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max bill

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with an essay by max bense

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the following essay has been written by  
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max bense: max bill

it is fitting to describe the works of max bill with the tools of modern aesthetics. among the artists, he has contributed more to its development than any other.

the decisive thesis of these aesthetics consists in the fact that the aesthetic reality of a work of art is not understood as a separate existent thematic "being", but as a sort of specific communication form, as an aesthetic message. according to the character of a message, it can be described in four ways: first, semiotically as a language of signs; second, as a view of topological relationships of neighboring elements, geometric figures, etc.; third, statistically, as a process of selection which distinguishes features of frequency from those of surprise; and finally, as a process of information, which communicates innovation, or an original aesthetic constellation. the mainly mathematical development of these processes is conditioned by the material nature of the elements they deal with. numerical reflections are always concerned with material data. as concrete art, by definition, demands a reduction of aesthetic reality or aesthetic processes to visual factors like colors and shapes, the material conception is just as characteristic for it as a mathematical thinking process in the broad sense. max bill has repeatedly drawn attention to this.

the semiotic description of max bill's concrete painting concerns pictures which must be understood as sys-

tems of relatively elementary polygons like squares, rectangles, triangles, etc.,—as screens—but also as configurations of points and straight lines. the semiotic description of these systems uses the classification of signs which was developed by the american, charles sanders pierce. accordingly, a sign must be understood as a triadic function, inasmuch as it exists first by itself, then in relation to an object, and finally in relation to an interpreter. correspondingly, the classification of signs is threefold as well: in regard to its own nature, in relation to the designated object, and in relation to the interpreter for whom it designates.

pierce found for each of these three classification possibilities again three classes of signs. better known is especially the classification related to the object, which distinguishes between the mere symbol, the index and the icon. relative to an object, a sign is a mere symbol when it is introduced purely nominally, quite independently of it. a sign functions as index in relation to an object if it maintains a realistic connection with it (as a road has a real connection with its destination). finally, a sign must be regarded as an icon, if it is identical in at least one respect with the object it designates (as is the case with a photograph).

the geometric figures like squares, rectangles, triangles, etc., which appear in the painting of max bill represent classes of such figures, and must therefore be understood as object-related icons. the arrangement of such figures



12 vier farbpaare um weisses zentrum  
four colour pairs around white center . 1961



into a system, however, considers certain further metric and topological relations. understood as signs, these establish real connections between those icons, and must be classified as indices. the concrete painting of max bill, semiotically speaking, becomes, therefore, “iconically constructed indices”. as regards the classification in relation to the simple “being a sign”, colors and forms appear, of course, as what pierce calls a “qualisign”, meaning as signs which are determined in a visually approachable quality. to the extent in which these qualities have a definite, singular appearance, they can further be called, with pierce, “sinsigns”. thus a typical concrete painting by max bill might also be described as an “iconical sinsign”. as iconical sinsign it represents obviously a combination, or more accurately a “supersign”, as it is called in aesthetics of information. one could go further in this classification, but even the statement that we are dealing here with iconically constructed indices or with iconical sinsigns materially exhausts the specific aesthetic process of super-sign formation and describes it semiotically.

topologically considered, the concrete painting of max bill prefers closed compositions (in contrast to tachistic and informal works which show a predominantly open character). this concerns not only the polygons themselves, but also their arrangement on the basic plane, or their system in this plane. occasionally one also observes appearances which, in the language of topology, are described as uniform structures. simple closed curves, which

divide the plane into an inner and an outer area, predominate, though there are also drawings of simple open lines, which have no dividing functions. among the sculptures, two-sided closed planes like a sphere or torus (in contrast to arp) are rare. more frequent are planes with curved edges, for instance discs; surprising and famous is the exploitation of the well-known monoplane of the moebius belt for sculpture forms.

