The Problem of Self-reference and the Law of Identity

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If we go by how Self-reference is defined, then the Law of Identity (A=A) is its evident example:

"Self-reference occurs in natural or formal languages when a sentence idea or formula refers to itself". (1)

What we conventionally accept as the Law of Identity (A = A) is no more than a tautology in logical terms. Tautology (for example 1 = 1) carries no useful information. While this is the case, one may feel puzzled indeed that a tautology has been considered as the first law of logic.

Among those who objected to this concept of identity was Friedrich Hegel (1770 – 1841):

"Likewise, Hegel attacked the Law of Identity and claimed that "the Law of Identity says very little in itself". The fact that A equals A is no more than a tautology and has little meaning – it tells us almost nothing about the identity of a thing. The only way a thing truly takes on identity is through what Hegel called its "otherness" or what is not. What a thing 'is not' is as necessary to its identity as what 'it is', since what 'is not' is what gives a thing boundaries, definition and meaning. Thus a thing's otherness must be contained within the very identity of a thing". (2)

In other words, Hegel was saying that: we need a 'contrast' between an object and what-is-not that object, to be able to distinguish it. This is a convincing argument, but for some reason it did not attract further attempts to examine the root problem of self-reference in the Law of Identity. Instead, some philosophers tried to find at least one field where A = A can be meaningful. As Ilya Satvinsky explains in his article "The essence of formal logic" - the only validity of the Law of Identity is when we treat A just as a symbol without physical content, as is the case in mathematics:

"In mathematical logic the expression "A = A" has a well-defined meaning, which no one disputes, but the expression loses its meaning outside of mathematical logic". (3)

It can be argued, however, that mathematics speaks about *equality* of quantities, not about their *identity*. For example, two lines in a plane can be "equal" in length, but each line has its own coordinates, which are differently situated; the lines are equal but they are not the same:

"*Plato notes that the sense of "the same" as applied to mathematical objects and to the ideas is different: properly speaking, sameness (identity) applies only to ideas while in mathematics sameness means equality…."* (4)

Identity based on Uniqueness

Assuming that the formula of A = A applies also to the physical realm - without explanation why this assumption is valid - Leibnitz subconsciously formulated his statement on *individualization* – suggesting that an individual object (A) needs nothing else but itself (to be the individual object A):

"*Every singular substance does not need as individuating principle anything more than its entity"* (5)

Don't we perceive a spirit of self-reference hidden within Leibnitz Principle of Individualisation? If by (A) we refer to a certain "singular substance", then the 'principle of individualisation' says that the entity of this "singular substance" is just (A) – but this is no more than a circular reference of (A) to itself.

We miss Hegel when we read Leibnitz. Hegel was enlightening us to the importance of "others" to identify the individual, and Leibnitz made "the others" transparent in his focus of individualism's self-sufficiency. The necessity to include "the others" in the process of defining the existence of an entity is an essential principle in Eastern philosophical teachings. From the perspective of Eastern philosophical concepts, the starting point in observation of an object is not *how different* it is from other objects – but, first of all, where does it belong: to what *group of other objects* it would fit. This perspective is derived from the essential truth of "*Interconnectedness of beings"*. Nothing exists on its own. The origin of an object cannot be itself; it is dependent on other objects:

"[Dependent Origination] teaches that no beings or phenomena exist on their own; they exist or occur because of their relationship with other beings and phenomena. Everything in the world comes into existence in response to causes and conditions. That is, nothing can exist independent of other things or arise in isolation". (6)

Obviously, Leibnitz' implied self-sufficient individualisation is challenged east and west, nonetheless one can sense a certain message he wanted to convey. Could it be that Leibnitz meant that an individual object must be *unique* to distinguish it as an object? This was not clearly stated in his principle, but the word he used ("individualisation") resonates well with the word "*unique*". However, everyone is unique. To be distinguished as being a unique individual, one must belong to a group of individuals among whom one is distinguished. A person can be unique among peers, among other people - but not among trees or fish. This means that identifying a *unique entity* necessarily requires referencing it to a *group of belonging*.

Identity through the fusion of the two categories: the "General" and the "Specific"

Any object under observation must be contained within a pattern, a category, or a general set of objects. The following example offers an explanation. Suppose that an accident involving a certain car took place and that the police is trying to identify that car. As it is common in such circumstances, the description of the sought car would be first given through its *general* properties (such as manufacturer, model and year). But there could be thousands of such individual cars, which satisfy the required list of '*general properties'*.

Identifying a certain car (A) in this example would involve two components: one related to general properties ($A_{general}$) and the other related to the specific properties ($A_{specific}$), which describe the particulars of the sought car: its registration number, colour, possibly a scratch or similar specific indication. The sought car (A) is then fully identified by two sets of properties:
a general set $\{A_{general}\}$- or $\{A_g\}$ and a specific set $\{A_{specific}\}$ - or $\{A_s\}$:

$$A \equiv \{A_s\} \in \{A_g\}$$

This expression of Identity dissolves the problem of self-reference by regarding object (A) as a specific (or unique) object within a general group of reference, to which (A) belongs. Considering a general category to which (A) belongs – satisfies what Hegle was telling us, that we need "*other objects*" to identify (A), simply because an object cannot be identified just by itself.
This perspective of Law of Identity justifies shifting from the *conventional Law of Identity* (A=A) to a *general Law of Identity* ($A \equiv A_s \in A_g$).

