GEORGE KUBLER

THE SHAPE OF TIME

REMARKS ON THE HISTORY OF THINGS

NEW HAVEN AND LONDON: YALE UNIVERSITY PRESS
1. The History of Things

Let us suppose that the idea of art can be expanded to embrace the whole range of man-made things, including all tools and writing in addition to the useless, beautiful, and poetic things of the world. By this view the universe of man-made things simply coincides with the history of art. It then becomes an urgent requirement to devise better ways of considering everything men have made. This we may achieve sooner by proceeding from art rather than from use, for if we depart from use alone, all useless things are overlooked, but if we take the desirableness of things as our point of departure, then useful objects are properly seen as things we value more or less dearly.

In effect, the only tokens of history continually available to our senses are the desirable things made by men. Of course, to say that man-made things are desirable is redundant, because man's native inertia is overcome only by desire, and nothing gets made unless it is desirable.

Such things mark the passage of time with far greater accuracy than we know, and they fill time with shapes of a limited variety. Like crustaceans we depend for survival upon an outer skeleton, upon a shell of historic cities and houses filled with things belonging to definable portions of the past. Our ways of describing this visible past are still most awkward. The systematic study of things is less than five hundred years old, beginning with the description of works of art in the artists' biographies of the Italian Renaissance. The method was extended to the description of all kinds of things only after 1750. Today archaeology and ethnology treat of material culture in general. The history of art treats of the least useful and most expressive products of human
industry. The family of things begins to look like a smaller family than people once thought.

The oldest surviving things made by men are stone tools. A continuous series runs from them to the things of today. The series has branched many times, and it has often run out into dead ends. Whole sequences of course ceased when families of artisans died out or when civilizations collapsed, but the stream of things never was completely stilled. Everything made now is either a replica or a variant of something made a little time ago and so on back without break to the first morning of human time. This continuous connection in time must contain lesser divisions.

The narrative historian always has the privilege of deciding that continuity cuts better into certain lengths than into others. He never is required to defend his cut, because history cuts anywhere with equal ease, and a good story can begin anywhere the teller chooses.

For others who aim beyond narration the question is to find cleavages in history where a cut will separate different types of happening. Many have thought that to make the inventory would lead toward such an enlarged understanding. The archae-

1. I owe my first concern with the problems set forth here to the works and person of the late A. L. Kroeber. Our correspondence began in 1938 soon after I read his remarkable study (with A. H. Gayton) on the Nazca pottery of southern coastal Peru, "The Uhle Pottery Collections from Nasca," University of California Publications in American Archaeology and Ethnology, 24 (1927). It is a statistical analysis based upon the assumption that undated items belonging to the same form-class can be arranged in correct chronological order by shape-design correlations on the postulate that in one form-class simple formulations are replaced by complex ones. See also A. L. Kroeber, "Toward Definition of the Nazca Style," ibid., 43 (1936), and my review in American Antiquity, 22 (1957), 319-20. Professor Kroeber's later volume entitled Configurations of Culture Growth (Berkeley, 1944) explored more general historical patterns, especially the clustered bursts of achievement marking the history of all civilizations. These themes continued as Kroeber's principal interest in the book of lectures entitled Style and Civilizations (Ithaca, 1956).

In an arresting review G. E. Hutchinson, the biologist, compared Kroeber's Configurations to internal or free oscillations in animal populations by subjecting Kroeber's work to mathematical expressions like those used in population studies.

ologists and anthropologists classify things by their uses, having first separated material and mental culture, or things and ideas. The historians of art, who separate useful and aesthetic products, classify these latter by types, by schools, and by styles.

Schools and styles are the products of the long stock-taking of the nineteenth-century historians of art. This stock-taking, however, cannot go on endlessly; in theory it comes to an end with irrefutable lists and tables.

