

On sandwiches: a Post-modern Reflection.~~(For ARTFORUM New York).~~

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"Chaos is undiscovered order, and order is undiscovered chaos". The first part of that statement is an article of Modern faith: every apparently chaotic phenomenon hides some order, and it is the business of reason to pierce the appearance and discover that order. The second part of the statement is an articulation of Modern despair: everything that appears to be orderly floats on an absurd chaotic mess into which we are thrown at birth without having been consulted. The two parts of the statement seem to contradict each other, and Modern age may be considered an oscillation between the the poles of that contradiction. On the one hand faith in the progress of reason, (of pure and applied science), on the other hand the deep-rooted existential conviction that every human effort is vain in the face of death. We know of the barbarous atrocities which have marked the two extremes of that oscillation during the last stages of Modern age: of the murderous attempt by "leftist" totalitarian regimes to force the unruly behavior of individuals and of society into what they hold to be an underlying order; and of the even more murderous appeal to irrational behavior by "rightist" totalitarisms.

But the two parts of the statement do not in fact contradict each other. What the statement means is this: if reason penetrate disorderly phenomena far enough it will discover some order, and if it penetrates far enough such an order, it will discover disorder. The statement implies that both the objective and the subjective world have a sandwich structure: that they are composed of alternating levels of order and of disorder. An example for the objective sandwich: the disorderly motion of snow flakes hides orderly motion, (for instance free fall), and that orderly motion hides a disorderly one, (for instance particle jumps). An example for the subjective sandwich: an orderly, (rational), act hides disorderly psychic motives, and that disorder hides some orderly psychic system. In fact: the statement suggests that each and every phenomenon, be it physical, biological, psychic or social, will reveal, under analysis, a sandwich structure. And Goedel's theorem shows that even such highly ordered systems like logic and mathematics have that structure.

How are we to visualize such a sandwich, and how are we to live with it? Is it like a building composed of an infinite number of storeys, wherein the elevator of reason ascends and descends, going from victory to defeat, and from defeat to victory? Or is it more like a loop composed of successive layers, wherein the "last" level precedes the "first" one somewhere outside our field of vision? Are we to trust reason, because it accumulates victory after victory, or are we to give up hope in reason, because it goes from defeat to defeat?

Let us have a closer look at the sandwich. At first sight, its levels do not seem to be neatly separated. Each level seems to be a fuzzy set which tends to invade the fuzzy sets above it and below it. Gray zones seem to stand between the levels. For instance: the nuclear phenomena seem to occur in a gray zone between orderly orbits and disordered particle jumps. At second sight, however, it may be seen that the fuzziness is not within the sandwich, but within the phenomenon it analyses. It is the phenomenon which is gray. For example: a cat chases a mouse.

This phenomenon may be ranged within the sandwich level "animal behavior", which is one of disorder. And within the sandwich level "niches within an ecosystem", which is one of order. And within the sandwich level "origin of species by chance mutations", which is one of disorder. How does the cat chase? In a chaotic fashion? Or according to the order imposed on it by its ecosystem? Or in a fashion imposed on it by its genetic information, which is a chance product? Those are of course wrong questions. The cat chases as it does, it does not chase within the sandwich. It is the sandwich which analyses the chase into neat levels of order and disorder. The sandwich is black/white/black, (order following disorder and being followed by disorder), the cat's chase is gray, and the whole purpose of the sandwich is to analyse that grayness.

But although the sandwich is neither fuzzy nor gray, it is a curious sandwich. Each of its levels claims phenomena claimed by other levels. Does that mean that the levels contain each other, like in a Russian doll? No doubt, the sandwich is more like a Russian doll than like a rule: the level "ecosystem" is contained within the level "animal behavior". But it is like a reversible Russian doll: the level "animal behavior" is contained within the level "ecosystem". A small doll being able to contain a big one? Like the brain which contains the universe it is contained in? The sandwich is contorted in a kind of Russian doll cannibalism: each level trying to devour all the others. It is contorted, because it tries to distinguish order from disorder in the gray concreteness of the world around us and within us.

The sandwich invites us to accept the grayness of the concrete world as a point of departure. To put it more dynamically: to accept that everywhere around us and within us orders emerge from disorder and merge back into disorder. Of course: take isolated, this is a very banal statement. But if taken within the sandwich context, it is anything but banal, because it invites us to abandon some basic beliefs and values of Modern civilisation, and it challenges us to elaborate a new civilisation.

