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# Counting Individuals with Leibniz

*Abstract* - The paper addresses the solution to the problem of individuation suggested by Leibniz's later writings and how this relates to the contemporary metaphysical debate. In the first section I introduce the problem of individuality along with the solution Leibniz proposed in his later writings. The second section analyzes Leibniz's solution in a contemporary perspective. I argue that, unlike during the Medieval and early Modern periods, today the epistemic side of the problem of individuation represents a good part of the problem. In this light, Leibniz's proposal that humans cannot grasp what the individuality of an individual consists in, seems problematic. I show, however, that Leibniz's proposal can stand on its feet also nowadays, provided we are willing to give up the pretenses that there is a definitive count of individuals and that re-identifying individuals across time and space is part of the problem of individuality.

For most early Medieval and Scholastic philosophers working in the Aristotelian tradition, knowledge of any specific subject is knowledge of its causes and principles. Knowledge of individuals was no exception. As Jorge Gracia has written "To know individuality [for early Medieval and Scholastic philosophers] is to be able to determine the causes and principles that are responsible for it."[1] The achievement of such ability is also known as *the problem of individuation*. This paper will be concerned with the solution to the problem suggested by Leibniz's writings and how it relates to the contemporary metaphysical debate. In the first section I introduce the problem of individuation along with the solution Leibniz proposed during the latter part of his life. The second section analyzes Leibniz's solution in a contemporary perspective. I argue that, unlike during the Medieval and early Modern periods, today the epistemic side of the problem of individuation plays a major role in the debate. In this light, Leibniz's proposal that humans cannot grasp what the individuality of an individual consists in, seems problematic. I show, however, that Leibniz's proposal can stand on its feet also nowadays, provided we are willing to give up the pretenses that there is a definitive count of individuals and that re-identifying individuals across time and space is part of the problem of individuation.

## 1. Leibniz and the Principle of Individuality

Let us start by considering the specificity of the problem at hand. What does it mean to determine the causes and principles responsible for the individuality of an individual? As we learn from Aquinas, principles are those features of entities that constitute its a-temporal bones, the features that would be necessary and sufficient for the existence of an entity if it were not to undergo any change.[2] Yet, since most entities undergo some change, principles are necessary but not sufficient to account for all features of entities. Causes are needed too. Causes, thus, are the features of an entity that (together with principles) account for its change. Principles and causes can account for what an entity is at a time, for how it did become such a kind of entity, and for how it might change over time.

Consider for example the causes and principles of the typical smell of a bush of rosemary. Its principles will be the features explaining how, for each instant of time, such a bush can have that good a smell. Aquinas, for instance, would say that the matter, form, and privation of a bush of rosemary are the principles responsible for its smell, especially the latter two. To know the specific forms and privations of rosemary is pivotal in understanding why rosemary smells as it does. The

[1] (Gracia, 1994, p.1).
[2] See (Aquinas, 1998).

causes instead will be those features accounting, for instance, for the fact that a bush of rosemary smells more intensely after being nourished with water, or for the purpose for which the bush smells.

Consider now individuality. This feature stands to individuals as a distinctive smell stands to a rosemary bush. Individuality is a feature of any individual, namely that feature which renders it one individual. What are the principles and causes of individuality has been one of the major issues in early Medieval and Scholastic philosophy, over which all the best minds in the field had a saying. Many, often even hard to differentiate, are thus the proposals. Boethius is arguably responsible for spreading the problem of individuation. Much of the terminology through which discussion over individuals and properties was (and still is) carried out is in good part due to the popularity of his writings.[3] During the centuries that go from Boethius to Leibniz, two traditions delineated themselves.[4] One – amply developed in the early Medieval period – treated individuation as a metaphysical problem, prior and independent from questions concerning the logical properties of terms and sentences. Central to the metaphysical tradition was the question: What makes of this individual, John, an individual? The other – among whose earliest and most prominent champions is by Peter Abailard – viewed individuation as a logical dispute.[5] Central to the logical, instead, was the question: Which distinctive role does 'John' play in a sentence and how does it pick out an individual in the world? For historical accuracy, however, it should be emphasized that Boethius did by no means invent the problem of individuation. Aristotle played also a major role in bringing it to light and, arguably, both traditions developed from him. The metaphysical grew out of the *Metaphysics*; the logical from the *Categories*.[6]

Since his early age, Leibniz faced the vast and intricate dispute on individuality. Most notoriously since the *Disputatio Metaphysica de Principio Individui*, his bachelor's dissertation defended in 1663.[7] At the beginning of the *Disputatio* Leibniz presents the logical and metaphysical approaches to the problem of individuation and opts for the latter. Hence he discusses and rejects those that for him were three out of four most prominent alternative metaphysical accounts of individuality.

