

THE WHOLE IN THE PART

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SECTION I: PARTS

1. *Background*

Concepts change, some more rapidly than others. Facts, historical events, discoveries determine the current meaning of concepts, the implicit as well as the explicit ones. Some are defined in terms of more basic undefined notions which we call "categories" or "primitive ideas." These categories also change, some spectacularly so, as the concepts of space and time, others do so so slowly that seem to be unchanging eternal entities. Here we want to deal with the basic categories of whole and part which in our daily life we make use of without thinking about their precise possible meanings. We do so of course with most categories: we believe we know what we are thinking about when we employ them until the facts call for a rectification big or small of prior subconscious interpretations. But to interpret we do, including when we accept standard semantic practices. This is true even in mathematics, where defined concepts are a function of how we set up our primitive ideas, that is, how we determine the semantic initial domain of interpretation in which such ideas acquire specific meaning, and in which proofs take residence and acquire a particular life. The notion that mathematics is incurably abstract is an exaggeration.

To take parts as individual elements of an expediently simple collection of individuals that performs the role of whole somewhat indifferently is the abstract approach with which we feel comfortable when we do not give to such conception another thought. We want to show though that there are other ways of thinking which place us closer to what reality, both physical and psychological, is like in its concreteness. Not that we want concreteness to be embraced fully once and for all within a better mental frame, which is impossible, rather to take a few steps forward in the never-ending task of apprehending reality as it truly is in its entirety, or better said, in a less incomplete manner.

2. *Fragments*

How is the word "fragment" officially defined? As "a part broken off," as "a small detached portion," as "an imperfect or incomplete part," or as "something that is small and usually insignificant." The verb "to fragment" is defined as "to break into fragments," as "to break or divide into disorganized or not unified pieces," or as "to destroy by such breaking or dividing up."¹ This is the inherited wisdom for an uncomplicated meaning of the noun and the verb.

There is, however, another way to construe the meaning of "fragment," even in the case in which a fragment is the outcome of breaking up a larger whole. The construction we are referring to makes the fragment a source of originally undetermined or previously unnoticed meanings, a site teeming with promising interpretations, with new enhancing subsumptions. This way of construing the meaning of "fragment" gives the word what we can call "a positive semantic ambiguity," an ambiguity that gathers a spectrum of wholes into each of which the fragment is a broken portion, or originally created full of pregnant meanings. These pregnant meanings may point in different concrete directions, and thus invite us to choose from a wealth of avenues to follow, that is, to engage in specific applications. In this alternative construction, the fragment possesses an intense life of its own.

A preeminent example of such kind of pregnant fragment is the collection of broken writings from the Presocratic thinkers that have randomly survived. This fascinating assortment of the most suggestive fragments in existence has preoccupied Western thought for centuries; indeed, volumes have been written as to how each statement in the remains should be interpreted. Such reconstructions often let to opposite understandings, but this is only a testimony to the fertility of the thoughts. They are not mere flotsams but gravid living creatures all. Thales, Anaximander, Pythagoras, Heraclitus, Parmenides, Zeno, Empedocles, Anaxagoras, these are awe-inspiring names that keep resonating through the ages, their writings generating each its own universe of interpretations. Of course, should we be in possession of the entire corpus of what each of these figures wrote, it is possible that some of the most outlandish extrapolations would automatically become superfluous – or then again, perhaps not. At any rate, despite the misfortune of having lost so much wisdom from these thinkers, what has reached us is so strikingly productive, that it is a consolation to realize how much intellectual energy there is still in what we do have, how many ways there are in which each sentence can be read and developed. This is particularly true of the most cryptic and mysterious of such fragments. In fact, the more opaque they

seem to be at first sight, the more suggestive they become with repeated approaches. Indeed, they are even today the triggers of the most creative inspirations.

Another example of pregnant fragments is the aphorisms. A good aphorism is not only a valuable condensation of general wisdom, but it is also capable of an unlimited number of relevant instantiations. Their pithy content hits us from the start: we recognize their potentiality for valuable developments. This potentiality makes the aphorism be seen as a brief treatise that stretches beyond itself. Some authors are especially good at this kind of genre; they know how to fit the world into a capsule. Excerpts from a diary or a notebook may fall into this category as well.

