tomos distributa* […], Ingolstadii, MDCXVIII, p. 692: "Secunda sententia est opposita, relationem a fundamento nullo modo ex natura rei distingui, sed sola ratione". Smiglecius quotes, among others, Suarez, Thomas, Niger, Zimara as followers of this doctrine.

[35] Jacob Martini, *Institutionum logicarum libri VII. Editio renovata*, Sumptibus Pauli Elwigii Bibliopola, MDCXIV, p. 163: "Relatio enim non dicitur Ens per se reale, sed per suum fundamentum, a quo realiter non distinguitur: ergo cum eo realem compositionem constituere nequit. Quocirca licet omne Ens reale reali additum realem gignat compositionem: Relatio tamen eam non parit."

[36] Cfr. Ockham, *OT*, V, p. 16.

To gain a better understanding of Leibniz's doctrine of relational accidents, i.e. of relations conceived as 'inhering' in a single subject, let me dwell now on the analysis of a passage belonging to a text written in the early period of Leibniz's life. The text, probably composed some years before the *Discours of Metaphysics* (1686), contains a list of definitions and expresses Leibniz's main concern for building a new 'table of categories'. In it we find the following passage:

> It seems quite difficult to distinguish the *relation* from the other predicates: action, for instance, requires something which suffers and quantity [magnitude (?)] is based on a comparison, quality on a disposition to act. Therefore, to relations seem to pertain all the extrinsic denominations, i.e. those denominations which are born and die without any change of the subject, simply because something changes in something else. Thus, a father becomes father as soon as his child is born, even though he, who happens to be in the East Indies, does not undergo any change. Thus, the similarity which I share with someone else, is born and comes to light without any change in myself, but with a change in the other.[37]

This passage begins with a question, which one usually meets reading the scholastic commentaries on the Aristotelian *Categories*: given that all the categories except substance imply some kind of relations, in what sense does *relation* form a specific category in itself, distinct from the others? Leibniz's answer is that to the category of relation "pertain all the extrinsic denominations". He characterizes an *extrinsic denomination* as that denomination which is born and dies "without any change of the subject to which it is attributed, simply because something changes in something else". Leibniz's example is that of *father*. To make extrinsic the 'denomination' *father* is the reference to something *external* to the subject playing the role of father (i.e. a child). The scholastic jargon employed by Leibniz may be explained saying that a *denomination* (*denominatio*) is a linguistic expression which *names* a given property of a subject; this denomination is *intrinsic* if it names an intrinsic property and *extrinsic* if it names a property which refers to something extrinsic to the subject. Now, a widely accepted claim amongst the scholastic thinkers was that extrinsic denominations do not inhere properly in the subject of which they are denominated. This is clearly stated by an author with whom Leibniz was surely familiar:

> *What is denominated* is the subject of that which denominates, i.e. the subject of which the predicate is *accidentally* predicated: for instance, the body in respect to blackness, the snow in respect to whiteness. And the form which denominates sometimes inheres and sometimes does not inhere in the denominated subject. Thus, from this originates a twofold denomination: *intrinsic* and *extrinsic*; for instance: if I say "the wall is white", then we have an intrinsic denomination, whereas if I say "the man is just before God" we have an extrinsic denomination.[38]

According to the scholastic tradition, however, extrinsic denominations did not coincide with relations: the former were a proper part of the latter. Usually, to be considered extrinsic were denominations like 'to be to the left of…' and all those relations which are produced by a mere act of understanding (*relationes rationis*: typical, in this sense, the relation between the knower and the thing known); whereas *father* or the cause-effect relation were considered *intrinsic*. Thus, the claim that a relation like *father* is an extrinsic denomination seems to contrast the traditional point of view, abolishing the distinction between real and mental relations and seems to consider *all relations* as a product of the mind. Indeed, the reason Leibniz advances to justify this claim was largely employed against the 'realists', by the followers of a nominalistic-conceptualistic attitude towards relations: a given individual may become the subject of a relation, without any change in

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[37]   A VI, 4A, p. 308.

[38] Johannes Christophorus Hundeshagen, *Logica, tabulis succinctis inclusa,* Jenae, MDCLXXIV, p. 13: "*Denominatum est subjectum denominantis, seu id, de quo denominativum accidentaliter* praedicatur, tale est corpus respectu *nigredine*, nix respectu albedinis; et quidem forma denominans inest interdum subjecto seu denominato, interdum vero non inest. Unde duplex oritur denominatio, *intrinseca* et *extrinseca*: v.g. Si dico: *paries est albus*, est denominatio intrinseca. Sin vero dico: *paries videtur, homo est justus coram Deo*, est denominatio extrinseca."

itself, but only in the *term* (*terminus*) of the relation[39].