In practice certain words, when they are abused by too common use, suffer in their meaning as if with cancer or inflation. Style is one of these. Its innumerable shades of meaning seem to span all experience. At one extreme is the sense defined by Henri Focillon, of style as the ligne des hauteurs, the Himalayan range composed of the greatest monuments of all time, the touchstone and standard of artistic value. At the other extreme is the commercial jungle of advertising copy, where gasolines and toilet papers have "style," and another zone where annual fashions in clothes are purveyed as "styles." In between lies the familiar terrain of "historic" styles: cultures, nations, dynasties, reigns, regions, periods, crafts, persons, and objects all have styles. An unsystematic naming on binomial principles (Middle Minoan style, style Francois Ier) allows an illusion of classed order.

The review is reprinted in The Itinerant Ivory Tower (New Haven, 1953), pp. 74-77, from which I quote: "The great man, born to the period where \( \frac{dN}{dt} \) is maximal [where \( N \) is the degree of pattern saturation] can do much. His precursors have provided the initial technical inspiration; much still remains to be done. If he were born to the tradition later he would, with the same native ability, appear less remarkable, for there is less to do. Earlier the work would have been harder; he would perhaps be highly esteemed by a small body of highly educated critics, but would never attain the same popular following as if he had worked at the time of maximum growth of the tradition. The rising and falling that we see in retrospect is thus to be regarded as a movement to and from a maximum in a derived curve. The integral curve giving the total amount of material produced seems to depend little on individual achievement, being additive, and therefore is less easily appreciated. We are less likely to think of 1616 as the date by which most Elizabethan drama has been written than as the date of Shakespeare's death."
But the whole arrangement is unstable: the key word has different meanings even in our limited binomial context, signifying at times the common denominator among a group of objects, and at others the impress of an individual ruler or artist. In the first sense style is chronologically unrestricted: the common denominator may appear at widely separated places and times, leading to "Gothic Mannerist" and "Hellenistic Baroque." In the second sense style is restricted in time but not in content. Since the lifetime of one artist often embraces many "styles," the individual and "style" are by no means coterminous entities. The "style Louis XVI" embraces the decades before 1789, but the term fails to specify the variety and the transformations of artistic practice under that monarch's rule.

The immense literature of art is rooted in the labyrinthish network of the notion of style: its ambiguities and its inconsistencies mirror aesthetic activity as a whole. Style describes a specific figure in space better than a type of existence in time.\(^2\)

In the twentieth century, under the impulse of the symbolic interpretation of experience, another direction of study has taken form. It is the study of iconographical types as symbolic expressions of historical change, appearing under a revived seventeenth-century rubric as "iconology." More recently still, the historians of science have conjoined ideas and things in an inquest upon the conditions of discovery. Their method is to reconstruct the heuristic moments of the history of science, and thus to describe happening at its point of inception.

The moment of discovery and its successive transformations as traditional behavior are recovered as a matter of program by the history of science and by iconological studies. But these steps only outline the beginnings and the main articulations of historical substance. Many other possible topics crowd upon the attention of this inquiry.

---

\(^2\) Meyer Schapiro, "Style," *Anthropology Today* (Chicago, 1953), pp. 287-312, reviews the principal current theories about style, concluding disparagingly that "A theory of style adequate to the psychological and historical problems has still to be created."
The history of an artistic problem, and the history of the individual artist's resolution of such a problem, thus find a practical justification, which, however, confines the value of the history of art to matters of mere pedagogical utility. In the long view, biographies and catalogues are only way stations where it is easy to overlook the continuous nature of artistic traditions. These traditions cannot be treated properly in biographical segments. Biography is a provisional way of scanning artistic substance, but it does not alone treat the historical question in artists' lives, which is always the question of their relation to what has preceded and to what will follow them.

*Individual entrances.* The life of an artist is rightly a unit of study in any biographical series. But to make it the main unit of study in the history of art is like discussing the railroads of a country in terms of the experiences of a single traveler on several of them. To describe railroads accurately, we are obliged to disregard persons and states, for the railroads themselves are the elements of continuity, and not the travelers or the functionaries thereon.