Of course, in a deep sense, every writing, no matter how accomplished, is ultimately a fragment crying for large accounts into which to be embedded. *The Iliad* is incomplete without *The Odyssey* and *The Oresteia*, etc. But even any work without a sequel can be seen as part of a larger whole, a whole which may not exist at the present, and which may never be brought into actuality. There is an essential incompleteness in any work, as well as in any act of life, something which far from being a defect, is a positive, regular introduction to the future.

Now, depending on the strength of the given whole, to segregate one of its details as a surrogate of the whole and be considered as a whole by itself may sometimes create an altogether new entity, contrasting and intense relative to the nature of its origin. Think of how the reproduction of a segment of a master painting – an expressive hand, a grimacing face, a whimsical particular – can become all by itself a veritable new painting, one with a new overall conception and with a distinctive quality not necessarily in harmony with the quality and atmosphere of the original. This is true of music as well, and of literature. A musical fragment overshadowed by its surrounding developments may turn into a mini-piece of its own by itself. The single saying of a character in a play may grow into an all-encompassing aphorism. In other words, to sever a part from the whole in which it was inserted can produce the most creative and unexpected connotations. This is true not only of aesthetic contexts but also in general. To give an example, the quality of our own life is fundamentally affected by the temporal context in which we mentally place our existence. To live in the present or to live in terms of long spans of time – worrying perhaps about how the far-away future will turn out, or encumbered by the weight of a lingering past – produce very different ways of living our life now precisely because of the different attitudes that each scale or our conscious way of living generates. Specifically, the scale in which we live our life leads to very different kinds of understanding, in fact, to the origination of very different selves with which we find ourselves existing.

SECTION II: WHOLES

3. *The Example of Gestalt Psychology*

It was the Gestalt psychologists – Christian von Ehrenfels, Max Wertheimer, Kurt Koffka, Wolfgang Köhler, Kurt Lewin, and others – who conveyed systematically the notion that a whole is sometimes more than the sum of its parts, that then the whole sets relations between the parts which do not exist when all the parts are separated from that whole. A simple example is the well-known Müller-Lyer phenomenon in which the same assemblage of forms is perceived as a vase, or alternatively as two persons facing one another according to the way intuition reverses the figure-ground psychological interpretation. In either perception, the whole of forms is clearly more than the sum of its parts, generating two different sets of relations, two different roles for each of the parts involved.

Critics of the expression “the whole is more than the sum of the parts” proceed in suitable atomistic fashion to analyze the terms “whole,” “part,” and “sum” each by itself ending up with a cadaver of the expression. The fact remains that whatever words we use the circumstance that sometimes the whole is more than the sum of its parts is directly perceived just as we see it in the Müller-Lyer case, an experience for which there is no room within an atomistic mental frame.

Physicists on their part have been some sympathetic, some hostile to using the word “whole.” For the latter, the word is more of a mystery than that of a scientifically productive term. This despite the fact that James Clerk Maxwell readily accepted in his *Treatise on Electricity and Magnetism* of 1873 Michael Faraday’s view that one actually begins with a given whole and then arrives at the parts by analysis. Max Planck, as quoted by Köhler, said even most explicitly: “We think of the wholes before us as the sums of their parts. But this presupposes that the splitting of a whole does not affect the character of this whole. Now, when we deal with irreversible processes in this fashion, the irreversibility is simply lost. One cannot understand such processes on the assumption that all properties of a whole may be approached by a study of its parts.”² But where wholes have acquired a most significant place in the productive role they now play in physics is described in the immediately following section.