6. To the best of my knowledge there are two other relevant passages in which Leibniz explicitly evokes relational accidents: one in the fifth letter to Clarke and the other belonging to a list of definitions which is still unpublished. The first is a well known passage where Leibniz imagines that a given body *A*, situated at some distance from the fixed bodies *C*, *E*, *F*, *G* is removed and substituted by the body *B*. When the substitution has taken place, so argues Leibniz, we say that the body *B* has been put in the *same place* as the body *A*, but this, properly speaking, is not true: the body *B*, indeed, cannot have "precisely the same relation" which the body *A* previously had to the fixed bodies *C*, *E*, *F*, *G*:

> And here it may not be amiss to consider the difference between place and the relation of situation which is in the body that fills up the place. For the place of *A* and *B* is the same, whereas the relation of *A* to fixed bodies is not precisely and individually the same as the relation which *B* (that comes into its place) will have to the fixed bodies; but these relations agree only. For two different subjects, as *A* and *B*, cannot have precisely the same individual affection, it being impossible that the same individual accident should be in two subjects or pass from one subject to another.[40]

Here, Leibniz explicitly considers the individual relation that the body *A* has to other bodies put at a certain distance from it, as an individual affection or individual accident inhering in the body: this is in perfect agreement with his interpretation of individual accidents as tropes or *abstract particulars*'.

Some authors, relying on this passage, have attributed to Leibniz a twofold attitude towards the ontological nature of relations: he would have viewed *all relations out of the (related) subjects* as the work of the mind, but he would have considered as *real*, at the same time, all relational accidents 'inhering' in a single subject. Taking the case of David and Solomon, Leibniz would have viewed as real the two relational accidents *father* and *son* inhering, respectively, in David and Solomon and would have considered as a mere 'ideal thing' the relationship subsisting between the two. As we have seen, however, to distinguish relational accidents from relations 'outside the subjects' was a quite traditional move in the scholastic tradition; and the distinction doesn't imply in itself that relational accidents, as opposed to the relation in the abstract sense, are real.

The other passage I referred to above belongs, as I said, to an unpublished text in which Leibniz attempts to define some Latin words: syncategorematic expressions, relative particles and adverbs (as for instance: *inter* ['between', 'amongst'], *ille* ['he'], *forte* ['by chance'], etc.). Analysing the function of the particle 'in' in the context of the general expression "in *A*" (where '*A*' designates a proper or a general name), Leibniz attributes to the particle the function of 'constituting' a predicate of *A* itself. Thus, he writes, "the abstract is in the concrete, i.e. what is attributed is in the subject. The part is in the whole." *Constitutive*, according to Leibniz's definition, is what by itself calls into existence something else, by the simple fact of becoming to the existence, without the intervention of any consequence or inferential activity. Thus, the ingredients call into existence the aggregate that they compose: "time begins to exist simultaneously to the existence of things." After having introduced this definition of "being in *A*", however, Leibniz expresses some doubt about its validity, and develops the following remark:

> To be *in* A is to be constitutive of the predicate A. Thus the abstract is in the concrete, that is, what is attributed is in the subject. The part is in the whole. The point is in the line, the line in the surface, the surface in the body. What is located is in a place. Action is in time, position in an order. But the constitutive is something prior by nature that comprises something else without any intervening implication or

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[39]   As we have seen, this argument is present in Aristotle, ecc.
[40]   Loemker p. 704.

immediate inference. Thus the ingredients comprise the aggregate (as, for example, a body or state), the taking together of things located or existing in something comprises place, and the taking together of existing things comprises time. […]

It may be objected to my definition of 'in' that every correlative term constitutes a predicate of another thing correlated to it, as *father* constitutes the predicate according to which another person is his son. Should we then add that 'in' is a predicate constitutive of his existence? For even if the father were to cease to exist, it would still be true that his son continues to exist. But even this does not solve the problem. For two things near one another constitute the relation of nearness simply by existing, without the one being in the other. It is true that this is reciprocal, but also the whole in its turn constitutes the predicate of the part, but it is not prior by nature.