(i) *Individuality as negation*, which Leibniz attributes to Bassolis and Ockham. According to this account, individuality consists in the negation of a number of qualities such as divisibility, unity, and indistinction. Leibniz ultimately rejects (i) because it implies property Realism; besides (i) cannot account for the extension of individuals, hence it cannot distinguish between individuals and properties.

(ii) *Individuality as existence*, which Leibniz attributes to Dionisius von Rickel and Nicholas Bonetus, and which had been defended in some form by Henry of Ghent, St. Thomas, and Cajetan. According to this account, individuality is immediately given in the existence of an individual. There are clearly several ways of explain what existence is. The only one that for Leibniz makes sense is the one he will defend: that existence is the complete concept of an individual (more on this later.)

(iii) *Individuality as* haecceitas, defended by Scotus and, later, by Fonseca and Bassolis.[8] According to this account, each individual has a common and a peculiar nature. Individuality is the peculiar

[3] See, for example, (Gracia, 1994, Chapter 2).
[4] Also on this point it is useful (Gracia, 1994, Chapter 2).
[5] On the distinction between a metaphysical, logical, and epistemic notion of individuality see also (Gracia, 1984: 75-76) and (Grazia, 1994: 25).
[6] On this point, see fir example (Mann, 2000).
[7] The *Disputatio* has been amply studied over the last decade or so. See (McCullough, 1996) and (Mercer, 2001).
[8] For a discussion of these principles see (McCullough, 1996), which also provides a translation of the *Disputatio*.

nature of an individual; each individual has its own *haecceitas*. This, together with the common nature, explain indivisibility and distinctness. Leibniz rejects *haecceitas* because for him there is no nature, be it common or peculiar, *in re*. *Haecceitas* is at best a concept through which a mind distinguishes among properties.

After thus rejecting (1), (ii), and (iii), Leibniz presents his favorite principle: the so-called Whole Entity Principle of Individuation, according to which the principle individuating an entity is its whole being, the totality of the features belonging to it, or – as I shall call it – the whole concept. Leibniz's position was not far from what Suarez had defended in *Disputatio* V of his *Disputationes Metaphysicae*, as Leibniz himself notes.[9] Among those who shared his position, Leibniz includes also Petrus Aureolus, Socinas, Gregorius Arimenensis, Murcia, and others. In the *Disputatio* Leibniz brings five arguments in favor of his view.[10] But here I will not be concerned with this view, so I shall not enter into their details. What is relevant to note is that among the five arguments provided by Leibniz, two rely on Nominalism, namely the view that there are only singular entities. For Leibniz, in fact, there is only one kind of predication which "although in itself a universal, when it is compared with the universal, can be called singular."[11] Universality is but a characteristic of language, a byproduct of minds. Said with the words of Durandus: "just as the act of the intellect makes the universal, so the act of a natural agent terminates in the singular."[12]

The *Disputatio*, however, was an early text, and it was only in subsequent years that Leibniz elaborated the Whole Entity Principle of Individuation for which he became famous, the principle displaying his genius. It is this principle that I would like to consider in order to draw some lessons for the problem of individuation in contemporary metaphysics.

What Leibniz proposed in the years after the *Disputatio*,[13] was an apparently simple but – as we shall discuss – meaningful modification to the principle he had defended. In the *Disputatio*, the Whole Entity Principle made change an accident of an individual; according to it an individual's complete concept is, by its nature, orthogonal to change. But at least since 1668, with the treatise *De Transubstantiatione*, Leibniz changed his views. If substance had to be a self subsisting being, it had to have the principle of action within itself: "substantial form is itself the principle of action; no doubts in bodies [the principle of] motion."[14] Substances are alive; they are active. This is necessarily so if we want to attribute to them the capacity of moving, which for Leibniz is a kind of acting.