4. *Reductionism and Emergence*

Reductionism is still prevalent in the natural sciences, the idea that to understand and manage a natural phenomenon one must analyze it into its last components, reduce it to an association of its ultimate parts, atoms or elements of some kind, thus creating what can be called a systematic

material atomism. This is why it is so remarkable to find the following statement in the now classic paper by the Nobel Physics Prize Philip Warren Anderson "More is Different": "Scale change causes fundamental change."³ This has to be understood not in the sense that previous laws are to be totally superseded by new fundamental laws, but in the sense that when known parts gather into a whole, there is a physical emergence that cannot be explained by the nature of the parts alone but eminently by the nature of the new whole. Not either that now reductionism has to be abandoned but that room has to be made for the new emergence which must be taken as an established physical factor, an increasing complication because "at each level of complexity entirely new properties appear, and the understanding of the new behaviors requires research which I think is as fundamental as any other."⁴

But the most exceptional evidence of the categorical state of affairs just mentioned has come from another Physics Nobel, Robert Betts Laughlin, who explained the curious and important phenomenon of superconductivity as an emergent one. Superconductivity consists in that, under some circumstances, electrons move without encountering any resistance through determined materials. This phenomenon is not reducible to the consideration of how each of its components behave: it is an emergent occurrence. Laughlin gives credit to Anderson but goes beyond by saying "I am increasingly persuaded that all physical law we know about has collective origins, not just some of it,"⁵ that is, the organization of the whole is what engenders the essential aspects of the law, "the organization can acquire meaning and life of its own and begin to transcend the parts from which it is made."⁶

This is the ascending emergence, but there is also a descending emergence that Laughlin does not consider; in fact, we can also say that less is different. Nanophysics, the study of materials of the order of a meter reduced a billion times, shows that matter changes its properties and acquires characteristics not present at a macroscopic level. Both types of emergence have each also its psychological counterpart. Such is the case, for example, when we put our present actions within the perspective of a long-standing objective, an objective which projects its meaning to each action. And such is the case also when we are caught by a critical instantaneous event that for a moment captures all of our thoughts and energies even if in ways contrary to our usual manner of being. We have then both a regular physical ascending emergence and a regular physical descending emergence. And then we have both a regular psychological ascending emergence and a regular psychological descending emergence. In all these cases, no part is immune to the surge of the emergent whole which makes radical changes follow necessarily.

5. *Lexical Fields*

Whenever the concept of field is used wholes have a most significant role. Fields are intricately related wholes, a field of forces in physics, a field of meaning in any lexical composition for example. Many lexicographers reject field analyses because, so they say, "field" is a mere metaphor. Yet, it is a matter of direct perception that the semantic whole of a complete sentence pervades the meaning of each of the sentence's words. The meaning of a sentence is a field, our intuition tells us so constantly, and as with any field, any change in any of the sentence's parts changes the sentence altogether, which in turn changes the meanings of all other parts. Fields, being the dynamic semantic form that lexical wholes take, are real, effective, and universal. Knowing it or not, we use them as concrete instruments with which we enhance or just grasp the understanding of a text.

Sentences, of course, can become part of larger wholes, a paragraph or a sequence of paragraphs. In all cases, here is how linguistics list some of the essential properties of a lexical field: "A principle of totality, a principle of ordering, a principle of reciprocal determination, a principle of integrity, a principle of differentiation, a principle of absence of gaps."⁷

6. *Other Examples*

What we just said is also eminently true of the arts. The paintings of Paul Klee, for instance, acquire an entirely new perspective when we notice the title of the picture after having only looked at its details. An emergent new work is then displayed to our attention. And so it is with the isolated notes of a striking musical theme, inexpressive each on its own, but which we see taking an irreplaceable function when heard as part of the theme, the emergent new musical reality. Music is, of course, pervaded by field-theoretic relationships, tonality if such is the case, dynamic progressions, timbre, color, all contribute to a red of attractions and rejections which lead to the pleasure of music listening.

Similar considerations apply to the relations between biological organs, and that of each organ with the whole functioning living organism. Physiology is closer to concreteness than an anatomy that deals with totally circumscribed dead organs. Life is an emergent phenomenon, with each biological specimen immersed into the species of which it is a part. Conscious of this state of affairs, Kurt Goldstein accurately defined the path each organ follows to influence another organ in a living being as "a detour through the whole," a classic and profoundly insightful statement to describe the way physiology functions.⁸

Anthropologists also use the notion of whole as a matter of course.