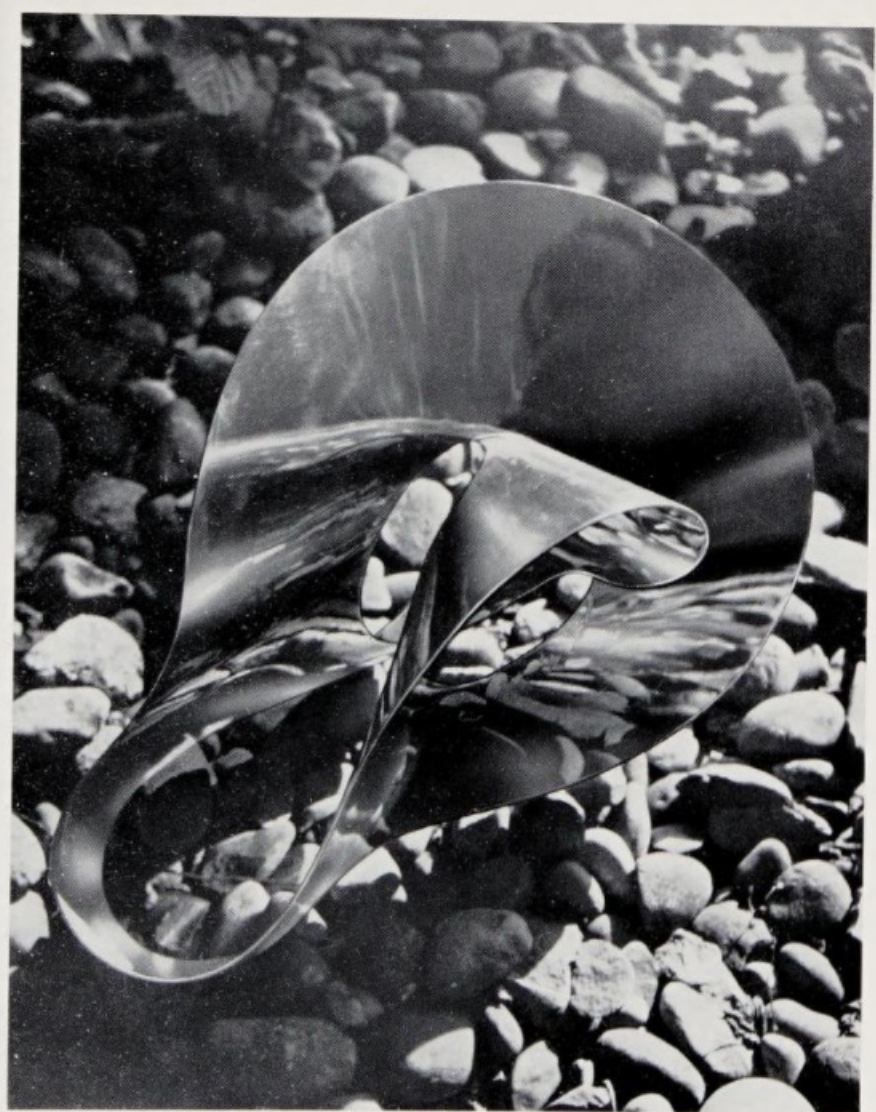
into this context belongs also the critical appraisal of max bill's painting according to the aesthetic standard which the mathematician g. d. birkhoff has introduced. according to birkhoff the aesthetic standard is a function of the degrees of order and complexity of the examined object. with the numerical increase of the degree of order grows also the aesthetic standard, but with the increase of the degree of complexity the aesthetic standard declines. this is plausible. the complicatedness of a form interferes with its aesthetic effect. order strengthens it. birkhoff has demonstrated his theory particularly on the variety of polygons. here the degree of order is determined by the existence or absence of vertical axes of symmetry, of rotation symmetries, right-angled grid systems, straight lines (which emanate from the center and dissect the figure only once), etc.

as degree of complexity we may use the smallest number of straight lines on which the polygon sides are based. in any way we see that the square has the highest aesthetic standard quotient. then follow the rectangle, the

triangle with equal sides and the regular pentagon. in this way bill's obvious preference for squares among polygons may be aesthetically justified. combinations of squares should be judged accordingly. to calculate the coloration degree of the polygonal constructions, it is of course necessary to consider among the factors of order the presence or absence of vertically, horizontally, or even diagonally oriented contrasts, covering grids and complementary colors. to calculate the complexity, on the other hand, the number of colors and contrasts would have to be considered. mathematical calculations would immediately show that the generally high degree of birkhoff's aesthetic standard in bill's color-form-compositions is the result of the fact that they achieve a high degree of order with a relatively low amount of complexity. this is a statistical fact which shows a distinct displacement in an area of small probability, on which the aesthetic level of compositional division is based.

the process of selection of max bill's concrete painting is herewith attained, and the statistical description intended. to calculate entropies of these pictures, in other words the states of distribution and mixture of used materials, they have to be grasped as organized quantities of elements, as for instance fucks has done in reference to texts. just as fucks divides his texts into one-, two- and three-syllable words, calculates their degree of mixture and calls this "text entropy", so can we divide a painting by max bill through a suitable screen into a number of similar

plane-elements. each element can be characterized by certain numerically applicable feature-values, as for instance the number of appearing colors, contrasts, topological elements, etc. by application of the entropy formula we would be able to determine the median color entropy, contrast entropy, etc. as style characteristics of bill's painting. this would distinguish his work statistically from that of other, related, painters, as for instance vancouver. but such numerical results are outside of the scope of this essay. i would merely like to emphasize that the concrete painting of max bill and others is especially favorable for such statistical research because it is pronouncedly related to visual perception. all countable and measurable particles of aesthetic reality and its message become fused in the optical plane. everything is left to mere perception, almost nothing depends, for its existence, on apperception. the aesthetic message, to formulate it thus, has material supports, but no semantic ones. with this same statement, by the way, we can significantly justify the concept of "concrete" painting and beyond that the concept of "reduced" painting. reduced, in this context, means an aesthetic reality and message guided back to visual material and to elements of visual perception. this point brings up another thought. christian von ehrenfels, the founder of the gestalt-theory, has introduced beside the gestalt-principle also "purity" as a principle of aesthetic production. a rose shows "gestaltung", but a polygon demands purity. the principle of purity has of course an upper limit, but the principle