This apparently simple modification required a modification also in the Whole Entity Principle. In order to reflect the active role of substances, the Principle had to incorporate the idea of change into itself: the complete concept of an individual cannot any longer be orthogonal to change; on the contrary, change is its main feature. The complete concept will thus encompass any change from which it resulted and that will result from it. Each step of the change will be part of the complete concept, and thus part of the individuality. I will call this the *Dynamic Whole Entity Principle of Individuation*, in virtue of the fact that its takes into account the dynamic aspect of individuals. Now, since the changes in virtue of which an individual comes into existence and to which an individual contributes are infinite, the complete concept of an individual is infinite. Later on, in the *New Essays on the Human Understanding*, Leibniz can thus write: "The most important

[9] See (Suarez, 1982, Disputatio V).
[10] For an analysis of them see (McCullough, 1996, Chapter 4).
[11] (Stahl, 1662, p.82b).
[12] (Durandus, 1964, 137a).
[13] For a thorough discussion of the development of Leibniz's thought see (Mercer, 2001).
[14] This translation of the text is quoted from (McCullough, 1996, p. 135).

point is that individuality involves infinity."[15] Among the many consequences that this modification to the Whole Entity Principle brought about, I would like to reflect on this one.

Before doing this, however, a clarification is in order. It is not yet clear, in fact, what are the changes that will define the complete concept of an individual. On this score, there are two main interpretations of Leibniz's proposal. The first, recently defended among others by Jean Cover and John O'Leary-Hawthorne, maintains that Leibniz excluded all relational properties from the complete concept of an individual.[16] In other words: if, in order to exist, this rosemary bush had to be in a certain relation with the sun, such relation should not be included in the complete concept of the bush. In other words, according to Cover and O'Leary-Hawthorne, Leibniz's principle of individuation, has it that:

PI: If two individuals have the same complete concept then they are identical.

PI, however, incurs in a series of problems. The most notable is the fact that it does not grant the uniqueness of an individual. If – simplifying a bit its properties – the whole concept of a bush is *greenness*, *having-a-certain-smell*, *being-of-a-certain-size* and *being-of-a-certain-age*, what is there preventing the fact that there might be another bush which is green, with that small, size, and age? If this is possible, then PI is not enough for individuating our bush: it could not discriminate between it and a different bush with the same intrinsic properties.

On the other hand, others interpreted PI as including relational properties too. For example, Mugnai argued that, for Leibniz, once intrinsic properties are in place, relational properties (which are distinct from relations, in that they do not require the existence of two or more individuals to be in place) will be in place too. *To-be-warmed-by-the-sun* is a property of the bush on a par with *greenness*. The only difference is that the first will result from the intrinsic warmth of the sun, the intrinsic features of the bush enabling it to receive warmth, and relative positions of the two substances; the second, instead, is not dependent on any other properties. Said in other terms, an individual will possess a relational property only in virtue of its possessing certain intrinsic properties. Thus, change in relational properties will occur only as a result of some change in the intrinsic properties. Still, relational properties are part of the whole concept of an individual. Hence they are among the properties with which PI is concerned. PI is then more ample than what Cover and O-Leary Hawthorne argued, and the uniqueness problem they raised is solved.[17] Even though two bushes might have the same intrinsic properties, they will have different relations.[18]

Having a picture of Leibniz's account of individuality, let us pass now to consider its import on the problem of individuation in contemporary metaphysics.

## 2. Counting Individuals with Leibniz

The world of the early Medieval and Scholastic philosopher was God's creation. The role of Philosophy was to discover the ways through which God created and maintained into existence the world. Not necessarily such ways could have been known to humans. Yet they certainly were out there. This led nearly all authors to ignore the epistemic aspect of the problem of individuation. There was no doubt as to the existence of individuals. To doubt about this, would have amounted to doubt about religious dogmas such as the Holy Trinity or the individuality of the soul.[19] Each author was in search of a principle justifying the existence of a multiplicity of individuals. The

[15] (Leibniz, 1981, pp. 289-290)
[16] See (Cover and O'Leary-Hawthorne, 1999).
[17] See (Mugnai, 1992) and (Arthur, 2001).
[18] Provided space and time are not perfectly symmetric. On this see (Black, 19
[19] In this respect it is interesting that one of the most influential writings on the problem of individuality was Boethius's *De Trinitate*.

principle, however, had nothing to do with the way humans discern individuals, i.e. with the way humans come to know that there indeed is a multiplicity of individuals.

