Wladimir Weidlé

BIOLOGY OF ART: INITIAL FORMULATION AND PRIMARY ORIENTATION

1. For a good while, men of high intelligence have been extolling a strictly descriptive phenomenological theory of art, concerned with the work of art itself and with its effect upon the spectator or the audience. Moreover, theories exist which tend in this direction, but sometimes they are still contaminated with the methods of psychological aesthetics, and sometimes they devote too much effort to combating those methods and to defining their own theory rather than putting it to the test of application.

The work of art is an object that exists solely for the human understanding, but which exists for it objectively—that is to say, outside or beyond individual variations of perception. Anyone who wishes to achieve results in this field—provisional results, to be sure, but at least concrete and capable of being verified or corrected—must describe both the common denominators and the distinctive traits of such objects.

Yet, as soon as one moves in this direction, one is obliged to ac-

Translated by Elaine P. Halperin.

https://doi.org/10.1177/039219215700501701 Published online by Cambridge University Press

knowledge a fact which, so far, seems to have escaped the attention of those writers who have thought about such matters. This fact is the following:

2. *A clearly defined similarity of structure exists between works of art and living organisms.*

We say a "similarity of structure," not one of activity or function, since the work of art does not live in the proper sense of the word "live." However, we must immediately add that, figuratively, it does live and that this figurative sense is neither arbitrary nor illogical. A work of art continues to exist in the consciousness of successive generations who know and understand it—to exist while changing, while living, one might say—for they understand it differently. And is it not true that this same faculty for self-renewal, while remaining identical with itself, which is proper to the work of art, is also found in the vegetable and animal kingdoms? It could even be that concepts such as ontogenesis and phylogenesis are not entirely inapplicable to the work of art, since it is the progressively elaborated product of a living being and since it maintains relations of filiation with other works of the same kind which precede or follow it in the sequence of time. And so we can already foresee why a theory of art, or some part of this theory, might equally well be called biology.

However, we cannot hope to shed light on a subject such as this by approaching it through metaphors, even justifiable ones, or analogies, though they may be significant. Only a study stemming from strict morphology, that is to say, from a method equally applicable to the sciences of nature and to those of the mind, will enable us to establish a solid foundation for what will follow.

3. The morphological affinities between living organisms and works of art are in no way limited to what follows from the very terms we have just used: "organism" and "form" (implied in the word "morphology").

The term "organism," highly favored by the German Romantics, was made by them to play an important role in literary criticism and in the philosophy of art as well as in political and sociological thought, with the result that much of its exact meaning was lost. Therefore it ceased to designate, outside the natural sciences, anything except a whole of any sort whatsoever which is not reduced to the sum of its parts (*Ganzheit*). As a consequence, we no longer even know whether or not its derivative, "organic," refers to that which is proper to living organisms; that is why certain German biologists prefer the adjective "organismic" or "organological." The fact is that a living organism possesses properties quite different from those of a *Ganzheit* and that the work of art, as we will demon-

strate, presents not only an organic structure but an "organismic" one as well.

As for the word "form" it can be useful to us only within the limited scope of its meaning when it translates the term *Gestalt;* and even then the concept that it designates remains too large for the likeness that we are attempting to define. In the beginning it might be more useful to us than the generalized concept of organism, which it renders more precise on more than one point; but it does not suffice for truly essential formulations. The work of art, like the living organism, is a form, a *Gestalt,* but, like it, it is something more. And in both cases this supplementary qualification is, to a certain extent, the same.

4. Every form possesses the following characteristics: it is sharply distinct from that which surrounds it or serves as its background; it is composed of correlative elements whose relations cannot be changed without altering or destroying it; it is a whole which cannot be reduced to the sum of its parts; it is transposable, which means that we recognize it as identical throughout many changes in dimensions, in position, or in musical tone and octave (when we are concerned with the form whose name is melody).