The analogy of the track yields a useful formulation in the discussion of artists. Each man's lifework is also a work in a series extending beyond him in either or both directions, depending upon his position in the track he occupies. To the usual coordinates fixing the individual's position—his temperament and his training—there is also the moment of his *entrance,* this being the moment in the tradition—early, middle, or late—with which his biological opportunity coincides. Of course, one person can and does shift traditions, especially in the modern world, in order to find a better entrance. Without a good entrance, he is in danger of wasting his time as a copyist regardless of temperament and training. From this point of view we can see the "universal genius" of the Renaissance more simply as a qualified individual bestriding many new tracks of development at a fortunate moment in that great renovation of Western civilization, and traveling his distance in several systems without the burdens of rigorous proof or extensive demonstration required in later periods.

"Good" or "bad" entrances are more than matters of position in the sequence. They also depend upon the union of temperamental endowments with specific positions. Every position is keyed, as it were, to the action of a certain range of temperaments. When a specific temperament interlocks with a favorable position, the fortunate individual can extract from the situation a wealth of previously unimagined consequences. This achievement may be denied to other persons, as well as to the same person at a different time. Thus every birth can be imagined as set into play on two wheels of fortune, one governing the allotment of its temperament, and the other ruling its entrance into a sequence.

*Talent and genius.* By this view, the great differences between artists are not so much those of talent as of entrance and position in sequence. Talent is a predisposition: a talented pupil begins younger; he masters the tradition more quickly; his inventions come more fluently than those of his untalented fellows. But undiscovered talents abound as well among people whose schooling failed to gear with their abilities, as among people whose abilities were unrequited in spite of their talent. Predispositions are probably much more numerous than actual vocations allow us to suppose. The quality talented people share is a matter of kind more than degree, because the gradations of talent signify less than its presence.

It is meaningless to debate whether Leonardo was more talented than Raphael. Both were talented. Bernardino Luini and Giulio Romano also were talented. But the followers had bad luck. They came late when the feast was over through no fault of their own. The mechanics of fame are such that their predecessors' talent is magnified, and their own is diminished, when
talent itself is only a relatively common predisposition for visual order, without a wide range of differentiation. Times and opportunities differ more than the degree of talent.

Of course many other conditions must reinforce talent: physical energy, durable health, powers of concentration, are a few of the gifts of fortune with which the artist is best endowed. But our conceptions of artistic genius underwent such fantastic transformations in the romantic agony of the nineteenth century that we still today unthinkingly identify "genius" as a congenital disposition and as an inborn difference of kind among men, instead of as a fortuitous keying together of disposition and situation into an exceptionally efficient entity. There is no clear evidence that "genius" is inheritable. Its incidence under nurture, in situations favorable to craft learning, as with adopted children reared in the families of professional musicians, marks "genius" as a phenomenon of learning rather than of genetics.

Purpose has no place in biology, but history has no meaning without it. In the earlier transfer of biological ideas to historical events, of which so many traces survive in the historian's diction, both typology (which is the study of kinds and varieties) and morphology (the study of forms) were misunderstood. Because these modes of biological description cannot be made to account for purpose, the historian working with biological ideas avoided the principal aim of history, which usually has been to identify and reconstruct the particular problem to which any action or thing must correspond as a solution. Sometimes the problem is a rational one, and sometimes it is an artistic one: we always may be sure that every man-made thing arises from a problem as a purposeful solution.

Biological and physical metaphors. However useful it is for pedagogical purposes, the biological metaphor of style as a sequence of life-stages was historically misleading, for it bestowed upon the flux of events the shapes and the behavior of organisms. By the metaphor of the life-cycle a style behaves like a plant. Its first leaves are small and tentatively shaped; the leaves of its middle life are fully formed; and the last leaves it puts forth are small again but intricately shaped. All are sustained by one unchanging principle of organization common to all members of that species, with variants of race occurring in different environments. By the biological metaphor of art and history, style is the species, and historical styles are its taxonomic varieties. As an approximation, nevertheless, this metaphor recognized the recurrence of certain kinds of events, and it offered at least a provisional explanation of them, instead of treating each event as an unprecedented, never-to-be-repeated unicum.