Perhaps, then, we should say this: that what is 'in' something is what is posited by the very positing of that thing, or that the positing of which is the positing of that thing itself. Thus an accident is not at any other place or time than the subject is, nor is a part in anything other than the whole, nor is a thing placed in anything other than a place, nor an ordered thing in any order other than a complex of ordered things.[41]

Even though it is not always easy to follow the thread of thoughts embodied in this passage, two conclusions may be drawn: 1) Leibniz plainly accepts that "every correlate constitutes some predicate of another correlate"; 2) Leibniz here attempts to weaken the relation of 'being in', interpreting it as simple 'simultaneous presence', thus undermining its nature of 'constitutive relation' (as it was interpreted in the 'realistic' tradition). Thus, Leibniz accepts that 'in the world' there are 'correlated' things, i.e. things between which a relationship subsists such that the one 'constitutes' a predicate of the other and vice versa. To be correlated here are 'individual things', and the predicates are relational predicates like 'father' and 'son'. It is not difficult to find in these words more than an echo of the scholastic doctrine of the so-called connotative terms, according to which a term like 'father' signifies primarily an individual (the father) and secondarily the property of being a son, instantiated by another individual.

Leibniz's insistence on the 'mental' nature of relations is evocative even of Buridan's doctrine of relations and of relational terms. Johannes Buridan, indeed, holds that relations are strictly dependent on the 'comparing activity' of our soul. According to Buridan, the soul "may understand things by means of two kinds of concepts": first, without comparing some of the things themselves to others, thus giving rise to terms like 'man', 'white', 'horse'; second, "making recourse to a reciprocal comparison, i.e. comparing this thing with that", producing *relative* terms and relations in the proper sense. It is by means of this second class of concepts that words like 'father', 'son', 'double', 'half', etc, are imposed to things. Buridan's conclusion is that expressions like 'absolute' and 'relative' (or 'respective') "are not differences of the things denoted by the words in the outside world, but they are differences of concepts, in the first place, and of words imposed to signify by means of these concepts, in the second place."[42]

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[41] Cf. LH IV, 7 B, 3, Bl. 56v: "*In* A est ut constitutivum praedicati ipsius A. Ita abstractum est in concreto seu adjunctum in subjecto. Pars in toto. Punctum est in linea, linea in superficie, superficies in corpore. Locatum est in loco. Actio in tempore; positum in ordine. Constitutivum autem est quod aliquid sine interveniente consequentia ponit, seu immediate inferens natura prius. Ita ingredientia ponunt aggregatum ut corpus, statum, locum simul cum locatis seu inexistentibus sumtum, tempus simul cum existentibus. […] Objici potest ad meam definitionem τϖ *in* quod omne correlatum constituit aliquod praedicatum alterius correlati, ut pater constituit praedicatum hoc quod alter est ejus filius. An ergo adjiciemus ut in sit praedicatum sua existentia constitutivum. Nam etsi pater non existat amplius verum manet eum esse filium. Sed nec hoc rem efficit. Nam duo vicinia existentia sua relationem viciniae constituunt, nec tamen unum est in alio. Verum est hoc reciprocum esse, sed et totum vicissim constituit praedicatum partis, at non prius natura est.

An dicemus? In aliquo est quod ipsius positione ponitur. Seu cujus positio est ipsius positio. Sic accidens non in alio loco aut tempore est quam subjectum, nec pars in alio quam totum, nec locatum in alio quam locus, nec ordinatum in alio ordine quam complexus ordinatorum." LH IV, 7 B, 3, Bl. 56v.

[42] *Summulae in Praedicamenta*, pp. 48-49: "Duplici enim conceptu potest anima intelligere res. Uno modo sine comparatione earum ad invicem, et sic mediantibus talibus conceptibus imponit anima istos terminos ad significandum 'homo', 'album', 'tricubitum'; tales ergo conceptus vocandi sunt absoluti proprie et primo, et consequenter termini

7. As we have seen, according to the late-scholastic doctrine in vogue at Leibniz's times, the mere fact of accepting the existence of relational predicates did not decide automatically the question about the ontological nature of these predicates. In the seventeenth century's variant of the scholastic doctrine, what mattered was the specific kind of relationship subsisting between each relational accident (if any), corresponding to each predicate and the absolute property on which it was founded. Therefore, to determine Leibniz's attitude towards relational predicates is necessary to investigate how Leibniz interprets the relationship of a relational accident to its foundation. Unfortunately, Leibniz does not explicitly tackle this problem, hence to find an answer to it, one has to recur to indirect evidence. There is a text, however, which may help to solve the question: it is the short commentary on the book of the Jesuit Aloys Temmik, mentioned above. It was written in 1706 and published for the first time in the so called *Vorausedition*: besides the question of the ontology of relational accidents, it contains even important suggestions about Leibniz's philosophical views, in general[43]. Let me consider now a passage from it, where the question is explicitly raised if relational predicates add something to a given subject:

> One may distinguish between predicates that add something to a subject and predicates that do not. Thus, rationality or the capability of wondering do not add anything to man. But learning does add something, when a man is said learned. Does paternity, however, add something to Philip? If individuals are considered as complete notions, it doesn't add anything. One may say that contingent properties are essential to the individuals, because the notion of an individual is such that it contains all contingent attributes. […] As the point doesn't increase the line, thus a relation doesn't increase the subject.[44]

First of all, here we have a clear proof that Leibniz till to the end of his life continued to attribute a central role to the doctrine of complete concepts and, moreover, that he was fully aware of some extreme consequences of it. In the case of "complete notions", even properties which are considered contingent become essential to the individuals; and this is due to the fact that the notion of an individual contains *all* the properties which are truly attributed to it. In other words, here Leibniz plainly recognizes that, according to his theory which assigns a complete concept to each individual substance, *all properties of the individual substance become essential to it*. At the same time, Leibniz states that this claim is compatible with a sharp distinction between necessary and contingent properties of a given individual. *Rationality* or the *capability of wondering*, for example, being included in the concept of man, are necessary attributes of the individual which is a man, whereas *learning*, being not included, is a contingent property. This is asserted by Leibniz, making recourse to the idea of a property which adds something to another property: if to the property of being a man the property of being rational is added, we continue to have the concept of man (rationality being included in the concept of man); but if to the concept of man we add *to be learned*, we increase, as it were, the *intensional* content of the concept 'man'.

After having discussed the cases of general concepts like 'man', 'rational' and 'learning', Leibniz, in the passage we are analysing, passes from the general to the individual and poses the question if *paternity* does add something to Philip. Clearly, *paternity* in this case, denotes a relational accident, i.e. a relation inhering in a given subject, in perfect agreement with Leibniz's

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vocales illis conceptibus subordinati dicuntur etiam termini absoluti. Alio autem modo anima intelligit res in ordine ad invicem, comparando hanc ad istam. Et tales conceptus vocantur proprie relativi et relationes, quia eis anima refert et comparat res ad invicem. Et mediantibus illis conceptibus imponuntur termini vocales ad significandum, quos vocamus communiter terminos relativos seu respectivos, sicut sunt isti termini 'pater', 'filius, 'duplum', 'dimidium' etc. Ideo manifestum est quod 'absolutum' et 'relativum', sive 'respectivum', non sunt differentiae rerum extra significativarum per voces, sed sunt differentiae primo conceptuum, secundo vocum significativarum mediantibus illis conceptibus impositarum."

[43]   Tutta la storia sul testo di Temmik.

[44]   Mugnai, 1992, pp. 156-57.

remark to Des Bosses quoted above.[45] Leibniz's answer is that if "individuals are considered as complete notions" *paternity* "doesn't add anything" to Philip. Because a 'complete notion' contains each concept corresponding to each property that can be truly attributed to the individual 'subsumed' to it, from this, one seems authorized to conclude that for Leibniz *relational accidents* (better: the relational concepts corresponding to relational accidents) inhere in the complete notions of the corresponding individuals. In the last sentence of the passage just quoted, however, Leibniz stresses that as "the point doesn't increase the line, thus a relation doesn't increase the subject." Speaking of a relation in connection with a single subject, here Leibniz continues to have in mind what I have called 'relational accidents': that a relational accident doesn't increase its subject means that it does not add any further reality to it. The analogy based on the two couples: *point/relation* and *line/subject* is particularly revealing. If one considers that for Leibniz points do not compose the line nor are parts of it, then Leibniz here states that relations (relational accidents) do not compose nor are part of the subject on which they are founded. In more traditional terms, relations (relational accidents) are not really distinguished from the absolute properties (*fundamenta* [foundations]) on which they are based.