For Clyde Kluckhohn each human culture constitute a whole, but "no culture can be isolated or characterized by even the most exhaustively correct enumeration of its parts."⁹

We should emphasize that there is a common trait in all the examples adduced: the categories of whole and part are not defined. Being primitive ideas one uses them generally as undefined concepts, in principle open to different interpretations, although in the examples just given the atomistic interpretation is set aside in favor of what we can call synthetic ones. This situation is very clear in mathematics, where one defines parallel lines in geometry but, from the days of Euclid, points and lines are undefined and can be interpreted in many ways, making room for Non-Euclidean geometries for instance. The ideas of element and set are also undefined, which in turn leaves open the way to a variety of nonclassical set theories. Once the interpretation is established, all these categories – wholes and parts in particular – are intellectually grasped and identified in the specific context in which they are used. We understand clearly and directly what we mean; it is therefore out of place to expect categories to ever be defined. This is patently true in abstract disciplines, it is also true in concrete ones, where it is not intelligent to demand definition when observation is the only possible tool. Important as definitions are, one should not forget their ambiguous beginnings. Much as we can love exactness, it still depends on preliminary choices based on unmediated intuition.

Many other examples could be added to the characterizations given here of how a whole can have it in its nature to relate intimately to its parts and bring to the parts the emergent relations and properties it generates. By now it should be clear that the nexus between whole and parts can be an active one, both creative and dynamic. However, these examples do not imply that one must necessarily abandon the neutral conception of a part as an element or a subclass of a passive class. After all, Newton's gravitational principles are still useful even if we know now that they are not entirely correct. In our daily life, we still gather items into a box without worrying about what the box could do to each item.

What we really should be conscious of regardless of practical considerations is the fact that the way we think about wholes affects our intellectual make up – and eventually also our plans and actions. Each conception of what a whole is determines its own particular mental frame within which we carry out our rational life. So far, we have introduced through our descriptions three types of mental frames induced by three ways of comprehending the notion of whole; each of these ways is limited, each has its domain of validity, all are waiting for the next conceptual broadening. They are listed here in the ascending order of inclusiveness.

(i) The whole as an inert collection of parts, an assemblage of individuals relatively independent of one another and void of any dynamic connections between them and with the whole. (ii) The whole as a Gestalt, psychological, physical, lexicographical, etc., a whole that imparts a new significance to each of its parts by being an overall configuration which is more than the sum of its parts. (iii) The whole as an emergent entity that radically alters the very dynamic nature of the parts and the processes themselves in which the parts are involved.

SECTION III: THE PART IN THE WHOLE

7. *Ontological Implications of Semantics*

It should be clear by now that categories, just as mathematical primitive ideas, are open to interpretation before any use is made of them. When we use them in daily life, we always have already a more or less vague idea of what we mean; as long as we use categories without much reflection, they seem to have an obvious significance inherited from the past. In any case, semantics precedes syntax, and determines from the beginnings of any discourse the parameters of such discourse. Thus, if the parts of a whole are interpreted as elements of a set, as individuals complete in themselves, and, accordingly, if the whole is interpreted as an inert collection of such individuals, the mental frame that these interpretations creates – whether we are conscious of it or not – leads to a very specific ontological conception of the real world and of our own mind: both world and mind are then made up of real ultimate components, respectively, quarks, sensations, etc. But now, if we take the parts intrinsically related to each other and to the whole which as a Gestalt defines the role of the parts, we have a mental frame which conduces to a different view of what the real world and the mind are in effect: wholes are not only real, they are coextensive with each part. In this universe, parts are unthinkable without some specific whole. But more still, if the gathering of the parts ends in an emergent whole, then we have the ontological picture of real new processes being generated by such gathering, real processes with different real laws. We should add that the difference between any Gestalt and any emergent whole is not razor sharp: they intersect. Gestalt theory is predominantly psychological, although also physical, biological, and social; the theory of emergent wholes is predominantly physical, although examples from other disciplines and the arts can be found in the cited works of Anderson and Laughlin.