No doubt the problem of individuation is still alive. Individuals are a fundamental ontological category across most civilization. And it seems reasonable to expect a criterion for inclusion in the category. On the other hand, unlike in the early Medieval and Scholastic periods, today we cannot anymore take individuals as given. Many of us do believe in the Judaic God. But many don't. It is not any longer plausible to assume that there are individuals and that we need a principle for justifying the way we count them and tell them apart. We need a reason for believing that they exist in the first place. And we need a reason justifying the way we count them. This is not to say that the problem is only epistemic. The justification can appeal – and, as a matter of fact, I believe it should appeal – to the metaphysical features of the entities at hand.

What kind of justification is needed in order to count individuals? Well, as also the discussion thus far reveals, there are mainly two categories of entities involved in the discussion of the problem of individuation: individuals and properties. Now, since we are trying to justify the existence of individuals, we cannot use individuals themselves to do this. Hence we need to use properties.[20]

One could push this line even further. The problem of individuation – one could argue – is no longer the problem of spelling out the principles and causes of individuality. Individuals are arguably not anymore the subject of scientific enquiry. As many have maintained at least since Berkeley, all our knowledge is knowledge of properties. Look in front of you. Red is on the right, blue on the left. Now listen. An intense, acute sound from behind. A melody from above. These – arguably – are all properties, not individuals. They are repeatable features. The same holds for what you can smell, touch, or taste. Moving to a different kind of knowledge, is our scientific knowledge any different in this respect? As Chris Swoyer has argued,[21] all that scientists care about is the discovery of certain patterns of properties. If you are trying to clone stem cells, all that you care is that you get the right kind of properties in place. Whether you are creating one, two, three thousands, or no individuals at all is of no interest to you. Scientists are interested in what can be repeated, not in what is individual. Laws of nature, natural kinds, natural roles or behaviors, all deal with repeatable entities which have a qualitative character. Hence, they arguably deal with properties.

Thus, a solution to the contemporary problem of individuation has to come from properties – or so I argued thus far. Which properties? It is on this score that one can look at the principles proposed by past authors and try to adapt them to the contemporary problem. This is what I will try and do with Leibniz. How to count individuals with Leibniz's Dynamic Whole Entity Principle of Individuation?

In its strongest interpretation, the Principle is no doubt a very powerful metaphysical tool for telling apart individuals. However, it does its job only when paired with the assumption that there indeed is a multiplicity of individuals. Leibniz could legitimate this assumption, however. For him, in fact, mind – the principle responsible for the activity of individuals – had no extension. Without a mind there cannot be an individual, since there cannot be a source of internal activity. But, the sources of motion (the distinctive activity of bodies) are infinite, as anybody can experience. Hence, there have to be infinite individuals creating the motion.

Now, as we have seen, the individuation of each individual passes through the understanding of the relations that it has with all other individuals. But, since there are infinite individuals and each of them is related to each other, there will be infinite relations too. Each relation will be part of the complete concept of an individual, which will thus be infinite.

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[20] For space constraints, I cannot develop this line of argumentation as much as it would deserve and need. I do so in my Ph.D. dissertation.

[21] (Swoyer, 1982).

The fact that the complete concept of every individual is infinite, however, raises an epistemic question: How can a finite human mind understand such infinite relations? The question might have not constituted a problem for Leibniz's account of individuality, since for him God granted the existence of individuals. From our present perspective, however, the question is problematic. Here is a nice passage from the *New Essays* illustrating the point at issue:

"You see, paradoxical as it may seem, it is impossible for us to know individuals or to find any way of precisely determining the individuality of anything except by keeping hold of the thing itself. For any set of circumstances could recur, with tiny differences which we would not take in; and place and time, far from being determinants by themselves, must themselves be determined by the things they contain. The most important point in this is that individuality involves infinity, and only someone who is capable of grasping the infinite could know the principle of individuation of a given thing."[22]

So, who could count individuals for Leibniz? God, certainly. For God could count the infinite relations. But, as I said, this is a line of argumentation that would fall short in contemporary discussion, since many do not believe anymore to the existence of God. Could a person count individuals? And how would she go about doing it?

To answer these two questions we need to look at Leibniz's account of relations. For Leibniz, a relation is a sort of activity in which an individual is engaged. As such – in so far as it is an activity – it is grounded in a perception. It is because there is an individual who (by definition) is capable of perceiving that there is a relation. Now, perceptions are indivisible entities. You cannot have half or a quarter of a perception. That would be a different perception. Perceptions are indivisible. Hence, they are denumerable. Now, since all the relations of an individual are perceptions, and they are denumerable, the relations too, although infinite, are denumerable.