The first two characteristics, which might be called closure and coherence (*Geschlossenkeit* and *Zusammengehörigkeit*), although rarely mentioned, are not less fundamental than the two that follow, in which we recognize the *Gestaltqualitäten* described by von Ehrenfels in his famous study of 1890. Of these, the second had not been described prior to him, while the first is confused with *Ganzheit* and consequently with the notion of organism in its broad and figurative sense. Be that as it may, the fact remains that the concept so often defined since then and which we have just set down embraces not only works of art and living organisms but also crystals, geometrical figures, Koehler's *physische Gestalten,* the totality of manufactured objects, the sum of works of the mind. Everything, or almost everything, is *Gestalt:* a box of matches and the Parthenon, a game of chess and the *Ninth Symphony,* Michelangelo's "Moses" and Charlie Chaplin's mustache, my concierge and her lodge, a beehive, a bee, a swarm of bees. Of course it is not unimportant that a statistical fact like the number of suicides in Paris in 1954, a mere mass of sensory effects like the noise that rises from the street to my window, can no longer be contained in this excessively broad category. This proves that such a fact can be useful to us—but on condition that we define what it fails to define sufficiently.

5. What are the morphological characteristics that properly belong to

living organisms and distinguish them from inanimate forms? Buytendijk raised this question thirty years ago and answered it satisfactorily. He was not greatly concerned with the fact (which he thoroughly understood but which was not germane to his remarks) that his answer was valid for forms other than those to which he pointed directly and that the distinctive characteristics which he indicated were also those of works of art.

His observations enabled him to establish several principles. Of these, the richest in its applicability is doubtless that which he aptly termed "irregular regularity." In comparing a circle, an ellipse, the shape of an egg, and the contour of a linden leaf, he demonstrated that, in relation to its predecessor, each expresses a greater degree of freedom. Freedom, as we use the term here, remains compatible with the maintenance of a rule. The rule for an ellipse is less rigid than that which governs a circle, still more flexible for the contour of an egg. However, it is the most supple of all for a leaf, and the least formulable by number or in words, although at the same time it is perfectly evident and immediately recognizable among those which determine a thousand other leaves. The circle does not vary except in regard to its dimensions; the ellipse varies within its very narrow limits; the variations of the egg are far more numerous; and the variations of the leaf are innumerable, although by no means unlimited. The degrees of freedom in this connection are at the same time the degrees of approximation to the laws of animal and vegetable form. This rule, devoid of rigidity, is a moderate one that does not disavow itself and never becomes the absence of a rule; it is observed everywhere, in everything that is related to living things. One of its most obvious expressions is that bilateral symmetry so characteristic of the structures of the organism (even embryonic ones); we must add that this bilateral symmetry is always slightly asymmetrical and that, because of its very nature, it achieves equality by contrast. Moreover, what is true of vital statistics is also true of dynamics, for none of the vital rhythms—such as those of growth, respiration, circulation of the blood, etc.—can be regulated by a metronome, and all of them, within certain limits (always moving), can slow down or accelerate.

Irregular regularity must be regarded, even more so than was done by Buytendijk, as a universal law of living form—a law which is reflected variously in most of the other normative principles that allow themselves to become established when the problem arises of distinguishing these forms from inanimate ones. But what we, for our purpose, must stress above all is that this law is equally valid for all forms of art in any field of artistic creation. Musical rhythm, like breathing, cannot be fixed by a

metronome. The rhythm of any poem of value never coincides with the metrical formula that serves as its framework or establishes its limits. In the composition of a bas-relief or a painting the "rules" of proportion or symmetry are never observed literally or even without express derogation. And the most "regular" art of all, that of the architect, which must conform to the rules of an ineluctable computation, does not do so without some artifice, which is precisely what distinguishes it from the technical dexterity of an engineer.