The linguistic situations in particular should be clear by now as well. If I say "Now is why," the expression is meaningless until it is placed into a context, but this context must have the character of a field of crisscrossed

significations to truly make sense. Although everything lexical is a matter of the mind thinking, the sentence shares the nature of a real Gestalt. If we reflect on this, it is linguistic common sense to give to any context the nature of a whole which depends on its parts but injects on its parts something which did not exist outside the whole.

8. The Relativization of the Individual

Models in mathematics are usually built on a domain of interpretation that is a set, that is, a collection of selected, detached individuals. In real life, however, the individuals are taken as disengagements from the relations in which they originally existed. This is true even in the case of human beings. This does not signify that we as selves do not have creativity and spontaneity, merely that we cling for life to the essential relations in which we grew and from which we continuously emerge. Think only of how much our self is shaped by our parents, by the ties with the persons we love, and by the traits of persons, perhaps not even alive, which are for us models of behavior and thought.

9. The Relativization of the Whole

We have been giving the whole a prominent role vis-à-vis its parts in both the Gestalt and the emergent cases. This should not in any measure give the idea that the parts are relatively passive members of the whole. A single part can bring with itself relations and properties of its own which in one degree or another change the nature and configuration of the whole, and by rebound that of all the parts. A simple personal story should illustrate the case. Hanging on the wall, I had for a long time a reproduction of a painting by Joan Miró. One day its frame fell to the ground and broke irreparably. Wanting to keep the picture in view I turned to a slightly smaller frame which unfortunately required to clip the reproduction on one side. The painting was typical of Miró's style, with isolated dots of different colors and strong foreground forms. To fit the picture in the new frame it seemed that the least damaging way to do it was to eliminate one small red circle very near one of the edges. I thoughtlessly concluded that such a sacrifice of an apparently insignificant dot would not essentially alter the impact of the whole. I was wrong. In fact, I was never able to get over the loss of such a minimal component. The change in the balance of forms and colors kept bothering me: something important for the field-theoretic equilibrium of the original work had been severed. I finally had to hang another picture in the same place. That omitted part in the whole had a good reason to be where it was placed.

This aesthetic experience was of course a subjective one, but so are often the interpretations of primitive ideas, and more importantly, their being subjective acts does not mean that they were unreal. In effect, there is nothing that is "merely subjective," not only because our subjectivity is our most immediate reality, but also because we see it as a continuation of the real world and of the equally real views of our fellow beings. Through the interpretation of our categories our subjective self is in a continual process of adjustment, a process that sometimes moves very gradually, almost imperceptibly, sometimes very suddenly in the realization of the existence of previously ignored developments in the real world.

10. The Expansion of the Whole Beyond its Locus

It is not difficult to realize that a part can expand beyond what at first sight seems to be its rightful locus. It may not be so easy to see some parts irradiate their presence beyond the confines of the whole of which there were originally members, and then to have such parts impact their whole from the "outside" so to speak. Let us make this state of affairs more explicit. We have no problem in thinking that every whole divides the environ in which it is placed into two regions, the inside and the outside, but then we are already implicitly framing our thoughts by some geometric, visual interpretation. This interpretation is usually the one of sharply dividing the space of what is in the whole from that that contains what is not. Now, in the case of a Gestalt, its surroundings are greatly changed by the Gestalt's sudden appearance from what it was the mere sum of its parts. The characteristics of the Gestalt spill beyond its apparent boundaries, which inevitably changes the nature and meaning of the Gestalt's surroundings. The same can be said of an emergent whole. In both cases, the distinction between inside and outside becomes supremely ambiguous and misleading. It turns that the inside goes outside, messes with the outside, is the outside in a very concrete sense, even when we continue to adhere to the fixity of their boundaries with absolute abandon. Reflection forces other ideas on us though. There are parts so active, so much a dynamically creative nucleus of their whole, that their effects transcend the borders of a whole and become unbounded. To put it paradoxically – which is inevitable here – the exterior of the whole becomes the interior of the part and hence in turn also the interior of the whole.

To make the preceding clearer take the beginnings of a charismatic leader in any area. The leader is then confined in space and time to the region in which he started, but when the leader's influence exceeds the initial domain of action then such domain goes outside itself. The original boundaries are not deleted, they have become porous; the past is never

annihilated, it is still a member of the origins, what happens is that the past has moved to the ever-larger present taking with itself the whole of the events in which it occurred.