As humans, we can certainly single out perceptions. Being individuals ourselves, we can distinguish one perception from another. But in order to be able to devise the principle of individuation of ourselves or of some other individual in the world we would have to be able to count all its relations. Can we do this? We cannot, for many reasons. Let alone the complexity, the main one is ignorance. We do not know the future. Not knowing how each individual will be related to others, we do not thereby know what each individual is. Also, we know but a tiny bit of the past. Hence, for Leibniz we cannot properly individuate any individual.

This is clearly a paradoxical conclusion. But in the remaining I am going to try and convince you that it is not that bad. In fact, even if we cannot individuate, through Leibniz's Dynamic Whole Entity Principle of Individuation we can *differentiate*, that is tell apart, distinguish. I perceive to be related to my rosemary bush in a different way than Franz Beckenbauer is. I nourish it, I see it. Beckenbauer just had his name related to it on this page. This is enough to know that mine and Beckenbauer's complete concepts are different. This is enough to know that there is some property that we do not share. Hence, me and Beckenbauer are distinct. *There are at least two individuals.*

Difference in accidents determines numerical difference. This is in perfect accordance with an ancestor of the Dynamic Whole Entity Principle of Individuation, advanced by Thierry of Chartres:

"For if [different] accidents [by which he means also properties] were not [present] in them [i.e. in individuals] in any way, they could not differ in number, nor would there be number in them, but everything would be reduced to unity."[23]

Leibniz's proposal is, thus, not so paradoxical after all. It can be put at use, provided we think to our ontology as a work in progress. As, instant after instant, we expand our knowledge of the distribution of properties in the world, we thereby become able to tell apart individuals. We will

[22] (Leibniz, 1981, pp. 289-290)
[23] The text is taken, with some small modification, from (Gracia, 1984: 274).

never be able to grasp the full meaning of any of such individuals. We will never be able to grasp what makes any of the individuals in the world an individual. Yet we are certainly able to infer their existence. And this might well be enough. After all, Kant did not pretend much more from human knowledge of the external world. Nor do many contemporary philosophers.[24]

There is one more problem though. Let us grant that we cannot know the individuality of any individual, but that we can tell them apart in some contexts. This – one could say – is not enough for counting them. How do we re-identify individuals across space and time? Suppose that Beckenbauer is sitting here in front of me. How do I know that this individual that now sits in front of me is the same that was yesterday on TV? This is where the thesis that individuals are non-extended comes in to do some metaphysical work. Granted this thesis, the question of re-identification becomes an easy one to answer: the two perceptions of Beckenbauer are perceptions of different individuals; yet both individuals are but the same complete concept expressed differently. As Leibniz put in the *Discourse on Metaphysics*, 9:

"Every substance is like a complete world and like a mirror of God or of the whole universe, which each one expresses in its own way, somewhat as the same city is variously represented depending upon the different positions upon which it is viewed."[25]

Thus, for Leibniz re-identification through time was not really an issue. The problem with individuals was not to track them through time and place. As he explicitly says in several places,[26] time and place cannot individuate individuals. It is the other way round: individuals individuate times and places. For Leibniz, hence, the issue of individuation is an issue insofar as it comes to discerning all the existing minds that do an activity, and understanding the critical role that each of them plays in the universe. That is what we humans cannot do. That is why we cannot have an adequate knowledge of the world.

Counting individuals with Leibniz, thus, turned out to be something quite different from what the main problem of counting is nowadays considered. It is not a business of re-identification throughout time and space.[27] It is the business of telling apart minds, telling apart sources of activity in the world. It is something rather simple to do on a small scale. But it is something extremely complicated to do in its totality. So complicated that we humans cannot do it. The conclusion is, as most of the times with Leibniz, simple and startling. Counting is terribly easy; so easy that we cannot fully do it. Mathematics is similar in this respect: to start manipulating numbers is so easy that small kids can do it; so easy that we cannot fully do it. This is then the moral to be drawn from Leibniz's doctrine of individuation for contemporary metaphysics: we should abandon worry about counting and re-identifying through time; we should just look at the sources of activity.

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[24] For instance, see Langton's and Lewis's accounts of intrinsic properties in (Langton, 1998) and (Lewis, 200+).
[25] (Leibniz, 1989: 42).
[26] For instance in (Leibniz, 1981: 230).
[27] For the thesis that re-identification through time and place is crucial to individuality see (Strawson, 1959) and (Wiggins, 1979).

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