Furthermore, one must not imagine that this derogation, which is always present in a rule that it does not abolish, remains so secret that it cannot be discerned without recourse to precision instruments. It is evident to any partially trained ear. It is visible to the naked eye, provided the eye in question is capable of appreciating a visual form. It is true that only the exact measurement of the Parthenon toward the middle of the last century revealed the fact, surprising at first, that all its vertical and horizontal lines are actually curves; but the Greeks knew it and felt it. Vitruvius knew something about this, and, since the archeologists have opened our eyes, we, too, perceive it directly (with a little good will). The architect, moreover, has many other means of violating, or perhaps of merely disguising, the rigidity of his computations as well as that of the very matter in which his thought takes shape; and even if we did not take such precautions, during the long centuries an edifice is assured a certain minimum of irregularity because of the essentially manual work of those who erect it. Moreover, if in our times we feel the need to *vivify*, by this or that fortuitous means, the somewhat dull results of exclusively mechanical work, this merely proves once again—and the verb that we have italicized only serves to emphasize this—how much irregular regularity is characteristic of what is *living* and of the narrow bond that exists between the attributes of living form and those of artistic form.

6. If we return now to our initial concept in order to extract from it the particular traits that living organisms and works of art have in common, we will immediately see that the properties of *Gestalt*, which we enumerated above, are not all fixed on the same level. Transponibility, whose meaning is clear as long as we think of the melody or of any other figure in time and space, is not, in the same sense, attributable to objects whose form is inseparable not only from some of their material attributes but also from the sum of these. As for the primary trait of all form, which is to be distinct from that which surrounds it, it acquires, to be sure, a special and increasing value when it belongs to a plant, an animal, an architectural,

plastic, or musical work; but, as long as it is considered separately, just what this increase in its value consists of is rather difficult to formulate clearly. In order to do this, one must examine not the external embodiment of the *Gestalt* but its very nature, the relation within it between the whole and its parts.

This relationship, which is always a real bond, can never, as we have seen, be reduced to one which would result from a mere addition. But precisely this non-additive characteristic of form, although sufficient to define it whenever it is neither a work of art nor a living organism, ceases to be so when it is either one or the other. In the two latter instances, not only are the parts not added but they are not integrated into the whole of the form: it is the whole which comes before all else and which is articulated into its parts. From a morphological as well as a genetic point of view, the whole precedes the parts in a living organism. This is so because, on the one hand, the parts have neither life nor meaning apart from the whole, and, on the other, they spring from the progressive differentiation of a relatively undifferentiated whole. As for the intelligible organism of a work of art, it is due, too, to the differentiation of a spiritual germ and cannot be conceived (in the two senses of the word) by means of its assembled parts, even if they were assembled according to a far more complex rule than that of addition. By and large, the parts belong to the whole, like so many of its members or organs; they belong to it and do not subsist without it. But, even if it should lack some of them, it nonetheless remains identical with itself.

Such a marked prevalence of the whole over its parts explains well enough that increase in projection, relief, and fertility to which we have already alluded and which at first seemed rather inexplicable to us. A certain minimum of fertility—like a certain degree of unity, higher than that of an additive group—characterizes every form without exception. But, when it is a question of a work of art or of a living organism, this fertility (increased)—and this unity as well (being also more complete)—appears not as a result of a prior process, such as the constitution of the whole or the integration of the parts, but as a quality inherent in the whole itself, insofar as it is unique and strictly original. Coherence, closure, and fertility constitute a single entity, and all three seem to emanate from this central characteristic of the *Gestalt*, which we call unity or, more explicitly, prevalence of the whole over its parts. To convince one's self of this, one has only to imagine a large, isolated tree, a wild animal (even though caged), a fountain by Bernini; or to think about the function of a frame,

of a pedestal, of a brief interval of silence between two pieces of music or two poems. In the case of these last three examples, moreover, plainly supplementary procedures are involved; if a painting requires a frame, it is because it prefigures one, bears it within itself, in the same way that plants or animals do. And a symphony, at both its beginning and its end, implies—we might even say engenders—silence.

Compare a machine, a tool, a utilitarian building to a living organism, to a work of art. When the unity of a form prevails over its multiplicity, when this multiplicity is the result and in a sense the confirmation of the unity, form thereby acquires a particular fertility that one finds neither in inorganic nature nor in the technical creations of man.