Universality of the General Law of Identity

While the conventional Law of Identity is valid only for mathematical objects, the general Law of Identity applies to all objects, abstract and physical alike.
Take for example a number, say A = 5. According to the General Law of Identity, the general property of number 5 is its belonging to the general set of positive integers, while its specific property is that it is the only element in the general set that is greater than 4 and smaller than 6. Obviously, there is no number 5, which can exist without having also other numbers like 4, 6 and in fact all others. On the other hand, to identify number 5 by just as being number 5 (according to the Conventional Law of Identity A = A) the definition becomes a tautology with zero information about the nature and belonging of that number.

As for application of the General Law of Identity ($A \equiv A_s \in A_g$) in the physical field of objects, then The previous mentioned example with identifying a car, can be extended – for example – to identifying a person. A person is a unique individual, described by his/her specific properties $\{A_s\}$ and belonging to a certain general group of humanity $\{A_g\}$. Uniqueness of individual can be developed in many ways, but there is one concrete element of unchanging and unacquired uniqueness, which originates from individuals' birth within a specific family, defining the individual's belonging. We may find many individuals in the world who share most of their specific personal properties, including the one-off event of date and place of birth, but when birth is referenced to a family of belonging, there can be no two individuals who can share the date, time and place. Defining the identity of an individual requires not only the individual's self-entity (as Leibnitz implied) but a reference of others, here being the family name.

This property of being a one-off entity, a unique existence, is carried along unchanged over the passage of time and remains as such. Even though most or all specific properties of an individual can change - and they certainly do - nonetheless uniqueness of identity is maintained.

Identity over time

The reason why individuals undergo drastic changes is that their specific properties $\{A_s\}$is obviously a function of time. Despite changes to our specific properties, are we not the same unique person of few years ago and before? There is something that keeps identity miraculously maintained.

Identity over time poses a deep philosophical problem. For example, the following passage (from an article published by "Hume Society") reflects the difficulty and limitations in explaining identity over changing phases of time:

> *"What is identity?.... Hume thinks that our idea of identity involves confusion, first of all because it is based on vacillating between viewing (A) as two things and viewing it as one, and more fundamentally because it mistakenly applies passage of time, or duration, to the unchanging (A)".* (7)

Where does this confusion about identity over time come from? It is originated from a mistaken assumption that (A) is unchanging. In reality, the specific properties of any object undergo changes, so, the expression $\{A_s\}$is a function of time. What anchors or stabilises the identity of $A \equiv A_s \in A_g$ - is the reference of belonging $\{A_g\}$, which is unchanging.

One part of the General Law of Identity, when defining a person, is $\{A_s\}$and this part is a function of time, constantly changing. The other part, of the General Law of Identity, however, being the reference of belonging $\{A_g\}$ – is fixed. In this way, all elements attributed to characterise a person can change, yet the uniqueness of the person (originating through being distinguished within the reference group, here the family) – this uniqueness is a *fixed event of existence* within that group and therefore it cannot change.

Identity as a dynamic entity

In his book Θ, Aristotle used the word "dunamis" to refer to the potential of object to change in time. However, potentiality implies various scenarios of the future state of observed object, and not a fixed or concrete description. This lack of concreteness about the future state of an identity made potentiality undefinable:

> *"A dunamis in this sense is not a thing's power to produce a change but rather its capacity to be in a different and more completed state. Aristotle thinks that potentiality so understood is indefinable, claiming that the general idea can be grasped from a consideration of cases. Actuality is*

to potentiality, Aristotle tells us, as "someone waking is to someone sleeping, as someone seeing is to a sighted person with his eyes close." (8)

Applying the terminology of the General Law of Identity $A \equiv \{A_s\} \in \{A_g\}$, we can understand the "actual state" of an object (Actuality) as simply the current state of $\{A_s\}$: the actual specific properties of A. However, because the specific properties of any object are a function of time, then the elements of the set $\{A_s\}$ possess potentials for change. This mean that scenarios of Potentiality of future states are contained within the actual state of object, although undefined in concrete terms.

To take Aristotle's example; we can say that the "actual state" of a person waking has within its properties a *potential* to develop into the *same person sleeping* - at a later time. Viewing the specific properties $\{A_s\}$of an entity (A) as time-dependent automatically implies that those properties possess the capacity for change in time; a potentiality dormant within the actual state. There is no conflict then or dichotomy between actuality and potentiality - as both belong to the same identity.

The concept of potentials (or latent states of identity) in Eastern philosophies emerged through the search for a solution to the problem of sufferings. One's actual state can be that of hardships, but the same actual state of hardships contains within itself a potential (or a latent state) of change - allowing for transformation of one state into another.

The concept of 'potentiality contained within the actual state' described by the set of specific properties $\{A_s\}$ - applies also to any physical phenomenon or natural occurrence under observation: *"An understanding of [latency], therefore, helps us to see that, despite how we may see them, things--people, situations, relationships, our own lives--are not fixed, but dynamic, constantly changing and evolving. They are filled with latent potential which can become manifest at any time".* (9)

While the set of specific properties $\{A_s\}$ describes the dynamism of the current state (as its elements possess the potential to change in time), one property in it remains unchanged: the uniqueness of (A), and which is the result of referencing the object to the general set of belonging $\{A_g\}$.

Differently from the static structure of the Conventional Law of Identity A = A, the General Law of Identity: $A \equiv \{A_s\} \in \{A_g\}$ can explain the dynamism of a developing identity, maintaining its uniqueness over time.

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