The biological model was not the most appropriate one for a history of things. Perhaps a system of metaphors drawn from physical science would have clothed the situation of art more adequately than the prevailing biological metaphors: especially if we are dealing in art with the transmission of some kind of energy; with impulses, generating centers, and relay points; with increments and losses in transit; with resistances and transformers in the circuit. In short, the language of electrodynamics might have suited us better than the language of botany; and Michael Faraday might have been a better mentor than Linnaeus for the study of material culture.

Our choice of the "history of things" is more than a euphemism to replace the bristling ugliness of "material culture." This term is used by anthropologists to distinguish ideas, or "mental culture," from artifacts. But the "history of things" is intended to reunite ideas and objects under the rubric of visual forms: the term includes both artifacts and works of art, both replicas and unique examples, both tools and expressions—in short all materials worked by human hands under the guidance of connected ideas developed in temporal sequence. From all these things a shape in time emerges. A visible portrait of the collective identity, whether tribe, class, or nation, comes into being. This self-image reflected in things is a guide and a point of reference to the group for the future, and it eventually becomes the portrait given to posterity.
Although both the history of art and the history of science have the same recent origins in the eighteenth-century learning of the European Enlightenment, our inherited habit of separating art from science goes back to the ancient division between liberal and mechanical arts. The separation has had most regrettable consequences. A principal one is our long reluctance to view the processes common to both art and science in the same historical perspective.

Scientists and artists. Today it is often remarked that two painters who belong to different schools not only have nothing to learn from each other but are incapable of any generous communication with one another about their work. The same thing is said to be true of chemists or biologists with different specialties. If such a measure of reciprocal occlusion prevails between members of the same profession, how shall we conceive of communication between a painter and a physicist? Of course very little occurs. The value of any rapprochement between the history of art and the history of science is to display the common traits of invention, change, and obsolescence that the material works of artists and scientists both share in time. The most obvious examples in the history of energy, such as steam, electricity, and internal combustion engines, point to rhythms of production and desuetude with which students of the history of art also are familiar. Science and art both deal with needs satisfied by the mind and the hands in the manufacture of things. Tools and instruments, symbols and expressions all correspond to needs, and all must pass through design into matter.

Early experimental science had intimate connections with the studios and workshops of the Renaissance, although artists then aspired to equal status with the princes and prelates whose tastes they shaped. Today it is again apparent that the artist is an artisan, that he belongs to a distinct human grouping as homo faber, whose calling is to evoke a perpetual renewal of form in matter, and that scientists and artists are more like one another as artisans than they are like anyone else. For our purposes of discussing the nature of happening in the world of things, the differences between science and art are nevertheless irreducible, quite as much so as the differences between reason and feeling, between necessity and freedom. Although a common gradient connects use and beauty, the two are irreducibly different: no tool can be fully explained as a work of art, nor vice versa. A tool is always intrinsically simple, however elaborate its mechanisms may be, but a work of art, which is a complex of many stages and levels of crisscrossed intentions, is always intrinsically complicated, however simple its effect may seem.

A recent phenomenon in Europe and America, perhaps not antedating 1950, is the approaching exhaustion of the possibility of new discoveries of major types in the history of art. Each generation since Winckelmann was able to mark out its own preserve in the history of art. Today there are no such restricted preserves left. First it was classic art that commanded all admiration at the expense of other expressions. The romantic generation again elevated Gothic art to the pedestal. Some fin de siécle architects and decorators reinstated Roman Imperial art. Others generated the languors and the botanical elaborations of art nouveau on the one hand, or the rebels among them turned to primitivism and archaic art. By a kind of rule of the alternation of generations between tuteary styles of civilized and rude aspect, the next generation decreed to baroque and rococo—the generation that was decimated by the First World War. The revival of interest in sixteenth-century Mannerism which flared during the 1930's not only coincided with great social disorders but it indicated a historical resonance between the men of the Reformation and those of a time of depression and demagoguery. After that, nothing was left to discover unless it was contemporary

The last cupboards and closets of the history of art have now been turned out and catalogued by government ministries of Education and Tourism.