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If we accept the sandwich, (as we must, given the present stage of scientific knowledge), we have to accept that the search for some fundamental order is vain, not for practical, but for theoretical reasons. Because such a fundamental order containing all the other levels must sit on some disorderly level which contains it, (together with all the other levels). Now this implies that we have given up Modern science. Which is a discipline in search for that fundamental order, for a "mathesis universalis", for a "universal combinatory game of theorems and algorithms". If we admit, (as we must), that science can never, (and for theoretical reasons), achieve fundamental knowledge, and therefore can never provide us with mastery over the world and ourselves, then Modern science is over.

On the other hand, however, there can be no doubt that we owe the sandwich to Modern science. And the sandwich shows us that scientific method is not limited, in its competence, to the orderly levels, and that it must capitulate

when it reaches disorderly levels. It shows exactly the opposite the scientific method is competent to penetrate any disorderly level and discover some order below it. It is precisely because science stumbles over and over again, <sup>because</sup> ~~that~~ it hurts itself again and again against disorderly levels, that it can penetrate ever deeper into the concrete grayness of the phenomenal world. Thus the sandwich has us admit both that science is incompetent for some fundamental level, and that it is competent to advance indefinitely.

Which boils down to this: we have to re-define science and its place within the tissue of civilisation. We can no longer conceive of science as a search for "truth", (~~whatever that word may mean~~ <sup>unless we redefine that word</sup>), but we have to conceive of it as a method to carve various levels of order out from the concrete grayness around us and within us. Like a sculptor who carves a figure out from the grayness of marble, Was that figure within the marble, before the sculptor carved it? Were those orders within the phenomena, before science carved them? Those are typically post-modern questions. In other words: we have to re-define science as one among the art forms, and we have to define the sandwich, (that scientific model), as a sort of chisel. And this is bound to have profound consequences for post-modern civilisation.

Modern civilisation is divided in two unequal branches which communicate with each other with great difficulty: the branch of scientific and technical culture, and the branch of artistic culture. This division is due to the Modern belief that science "discovers", while the arts merely "invent", and this is precisely what we no longer believe. We no longer believe that scientific reason is, for some mysterious "harmony", adequate to the fundamental structure of the world. The sandwich has us accept the fact that all the orders which science "discovers" were previously invented in the sandwich. That the "laws of nature" which science discovers were previously injected into nature by the sandwich. Which is precisely what the sculptor does, (and what all the arts do). Scientific method is different from all the other artistic methods, like all the other methods are different from each other. But of course: it is an extraordinarily powerful method. Thus post-modern civilisation can no longer maintain the division between science and the arts, and it will re-establish its unity lost during the Renaissance.

But this is easier said than thought through. Because the fusion of science and art poses some formidable problems. One of which is this: if we admit that science is an art form, (and therefore that the arts are branches of science), we have abandoned the distinction between discovery and invention, between "truth" and "fiction". For example: the sandwich under consideration is then just as true and/or just as fictitious as is a poem, a painting or a musical composition. It is just as much a work of art as they are. Which implies a definition of "truth" which we are far from having elaborated. But what we can say even now is this: the sandwich, (this scientific model), is a glorious work of art, a kind of immaterial cathedral erected by scientific reason. And this is a post-modern way to appreciate it.

And it is only one view among many. As yet unimaginable and inconceivable perspectives open up, once we have learned to substitute Modern faith in science, (which now appears to be naive), by some more sophisticated attitude toward science. If we accept that science is an art form, and that the arts are epistemological disciplines, we may expect science and all the other arts to develop in close communication with each other. And the results of such a fusion are too staggering to be even envisaged at the present stage of civilisation. Thus the present decay of faith in science, (noticeable everywhere, and most significantly within the scientific texts), need not necessarily have pernicious effects. Modern civilisation will not necessarily be followed by technocratic barbarism, (by uncritical application of science), nor by irrational bestialism, (by abandon of science and reason). It may be followed by a post-modern civilisation in which reason is liberated from unreasonable expectations to develop more fully. And this is, after all, the meaning of the sentence which opens this paper.