Think also of a contagious illness which has spread to the entire body of a person; from organ to organ it now covers the whole organism. But then the illness appears in other people by contagion; the body where the illness first showed up still has the same visibly circumscribed bounding surface, yet the illness has made the body be expanded into a larger biological system that includes the exterior of such body. Physiology has forced single location into a new complex spatio-temporal entity which transcends the initial settings.

11. The Role of Intuition in the Apprehension of These Processes

It would be missing the point to take the last two examples as merely cases in which a whole simply becomes enlarged. This only would show how much we are trapped by interpreting wholes as being plain collections. The point is that in both examples the "old whole" still remains a whole by itself throughout the entire expansion, but it is transformed in the process into a paradoxical entity in which the original exterior and the original interior coalesce by a detour through the part. This "new whole" has the same boundaries, but becomes an ontologically contradictory entity remindful of those "impossible" Escher pictures in which going up is seen as simultaneously going down and vice versa. To fully apprehend this situation requires a shift of intuition, which calls on us to dwell further on how intuition is an essential factor in our understanding of the world.

To begin with, intuition is as real as any other instrument of our real consciousness, as instrument that plays an essential role in generating the different mental frames within which we carry out our thought. Intuition gives us directly the changing meanings of a Gestalt or of an emergent whole, it allows us to penetrate a cloudy apprehension and come out with clear-cut interpretations of how to think of a whole and its parts. Intuition is a most pervasive activity of the mind. Perception, in particular, is a form of intuition, framed and shaped by previous intuitions. Atomistic thinking looks at intuition with suspicion, yet even in following a mathematical proof intellectual intuition plays a considerable role. And it is intellectual intuition that guides us also in solving a mathematical problem. Practical considerations make us be satisfied in taking wholes as simple collections and parts as separable elements of such collections. It is a reflective intuition that opens our mind to the perception of a whole as a mini-universe made up of teeming parts, a lively active beehive which occasionally steps beyond itself.¹⁰

SUMMING UP: THE WHOLE IN THE PART

12. *Examples*

A physical field of forces is a clear instance of how the whole distribution of attractions and repulsions affects every region of the field and vice versa. This is true of the electromagnetic field, of the gravitational field, and of any other physical field of actions. We have already mentioned the physiology of a given living organism as a biological example of how the global functioning of the whole influences its local functions, in effect is actually present in the latter. We also mentioned the constant presence of the lexical field of a sentence in each and every one of the sentence's parts. I would like here to add the example of the very telling title of a book by the linguist Fernando Lázaro Carreter: *The Dart in the Word*.¹¹ He does not explain explicitly what makes the dart in the word which produces the impact that the word lacks devoid of such content. But obviously, the extraordinary way in which a word may hit us is unmistakably a semantic phenomenon, a clear case of the whole in the part.

Other examples from disciplines other than physics, biology, and linguistics could be added, but what interests us at this point is to answer this question: what all these previous disquisitions about Gestalt psychology and physical emergence have to do immediately with the way we live our daily life? By now we know well that categories undergo changes and that our explicit thinking of them needs constant readjustment, great or small; we learn this way. But in our usual behavior we do not put our categories on trial before we perceive, think, feel, will, and ultimately act even as we have the old and new categorial schemes subconsciously setting the mental scene. Let me give a personal example of how, without even thinking about it, the whole in the part directly and concretely takes over our experience, and our actions henceforth.

When I first met Bethsabe, my future wife, I only saw an uncomplicated fragment of her, as it is the case with most people who meet somebody unknown for the first time: she was one more acquaintance. Later on we came to know one another better and fell in love with each other. By then, her presence had become something entirely different: I never failed to perceive her whole person in each of her acts; her total personality and all her potentialities were always present. Little gestures became every time part of her whole being which, as a consequence, made me able to see myself through her eyes, kindly.