At this point, let me pause a moment and attempt to draw some provisional conclusions: 1) the analysis of the texts examined till now reveals that Leibniz considers relations 'out of the (related) subjects' as 'merely mental things'; 2) an analogous nominalistic-conceptualist attitude is shown concerning what I have called 'relational accidents' or 'relational predicates': they do not add any reality to the subject (better: to the fundamental, absolute property) on which they are based. As we have seen, in the fifth letter to Clarke, Leibniz, speaking about the place of a given body, seems to assume that inhering in the body there is a relational property, corresponding to "the relation of situation" that this very body has in respect to some other fixed bodies; and argues that a second body, put at the place of the first, cannot have *exactly the same relation of situation* that this latter had to the fixed bodies. This, however, from Leibniz's ontological point of view, amounts simply to saying that the relation of situation cannot be the same, because the *foundations* on which the relation rests (respectively: in the fixed bodies and in the body which has been moved) *are not the same.*

That Leibniz cannot consider the *situs* or the *relation of situation* as a property *inhering* in a given subject in the same sense according to which one says that the accident *white* inheres in the wall, may be seen by the definitions of *situs* he gives in several occasions: "the situation contains two conditions: that some points are given, i.e. perceived [...], and that they are simultaneously perceived [...]"[46]; "[...] if one assumes that something is not only thought but even perceived, then from this very fact situation and extension are generated."[47] Here *situs* is connected to the condition of *simultaneously perceiving*, in agreement with the general definition of a relation as a thinking together of several things. In other occasions, however, he gives a less 'subjective' definition of *situs,* appealing to *simultaneous existence* and not to perception[48]. At any rate, in both cases, a situs, involving the necessary reference to more than one single thing, can hardly be conceived as a property of some sort 'truly' inhering in a subject. As we have seen, *to inhere is the property which constitutes the foundation*; and the relational accident 'resting' on it does not add anything real to the reality of the foundation.

8. In the scholastic tradition inherited by Leibniz, to show that a relation cannot have the same reality of a monadic (absolute) property, the following argument was usually employed:

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[45]Because this is the main assumption of my interpretation, few words are in order to justify it. That here Leibniz is not speaking of relations as 'accidents outside the subjects' is clear from the fact that, as we have seen, he does not consider this kind of relations as 'inhering' in a subject in the proper sense of *inhering*. Moreover, it would be quite odd to ask if a 'merely mental being' adds something to a given subject like Philip or Adam. Therefore, here Leibniz speaks of *relations* meaning *relational accidents*, as he does in the letter to Des Bosses.

[46]   A VI, 4A, p. 174.

[47]   A VI, 4A, p. 382.

[48]   Cf., for instance,

whereas any change of an absolute property is supposed to imply a change in the internal properties of the subjet in which it inheres, the same does not hold for relations (relational accidents). A relation, indeed, may change without any change of one or more of the related individuals. Many instances of this very fact were adduced by different authors: thus, a man in Europe is left a widow as soon as his wife comes to death in the East Indies, without any change occuring in him; analogously, a man who lives in France becomes a father as soon as a child is born to him in the East Indies, without any change occuring in him; and if a white thing is now in Spain, the emerging of a new white thing in the East Indies will produce the relation of similarity of the two things, without exerting any influence on the thing which is in Spain.[49] As we may see from the following quotation, which we have just encountered above, Leibniz conforms himself to the tradition:

> Thus, a father becomes father as soon as his child is born, even though he, who happens to be in the East Indies, does not undergo any change. Thus, the similarity which I share with someone else, is born and comes to light without any change in myself, but with a change in the other.

One of the main principles of Leibniz's metaphysics, however, emphasized and repeated on several occasions, is that "there is no wholly extrinsic denomination (*denominatio pure extrinseca*), because of the real connections amongst all things."[50] A first problem that this principle raises is how to interpret the statement that there are "real connections amongst all things", if relations are not real. Another problem, strongly connected with this, is to determine what exactly means that some denominations are *no wholly extrinsic*. I will tackle now these two problems beginning from the second.

As we have seen, Leibniz defines *extrinsic* (in strict conformity with the tradition) a denomination if it may be born and die without any *internal change* in the subject *to which it is attributed*. One of Leibniz's examples is that of *father*. That the denomination 'father' is *extrinsic* means that an individual, David for instance, becomes a father without any internal change occurring in him, as soon as his son Salomon comes to the existence. Consequently, that a denomination like *father* is *not fully extrinsic* may only mean that, when someone becomes a father, this very fact implies some sort of intrinsic modification in the subject itself. That this is exactly what Leibniz thinks is shown by the two following passages:

> […] there are no extrinsic denominations, and no one becomes a widower in India by the death of his wife in Europe unless a real change occurs in him. For every predicate is in fact contained in the nature of a subject.[51]

> It follows further that *there are no purely extrinsic denominations* which have no basis at all in the denominated thing itself. For the concept of the denominated subject necessarily involves the concept of the predicate. Likewise, whenever the denomination of a thing is changed, some variation has to occur in the thing itself.[52]

It is worth noting that Leibniz never says that to produce the change *in* the subject to which the extrinsic denomination applies is *directly* the acquisition (or loss) of the denomination itself (a classical thesis of the ontological realism about relations). He says, instead, that *whenever the denomination of a thing is changed, some variation has to occur in the thing itself, because every extrinsic denomination has a basis in the denominated thing*. What he implies is that this basis contains, in some sense, the reason, or reasons for the attribution or loss of the denomination and that, if the extrinsic denomination changes, then the reason, or reasons themselves have to change.