7. To these two special characteristics of forms which we have mentioned—primacy of the whole and irregular regularity—a third must be added, but it is difficult to give it a name without engendering misunderstandings. We will call it "surpassingness" in order not to call it superfluity or overabundance.

All form can be considered from the point of view of its internal finality: the function of its parts in relation to the whole, the "services" that the parts render to the whole. This finality can be surpassed by another, by a "service" rendered to something besides the form itself, but it is not of this surpassingness that we wish to speak. The purpose of the wheels of a machine is to constitute this machine while the machine itself pursues the end assigned to it by its constructor. The organs of a living being do not constitute the being; they belong to it, but they nonetheless perform the various actions necessary to its existence. In order to deal here with our real concern, we will make no mention of the finality of this being in relation to another or to the sum of living beings. Our concern here has to do with another kind of surpassingness: that which living organisms achieve when they present traits that do not admit of any teleological explanation. Fertility is one such trait insofar as it emanates from what all forms have in common—especially that fertility which is the mark of highly differentiated organisms and which it is hard to avoid naming with emphasis.

Parallel to it, but not to be confused with it, such a great wealth and variety of formation exist in nature that it surpasses by far anything that one might attribute (depending upon the point of view one adopts) to the influence of the environment, to the complex effect of heredity, to the real needs of any particular organism. Today we must accept as fact that the multiplicity of animal and vegetable forms cannot be reduced to the markedly lesser multiplicity of their conditions of existence; that, for ex-

ample, hundreds of diverse aquatic plants grow in an almost uniform maritime environment; that the infinitely varied coloration of the wings of butterflies cannot be appreciated by their rather imperfect visual organs and yet far surpasses the exigencies of imitation; that the very striking contrast between the external appearance of the tiger and the lion (all the more striking when we realize that their skeletons are almost identical) is only to a limited extent explicable in terms of assimilation to the places which serve as their respective homes.

It is this surpassingness—not in the direction of a new goal but toward a gratuitous richness—which impresses us once again when we regurn to the field of art. The following is the rule to formulate for this domain:

The work of art can never be reduced to that which would suffice to make of it a work of art.

Just as a living organism is not content with what would, according to the most exact estimates, make it perfectly viable, and takes on traits which, in the sober eyes of science, are but superfluous adornments, so the work of art will never cease to astonish the critic by its manifest obstinacy in desiring to surpass the necessary and to offer him even more than full measure. And we are not referring, in this connection, to individual traits (traits that suffice in distinguishing one work from any other) or to the specific exuberance which characterizes certain collective or personal styles. Without changing anything at all of its classical manner, a tragedy by Racine is as far in excess of its own law as a drama by Shakespeare is beyond its own; and Chateaubriand's style is no more "excessive" in this sense than Stendhal's. Surpassingness is as much the secret attribute of a Bach fugue as of *Tristan*, of a Corot as much as of a Greco. Every work of art is so constituted that something is added to it which, however, neither it nor its perfection actually lacked. This is indeed one of the reasons why the use of the word "perfection" has proved to be so dangerous in art and literary criticism (the other reason being that the imperfect work is sometimes greater than the perfect). A work which possessed only perfection would lack life. In a living organism, even if we restrict ourselves to its immobile form, life manifests itself by an excess of life. The same is true of a work of art, as long as we see a form in it. Its formal value is a vital value.

8. Ever since the Greeks and their cumulative notion of *techne*, above all, ever since Aristotle, who was the first to theorize with this notion as his point of departure, European thought has become accustomed to placing works of art in the immediate proximity of utilitarian objects and technical con-

structions. This proximity, moreover, is real. Here and there we have to do with forms which, in addition, present surface affinities so obvious to the eye that we forget to think about the essential differences. Of course it is much harder to mistake a living organism for any kind of object resulting from the work of man than to confuse a work of art with an industrial product. And if, on the other hand, we remember that a work of art can easily be an object of practical interest at the same time, that this is even the most natural and the soundest basis for its being, we will agree that confusions of this nature are inevitable, and we will no longer be astonished to see them thrive during all epochs and at all stages of our civilization. But is this not reason enough to adopt a different point of view and to place works of art in an entirely different context?