4 fläche durch eine linie begrenzt  
surface limited by one single line . 1948-64



19 verdichtung von violett zu gelb  
condensation from violet to yellow . 1964–65

“gestaltung” has not. gestaltung can be inexhaustible in regard to newness, to innovation, but purity produces no novelty, no innovation. it merely elaborates and graduates the unique-identical. thereby it creates redundance. it becomes obvious that concrete painting sharply limits in each individual painting form through purity and that the degree of innovation balances in a pre-stabilized way the degree of purity. only materially oriented aesthetic reality can show up such a balance, which is by definition also material. But there is another reason why we speak of “gestaltung” in proportion to purity in the paintings and sculptures of max bill. i have already emphasized the mathematical themes of his painting. but mathematical forms, like polygons, have primarily only an ideal existence. only after the exclusion of all accidental characteristics like their spacial-temporal fixation or their coloration, etc. are they purely that which they are thematically; namely, mathematical constructions. we call this area from which realistic accident is excluded the area of ideality. the ideality of mathematical construction can obviously only be aesthetically attained when the material formation is achieved within the category of purity, and when reality transcends to the existence of precision. we see that the aesthetic tasks of max bill’s concrete painting are rooted in considerable ontological difficulties; but it is also apparent that the categories of aesthetic reality are based in this area directly on ontological ones. the idea of the precision of beauty, if i may say so, does not limit the liberty of artistic selectivity and produc-

tivity, but enforces it; because in the augmented state of exactness the fragile, diffuse, disturbance-possibilities multiply as well,—the uncertainties, the random-bodies, the alternatives of choice. the information theory has taught us that in these cases the information increases.

we arrive thus at a last context in which max bill's concrete painting can be discussed. it is a context in which the material and mathematical concept of his pictures is included on one hand, but which transcends this into a new kind of meta-aesthetic, almost cosmological form of interpretation. much has been said about order, and we have been able through the thoughts of schrödinger, heinz von förster and gothard günther, to incorporate this concept into ontological and cosmological considerations. it has become clear that order may have several sources. first, order can be established out of disorder. disorder here is understood as a state of more or less evenly chaotic distribution, while order functions as a state of uneven, non-chaotic, more or less improbable distribution or arrangement. generally, we must think of the artistic process as a process of passage from non-organized material elements (like colors, shapes, etc.) into an organized, ordered distribution. schrödinger has described the process of life as a process of conception of order out of order. to stem deterioration, life, living bodies must take on order out of their surroundings, to be able to maintain themselves in a state of order. heinz von förster, a cybernetics researcher, published in 1960 a much discussed work "on self-organiz-

ing systems and their environments". in it he indicates a further principle for the creation of order, namely "order from noise", in which "noise" stands for a mixture of order and disorder. förster gives an example for this order principle. it is a box containing cubic magnets, the poles of which are concentrated in opposed corners. because of this polarisation the cubes represent individual entities of a high degree of order. they are easily moveable. by simply shaking this box it is possible to introduce into it energy of a high degree of mixture, in other words energy which contains all its possible graduations in mixed form. this introduced energy represents disorder. the result will be that the (dis-ordered) shaking will combine the (themselves ordered) cubes, by using the attracting and repulsing poles, to a new architecture of cubes. this, therefore, represents a kind of higher order on the basis of given order and given disorder. what i would like to deduct from this in reference to max bill's concrete painting, is that his pictures can not be understood if they are looked at from the aspect of creating order from disorder, nor from the aspect of creating order from order. it seems to me rather that the principle discovered by heinz von förster about the creation of "order from (order plus disorder)" must be aesthetically applicable. given polygons represent, like the cubes with magnetic surfaces, high individual order, while the intelligent intervention of the painter into the multiplicity of possible relations between these polygons represents energetic and rationally planned even distribution (therefore



disorder!). creations by max bill give the impression of being higher degrees of order gained from given lower degrees of order plus disorder. in any way they demonstrate this principle clearly. hidden in this is of course the aesthetically so decisive principle of the creation of super-signs, which we already found applicable in the description of the semiotic process. it has been correctly understood that the scheme of "order from disorder" more strongly represents individual graduations within order, while the scheme of "order from noise", in other words "order from order-plus-disorder", represents the scheme of subjugating lower degrees of order under higher degrees. obviously this idea of order appears also in the paintings of max bill. it is not the square as such which is presented in its aesthetic reality, but the aesthetic inclusion of this structure into a higher order and complexity scheme is demonstrated.

i have not wanted to suppress this, as i said, more cosmological aspect, because aesthetic and physical realities are connected with each other by way of their clear mathematical so-being. there is no intellectual activity which today could do without the rational aura. i think that the painting of max bill has visibly demonstrated this fact on aesthetic grounds. therefore i find it impossible to speak about his work in other than rational terms.