Leibniz seems to be so fond of the principle according to which there aren't extrinsic denominations that he does not withdraw from the oddest consequences implicit in it:

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[49]   For this latter example, cf. Sanchez Sedeno, *Quaestiones ad Universam Aristotelis Logicam*, Moguntiae, 1615, tomus II, p. 153. The other examples are very common amongs scholastic authors.

[50]   NE p. 227; cfr. A VI, 4B, pp. 1503, 1618, 1645-46.

[51]   Loemker, p. 365 (A VI, 4B, p. 1503)

[52]   Loemker, p. 268 (A VI, 4B, p. 1645-46).

> On my view, all extrinsic denominations are grounded in intrinsic denominations, and a thing which is seen really differs from one which is not seen: for the radii which are reflected by the thing which is seen bring about a change in the thing itself. What is more, in virtue of the universal connection of things, the Emperor of China as known by me differs in intrinsic qualities from himself as not yet known by me. Further, there is no doubt that each thing undergoes a change at the very same time, and it is needed time, in order for him, once not known by me to become known by me.[53]

According to the scholastic tradition, the relation which obtains, for instance, between me and the object of my thought when I am thinking of the Emperor of China, is a typical *relation of reason* (*relatio rationis*). And a relation of reason gives rise to an extrinsic denomination: in fact, when I am thinking of the Emperor of China, a change takes place in me, but the Emperor remains unchanged. The agreement on this point was almost unanimous amongst both, realists and nominalists. Even the hardiest realists were not disposed to accept that a change occurs in the object of thought *because* this latter has acquired the new denomination of *being thought* (or being known) by me. To be precise, however, Leibniz too doesn't say that. He claims that *it is because of the universal connection of things* that "the Emperor of China as known by me differs in intrinsic qualities from himself as not yet known by me"[54]. Thus, the main differences between a realist about relations and Leibniz may be resumed as follows:

A realist believes that 'in the outside world' there are relational properties really belonging to the individual substances, even tough not all relations are *real* (some of them are merely mental);

For Leibniz *all relations are mental*;

For a realist, it is the very change of denomination, induced by the acquisition or loss of a relation, to cause a change in the related subject, even though not any change of denomination produces such an intrinsic change (an exception are the so-called 'extrinsic denominations' which, for the most part, corresponds to 'relations of reason');

for Leibniz, to *every* change of denomination induced by the acquisition or loss of a relation, a corresponding change *in all* the related subjects occurs, even though, this change is not properly caused by the change of denomination itself.

Hence, taken at face value, Leibniz's theory of relations presents itself as an odd combination of nominalistic-conceptualistic and realistic elements at the same time. It is nominalistic-conceptualist insofar as it denies that relations have a reality in the world *extra*; it has 'realistic' consequences insofar as Leibniz assumes the principle according to which the least change of denomination in a subject is correlated to a change *in the internal properties* of all things in the universe. To determine this situation are two different commitments: to nominalism-conceptualism on one hand and to the neoplatonic claim that every individual reproduces or reflects in itself the entire universe, on the other.[55]

It is worth noting that Suarez, in the *Metaphysical Disputations*, listing the various opinions concerning the change of relation, mentions a position that strongly reminds that of Leibniz. Suarez, indeed, mentions some unspecified authors [*aliqui*] who claim "that, because of the acquisition of a new relation, a true, real modification takes place in the very related thing, not by means of an action internal to the subject itself, but in virtue of a kind of intrinsic propagation [*per intrinsecam dimanationem*]"[56]. Suarez considers this thesis very implausible and gets rid of it observing that it doesn't exists any experiment or even a single evidence that confirms it.[57]

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[53]   VE 1086 (Mugnai 1992, p. 53).

[54]   *Ibidem.*

[55]   As we have seen, however, Leibniz's nominalism has more to do with a methodological choice than with an ontological commitment.