Something similar can be observed in a good friendship. Jean Renoir, the French movie director, said: "When a friend speaks to me, whatever he says is interesting." This is true, and the reason is again the presence of

the whole person in each of its acts. Of course, when friendships fall out without remedy the same acts lose their touching value, which only shows how difficult can be to be truly objective. These are not metaphors that we are bringing in: we perceive the whole in each part directly and having the same reality that a color has: we never doubt the existence of, say, a red dot in a painting.

13. The Perspectives of the Whole

When a part covers the whole it generates for itself a singular perspective of that whole. The part functions as a point of view from which to apprehend the whole with its own different ordering and with its own peculiar sense. In the Müller-Lyer picture we obtain two distinct perspectives, the vase and the two faces, seen respectively from the two diverse points of view produced by how our intuition sets an order in the perception of foreground and background. This allows to look at the picture anew not as two contrasting wholes, but as a single whole which offers two opposite perspectives. This view of looking at concrete objects can be extended from the finite case just referred, to the case of, say, a sculpture that can be seen from a seemingly infinite number of angles, a single whole that offers many perspectives as it is observed from all the possible positions from which it can be viewed as we walked around the sculpture, each position providing a distinct point of view with a partial apprehension of the whole. Thus, each angle creates different feelings, different attractions and thoughts that accompany the mind's perception. Any concrete three-dimensional object is subject to the same observations.

We must emphasize that the perspectives are real; we can even say that it is a good approximation to state that a concrete whole is the sum total of all the perspectives it offers. Perspectives are not mere phenomenological constructions; although genetically each belongs principally to one part, they are instruments of the whole with which it acts on the reality in which it is placed.

Things get a little bit more complicated when imagination becomes an additional component of my "external" perception. As one looks at the Venus of Milo for example, striking even without her missing arms, one could try to imagine how the sculpture might have looked complete, how its perspectivistic impact might have been then. A different added dimension enters the picture when one allows such a creative subjective fancy tamper with the concrete aesthetic object as it stands today. The physical and the subjective merge then to meddle creatively in how the whole is apprehended.

14. *Impacts on Other Categories*

From the beginnings of Relativity Theory it has become well-known that the whole universe is the sum total of all the perspectives that each and every moving body creates as a coextensive part of that whole. Within each perspective, space and time are different, sometimes displaying a very little change from moving body to moving body, sometimes differing a very great deal. Space and time, further, can be so prone to change, so structurally labile that even the presence of an active mass of matter alters their configuration. So much for their being a huge container eternally equal to itself; now we know that they are reduced to being just properties of relative movements.

In a smaller scale, something similar happens to feelings. Diffuse moods are floating realities of the mind filling it completely. Yet they are usually very much subject to change: the emergence of a directed feeling can cut through a mood's cloud like a dart in a word cuts through an unformed state of vague awareness. The psychological distribution of forces in the mind is being differently polarized with this constant interplay of mood and directed feeling.

But what is perhaps more surprising is that to see the whole in the part can take place even within atomistic settings. Mathematics is based on set theory for the most part, an atomistic foundation to be sure. Kurt Gödel, describing the proofs of his theorems on the incompleteness of arithmetic for which he is justly celebrated, said: "[it is] not self-contradictory that a proper part should be identical to the whole. The structure of the series of integers, e.g., contains itself as a proper part, and it is easily seen that there exist also structures containing infinitely many parts, each containing the whole structure as a part."¹² Anyone who has gone through Gödel's long proof can agree to the correctness of these statements showing a synthetic mental frame blooming within an atomistic foundation. All of which should make fully clear that to reduce a reasoning to its presumably ultimate components is not always to clarify but rather can become a form of obfuscation. Not that atomistic analysis is necessarily wrong, of course, but that analysis does not explain concreteness, it merely points at abstract regularities which, important as they may be, leave behind the fullness of reality in the flesh.

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NOTES

1. *Webster's Third New International Dictionary*, Springfield, MA: G.&C. Merriam Co., 1961, p. 901.
2. W. Köhler, *The Task of Gestalt Psychology*, Princeton, NJ: Princeton University Press, 1969, p.61. The quotation is from a lecture given by Planck in New York City in 1909.
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