This is what we have attempted to do. And it is Aristotle again who encourages us to persevere along this path, for we find in him the attractions of a philosophy that is very different from that which is usually followed, both when he compares man's productive work to that of nature and when he employs the same terms in speaking of the ordering of action in tragedy and the structure of the body in higher animals. Let us follow for a moment this second Aristotelian suggestion. Since we have established general principles concerning the similarity between living organisms and works of art, we will now examine the structure of the latter by imitating the procedure of the most elementary morphology, as we see it applied in the study of plants and animals.

Indeed, no sooner do we begin this study than we are led to a discovery: that of a fourth principle of similarity between forms of life and forms of art—the most valuable one of all from the standpoint of the method to be adopted regarding a theory of art based not on the analysis of sensations or emotions but on the description and comparison of works. This principle is the following:

9. *Every work of art is made of a tissue whose woof imitates the living tissue of organisms.*

In any form, whatever it may be, there is always the whole and the parts. When we have in mind a living organism, these parts are called organs and their subordination to the whole is closer (and more supple at the same time) than anywhere else excepting, as we have seen, in works of art. But living organisms—if they are articulated in organs which can, after all, be compared in certain respects to the wheels of a machine—present yet another structure to which inanimate forms are in no way comparable: their cellular tissue, their protoplasmic matter. The latter varies,

depending upon the organs, but it is invariably composed of living cells, except in certain places where, having ceased to live, they continue to fulfil a useful function. At first one is tempted to believe that nothing of the kind is possible where there is no life in the true sense of the word. But it is precisely this cellular structure of living matter which works of art imitate, and it is thus that their immaterial matter is structured.

Before examining the resemblance closely and verifying it, we must try to convince those who are inclined to deny the very fact that a structure of the form of art exists and that it can quite logically be called "tissue." In the field of plastic arts the best argument against such doubt is the possibility of distinguishing an original work from a copy, even one that is contemporary and excellent on all counts. The composition and everything that one could call the macrostructure of the original are to be found intact in the copy; only the scarcely perceptible nuances of the composition differ, the ductility and innervation of the design, the firmness or the infinitesimal tremor of the contour or the paint speck—in other words, the qualities of the microstructure which is the living tissue of the work: living because it interprets the life of the creator and also because it gives life to the created thing. As a general rule, the copy is less alive than the original; in a few exceptional cases it is just as alive, but its life is different: that of another creator. Of course it is impossible—as impossible in nature as in art—to perceive life without perceiving at the same time an individual life; but the two perceptions are distinct, and perception of the individuality is less immediate than that of life. Those who are accustomed to evaluating paintings know that if they begin by assessing attribution they run a greater risk of being mistaken about authenticity. First of all, they try to decide whether they are looking at an original or a copy and, with this in mind, to establish whether or not there is life—firsthand, not secondhand life—in the painting before them. The composition, the "forms," would tell them nothing useful; frequently they turn the painting upside down or cover most of it in order to examine one small part more attentively. Without being aware of it, they demonstrate in this way that the only thing that interests them for the moment is what we have called the tissue and, consequently, that the tissue exists.

It exists in all the arts. The fragment of an edifice is often more eloquent in this respect than that of a statue. Nine times out of ten the musician who leafs through a score knows by the hundredth bar whether the work he has in hand is living or dead. The man of letters who cuts the pages of a

new book has every reason in the world not to read beyond the tenth page (and sometimes the tenth line) if he feels that the texture of the language in the book he is reading lacks pith, vital energy. All this has always been known, even if only implicitly. The metaphorical use of words like "quick," "living," "vivify," proves this. What is less evident is that these metaphors reflect a very real state of affairs. The tissue of a work of art seems alive because it very closely imitates—as closely as is possible—the cellular tissue of organisms. And this is how it does so: it is entirely composed of units of brief duration or of reduced size which, in turn, imitate the internal structure of living cells. This imitation cannot, of course, go very far, cannot touch upon details that only a microscopic examination would reveal; but, by stopping at the threshold of all this complexity, it intuitively perceives the first foundation, the initial principle of the entire cellular architecture, to wit, the contrast between the protoplasm and the central portion. The latter is to be found within the units we have mentioned in the form of a contrast or tension between two opposing elements which can be very varied but which always seem both antagonistic and complementary—like the systole and the diastole or the two halves of a body constructed according to the rules of bilateral symmetry. We will call these quasi-cells "units of tension." And now we come to a formula that is more explicit than the preceding one:

10. *Every work of art appears at first as a tissue that imitates the cellular tissue of living organisms and is entirely composed of units of tension.*

If this rule must be modified, the sole reason for doing so would be to emphasize still more the resemblance to biological structures. Just as the living organism utilizes dead tissues in places, so the work of art can contain auxiliary elements integrated into its life but inert within themselves. These elements are especially numerous in architecture, but they are present in all the arts whenever the work is somewhat complex; they serve as its shell or skeleton. Moreover, there is continuity (as in living organisms) between the dead and the live parts of cellular tissue. The units of tension are unequal as regards the mass of vital energy that accumulates within them; the internal spacing between the two elements that constitute them varies. When this spacing exceeds a certain measure, their intensity decreases and can even become nonexistent in certain cases. Nevertheless, it is upon these units of tension and only upon them that the vitality of a work depends—a vitality which is nothing more than its formal value. The latter cannot be considered as its unique, its highest value, but the absence of such a value would not make it possible to realize any other

value in the same work. Units of tension are, for the works of art whose tissue they constitute, what the living cells of our body are for us. We are something other than our life; but what are we without life?

One long, then one short, syllable, one stressed syllable followed by another which is not stressed, a modulation which encounters another going in the opposite direction, a curve, a reverse curve, a movement in time and space and another that responds to it, two colors and two sounds that clash and become united, two inverse and juxtaposed structures—these are a few examples, the simplest ones, of what we have called units of tension. But all the tissues—and almost every work (like living organisms) can comprise many different kinds of these—do not present such an elementary texture. By combining the units of tension, which are very varied, in this or that way, by superimposing them and causing them to overlap with others, tissues can reach a rather considerable degree of complexity—yet never as great as that of the organism and its organs, never as great as that of the work of art itself and of the articulated parts which we can distinguish in it. What varies in the articulated parts and in their relationship to the whole is precisely their complexity; what varies in tissues is, to a certain extent, their thickness and, above all, their density. In order to assess the thickness, one must take into account the fact that often beneath the purely formal layer of tissue there is another layer, the semantic layer which reveals the "content" of the work (material as well as spiritual) yet which belongs to its formal structure. It is constantly present in art of which matter is the language, in figurative painting and sculpture, but it also plays a certain role in music and even in architecture. Like the more external "asemantic" layer, it is made up of units of tension (expectation and event, question and answer, sorrow and joy, impetus and failure, negation and affirmation). These units of tension are in continuous contact—agreement or struggle—with those of the other layer, which not only increases the thickness of the tissue but also helps to increase its density.

But, in any case, what matters first of all is neither the thickness nor the density of the tissue but its mere presence, its life, without which the work itself would be dead. The need of a living tissue, even if it is neither dense nor thick, manifests itself in the preference generally accorded, even when it is not a matter of art, to "manual work" as over against "machine work." Manual work, whose irregular regularity we praised above (in regard to architecture), because of its very nature produces surfaces and lines. Precisely because of this irregularity which is peculiar to them, these

surfaces and lines constitute a rudiment of tissue of very weak cellular tension but which is nonetheless alive, or at least capable of being integrated into the thicker tissue of a completely living work. Moreover, the internal structure of the units of tension, like their interweaving in the woof of the tissue, offers examples of irregular regularity at every step as well as examples of surpassingness—in other words, of a profusion and a variety that are never confined within the limits of the strictly necessary. Once again we must stress that the living and vital character of artistic form can be apprehended mainly in its tissue. That is why a study of this tissue, of its numerous variations and multiple possibilities, ought to constitute one of the most important chapters, perhaps the most important, in this new theory of art of which we have been able to give here only a first and very incomplete sketch.