[56]   Suarez, *Meditationes*, pp. 790-91 b-a: "Unde aliqui tandem fatentur, per adventum novae relationis seu denominationis relativae fieri in re ipsa relata veram mutationem realem, non quidem per propriam actionem, sed per intrinsecam dimanationem […]".

[57]   *Ibidem.*

9. Let me now tackle the other question raised above: how can Leibniz state that there are "real connections amongst all things", if relations are not real?

Although Leibniz usually expresses himself in accordance with the commonsensical, realistic point of view, there are occasions in which he clearly alludes to his own ontological perspective. This is the case of the short text quoted above on the reality of accidents. Here Leibniz, discussing the nature of accidental properties and their connection to the individual substance, parenthetically observes that, if one adopts a perspective more profound in respect to that which he is discussing, then one has to admit that every (absolute, accidental) property is a mode of being of the subject. Thus, the picture that Leibniz offers of the world is that of an aggregate of individual substances, each with its intrinsic modifications, which do not have any physical contact or influence the one on the other. These modifications mainly consist of representations and in a continous passage from representation to representation. Relations simply result from the existence of the individual substances with their modifications; this is clearly repeated in the following passage, which dates from Leibniz's last period of life:

> In addition to the substances, which are the underlying objects, there are the modifications of the substances, which are subject to creation and destruction in their own right. And finally, there are the relations, which are not created in their own right but result from the creation of other things.[58]

The passage, however, continues with some remarkable claims, which add very important information on Leibniz's ideas about relations:

> Their reality [of relations] does not depend on our understanding – they inhere without anyone being required to think them. Their reality comes from the divine understanding, without which nothing would be true. Thus there are two things which only the divine understanding can realise: all the eternal truths and, of the contingent ones, those which are relational [*respectivae*].[59]

What Leibniz says in this text may be summarized in four points:

1) the reality of relations does not depend on the human understanding;
2) relations inhere without anyone being required to think them;
3) the reality of relations "comes from the divine understanding";
4) amongst the contingent truths, the relational ones are realised by the divine understanding.

(1) and (2) agree the one with the other, but they seem to be in evident contrast with Leibniz's opinion that relations are the work of the mind. Leibniz, however, would probably justify this claim remarking that if relations merely result from the position of the individual substances with their intrinsic modifications (the foundations of the relations), then there is a sense according to which the relations 'inhere' in the related things, independently of any act of thought. To inhere in the proper sense of the word are *the conditions* for the existence of the relations, i.e. the *foundations* on which any relation rests.

If relations merely result as soon as the individual substances with their internal modifications exist, it is not too difficult to see in what sense (3) is consistent with (1) and (2). And even (4), on the basis of this interpretation, becomes plausible. In the above passage, indeed, Leibniz considers on a par the eternal and the relational truths: of both he says that *are realised* by the divine understanding. Clearly, this may sound quite odd, if one has in mind Leibniz's opposition to the thesis that the eternal truths are *created* by God. As is well known, for Leibniz neither the ideas nor the truths which are derivable by combining them are depending on God's will. Leibniz,

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[58]   VE p. 1082 (Mugnai 1992, p. 155).
[59]   *Ibidem.*

however, according to an Augustinian point of view, looks at the realm of ideas as something not 'detached' from but in a certain sense as 'co-essential' to the divine understanding. God's understanding *realizes* the eternal truths insofar as it is a kind of 'ontological support', as it were, of them. That God 'realizes', amongst the contingent truths, the relational ones means that as soon as he creates the individuals of a given world with their internal states (perceptions), then suddenly all the relations between them are created. This is clearly expressed in the following passages extracted from texts written after 1690:

> I trace the reality of each relation back to a relationship with the divine intellect.[60]

> I believe that a mode is properly an accident which determines, or adds certain limits to what is perpetual and undergoes modification. But I would not attribute this property to the relation and indiscriminately to all accidents. The relation results in fact from the substances and the modes, without producing any change of itself but only in virtue of a *consequence*. In a certain sense, the relation may be defined as an *ens rationis*, which yet is real at the same time: all things in fact are constituted by virtue of the divine understanding […] which is the cause of the eternity of possibilities and truths, even though nothing exists […] [T]hus, relations and orders are not imaginary […] since they are founded in truths.[61]

According to Bertrand Russell, Leibniz's position about relations leads to "a special absurdity, namely, that the relational propositions, which God is supposed to know, must be strictly meaningless".[62] Leibniz, however, simply puts the things the other way around: it is because God has created the individual substances and has put them together in a world, that relations *result*. Thus, relations between two or more individual substances exist as the result of *two acts* performed by God: 1) the creation of the substances (with the simultaneous assemblage of them in a world); 2) the mutual coordination of the 'representational' states internal to each substance with those internal to any other substance belonging to the same world.[63]

If the general picture seems to be plausible, some details, however, need further investigation. One may wonder, for instance, how this account of Leibniz's theory of relations can be accomodated with those statements in which Leibniz explicitly claims that even the so-called extrinsic denominations are *included* in the complete concept of an individual. Here some passages follow, which seem to substantiate this claim:

> And this individual complete notion, according to me, implies [*enveloppe*] a connection with the whole series of things [...][64]

> […] every possible individual of a world includes in its notion some laws of the world.[65]

> [...] Adam's individual [...] notion includes everything that will happens to him

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60   VE, p. 000 (Mugnai 1992, pp. 26, 161).

61   LH IV, 3, 5c, Bl. 2 r: "Modum putem proprie esse accidens determinans seu limites quosdam adiiciens ei quod perpetuum est et modificatur. Relationi autem adeoque omni accidenti nolim hoc tribuere. Relatio autem ex substantia et modis resultat nulla propria mutatione, sed consequentia tantum, et aliquo modo Ens rationis dici potest, etsi simul reale sit, quia ipsae res omnes vi summi intellecti constituuntur, quae causa quoque est ut possibilitates et veritates sint aeternae, etiam cum existentia abest." (cfr. Mugnai 1992, p. 26, footnote 47).

62   Russell 1900, p. 14.

63   Cf. Cover 2004, pp. 103-4: "[...] 'taller than Simmias' is a fine predicate to which no *taller than Simmias* accident corresponds, there being none. [...] Such "containment" of Simmias by Socrates 's accidents as Leibniz permits will be *objective*, not *formaliter*, and such representation as this requires is secured in the distinctive if familiar Leibnizian way, by the harmony-theoretic correspondance of universal expression. Thank God: that latter business was His in creating such substances as He did to unfold their intrinsic states in agreement [...], not the business of the superficial grammar of predicates. There are the mind-like substances and their intrinsic monadic qualitative states and God's "arrangement" [...], and that's it, full stop."

64   PG 2, p. 37.

65   PG 2, p. 40.

and even to his posterity.[66]

> A complete thing, i.e. a *substance* is what in its complete notion contains everything inhering in it and therefore everything external to it, i.e. the entire universe.[67]

> [...] The concept of an individual substance includes all its events and all its denominations, even those which are commonly called extrinsic, that is those which pertain to it only by virtue of the general connection of things and from the fact that it expresses the whole universe in its own way.[68]

> *Every individual substance involves the whole universe in its perfect concept*, and all that exists in the universe or will exist. For there is no thing upon which some true denomination, at least of comparison or relation, cannot be imposed from another thing. Yet there is no purely extrinsic denomination.[69]

Leibniz's belief that even the external denominations are *included* in the complete concept of an individual substance is grounded on his well known definition of truth as *inherence* of the predicate into the subject:

> [...] of every truth which is not immediate or identical it is possible to give a reason, i.e. the notion of the predicate always inheres explicitly or implicitly in the notion of its subject; and this takes place in the intrinsic denominations and in the extrinsic ones as well, in the case of contingent truths and in that of the necessary ones.[70]

Reading the above passages in the light of this quotation may help to explain in what sense Leibniz considers the extrinsic denominations as inhering in the complete concept. A sentence of the form 'S is P', where 'S' is a proper name or a definite description and 'P' an attribute, is true, according to Leibniz, if the concept corresponding to 'P' is contained *implicitly* or *explicitly* in the concept corresponding to 'S'. Clearly, here the distinction between an explicit and an implicit inherence of the predicate corresponds to a difference between, respectively, the inherence of an intrinsic and that of an extrinsic denomination. An extrinsic denomination like *father*, for instance, inheres *implicitly* in David *through* the *foundation* which *explicitly* inheres in David. Another way of expressing the same idea is that of saying that any extrinsic denomination inhere *virtually* (*virtute*) *in* a given subject[71]

[66] PG 2, p. 23.
[67] A VI, 4A, p. 631.
[68] L p. 337 (A VI, 4B pp. 1540-41).
[69] L p. 269 (A VI, 4B p. 1646).
[70] A VI, 4A, p. 912.
[71] Cf. A VI, 4A, p. 553.