11. We must speak even more briefly of that macrostructure of works of art which is the result of the relations between their whole and their parts. The general principle that obtains first of all in this connection is that of the primacy of the whole; but the pliancy with which it is applied, the freedom that prevails over any internal "economy" of the work of art, immediately reminds us of the principle of irregular regularity. The whole precedes the parts, produces them while differentiating between them. But so far as the rest is concerned, the internal organization of the work is pursued freely and can be invested with the most diverse forms. The parts can be numerous or few; they can be similar to one another or different; they can exist on the same level or be arranged in the most complex, the most rigid, hierarchy. In this domain, in contrast to the preceding one, the differences in complexity are almost unlimited. From the most simple parataxis to the most subtle hypotaxis, all art offers us every possible sample. This is why, when faced with these structures, our thinking is spontaneously oriented not toward the common denominator of works of art but toward their diversity and their apparent incompatibility.

This does not mean that a biology of art must attain its natural limits at this point. It merely means that in this domain it is easy to foresee the road that leads from morphology to genetics—and to the theory of evolution. Three avenues are open to inquiry in this connection. We will merely enumerate them:

a) Genesis of the individual work; the plasma from which it begins to grow; this growth viewed as differentiation; autonomous development and conscious elaboration; integration of heterogeneous elements; relation between the tissue and the macrostructure; the maturity of the work.

b) Evolution of the artist; structural development from one work to another; relations between the biological stratum of the person and the formal (therefore vital) aspect of his creations; relations between the aging of genius and the growing "transparency" of works.

c) After these two kinds of ontogenesis, phylogenesis. Is there any parallelism between these three processes and how far does it go? Can we observe an evolution (in the strict sense of the word) in the history of art? The distinction to be made between the (structural) development of forms and the historical succession of works of art viewed in their concrete reality; orthogenesis (partial) in natural history and in the history of art.

Finally, the study of the structure of works of art seems to open up perspectives in a field of research where, until now, scholars have very rarely ventured—that of the permanence of works, of their survival throughout the centuries. It is in this domain that those curious phenomena of regeneration or of regulation occur, to which we have alluded above. They can become somewhat explicable only if they are placed in relation to the extremely supple and plastic nature of every internal organization of a work of art. Just as in a living organism a particular tissue can, if it must, replace another, just as an organ can, at least partially, take over the function of another organ, and just as an increased glandular activity can supplement the lack of another activity, so the work of art seems to dispose of some secret means of repairing the wear and tear of the symbols which it employs and of replacing the unused elements of its formal structure by others which had been hidden before and which seems new to new generations. It might be said that this is life on the one hand and nothing but a semblance of life on the other. But a semblance of life that is so constant must be based upon something real, and it is this reality that a biologically oriented theory of art attempts to discover and comprehend.

12. The first advantage of such a theory over others which are possible in principle or which already exist is, we believe, that it can contribute, if only to a limited section of knowledge, to the closer union of the sciences of nature and those of the mind. This is one of the most urgent tasks of our times. The second advantage is that, through its directing principle, it indicates precise limitations to a discipline which would study works of art by concerning itself exclusively with their spiritual essence. It can thus lead to a metabiology of art. But the advantage that appeals to us the most is the third: this theory helps us to glimpse the meaning of human creation.

Life is prolonged by the life of the spirit. Where nature ends and the spirit begins, the incessant natural parturition does not stop. Man con-

tinues nature, not alone, as is wrongly believed, by making use of it through the powers of his own technical creation, but in a more direct way, by imitating it, by laboring like it, by transmitting the breath of life to the forms of his imagination. Art is a new nature, fixed on another level of being, but the rules which govern it are not new rules. Nature recognizes itself in art, and, even if the spirit has added something of its own to art, it remains nonetheless true that on earth the spirit, if it is to remain living, cannot abrogate the laws which are the laws of life.

https://doi.org/10.1177/039219215700501701 Published online by Cambridge University Press