Seen in this perspective of approaching completion, the annals of the craft of the history of art, though brief, contain recurrent situations. At one extreme the practitioners feel oppressed by the fullness of the record. At the other extreme we have works of rhapsodical expression like those dissected by Plato in the Socratic dialogue with Ion. When Ion, the vain rhapsodist, parades his boredom with all poets other than Homer, Socrates says, "... your auditor is the last link of that chain which I have described as held together by the power of the magnet. You rhapsodists and actors are the middle links, of which the poet is the first."

If the fullness of history is forever indigestible, the beauty of art is ordinarily incommunicable. The rhapsodist can suggest a few clues to the experience of a work of art, if he himself has indeed experienced it. He may hope that these hints will assist the hearer to reproduce his own sensations and mental processes. He can communicate nothing to persons not ready to travel the same path with him, nor can he obey any field of attraction beyond his own direct experience. But historians are not middle links, and their mission lies in another quarter.

The Historian's Commitment

The historian's special contribution is the discovery of the manifold shapes of time. The aim of the historian, regardless of his specialty in erudition, is to portray time. He is committed to the detection and description of the shape of time. He transposes, reduces, composes, and colors a facsimile, like a painter, who in his search for the identity of the subject, must discover a patterned set of properties that will elicit recognition all while conveying a new perception of the subject. He differs from the antiquarian and the curious searcher much as the composer of new music differs from the concert performer. The historian composes a meaning from a tradition, while the antiquarian only re-creates, performs, or re-enacts an obscure portion of past time in already familiar shapes. Unless he is an annalist or a chronicler the historian communicates a pattern which was invisible to his subjects when they lived it, and unknown to his contemporaries before he detected it.

For the shapes of time, we need a criterion that is not a mere transfer by analogy from biological science. Biological time consists of uninterrupted durations of statistically predictable lengths: each organism exists from birth to death upon an "expected" life-span. Historical time, however, is intermittent and variable. Every action is more intermittent than it is continuous, and the intervals between actions are infinitely variable in duration and content. The end of an action and its beginning are indeterminate. Clusters of actions here and there thin out or thicken sufficiently to allow us with some objectivity to mark beginnings and endings. Events and the intervals between them are the elements of the patterning of historical time. Biological time contains the unbroken events called lives; it also contains social organizations by species and groups of species, but in biology the intervals of time between events are disregarded, while in historical time the web of happening that laces throughout the intervals between existences attracts our interest.

Time, like mind, is not knowable as such. We know time only indirectly by what happens in it: by observing change and permanence; by marking the succession of events among stable settings; and by noting the contrast of varying rates of change. Written documents give us a thin recent record for only a few parts of the world. In the main our knowledge of older times is based upon visual evidence of physical and biological duration. Technological seriations of all sorts and sequences of works of art in every grade of distinction yield a finer time scale overlapping with the written record.

Now that absolute confirmations by tree-rings and earth-clocks are at hand, it is astonishing in retrospect to discover how very accurate were the older guesses of relative age based upon seriations and their comparisons. The cultural clock preceded all the physical methods. It is nearly as exact, and it is a more searching method of measurement than the new absolute clocks, which often still require confirmation by cultural means, especially when the evidence itself is of mixed sorts.

The cultural clock, however, runs mainly upon ruined fragments of matter recovered from refuse heaps and graveyards, from abandoned cities and buried villages. Only the arts of material nature have survived: of music and dance, of talk and ritual, of all the arts of temporal expression practically nothing is known elsewhere than in the Mediterranean world, save through traditional survivals among remote groups. Hence our working proof of the existence of nearly all older peoples is in the visual order, and it exists in matter and space rather than in time and sound.

We depend for our extended knowledge of the human past mainly upon the visible products of man’s industry. Let us suppose a gradient between absolute utility and absolute art: the pure extremes are only in our imagination; human products always incorporate both utility and art in varying mixtures, and no object is conceivable without the admixture of both. Archaeological studies generally extract utility for the sake of information about the civilization: art studies stress qualitative matters for the sake of the intrinsic meaning of the generic human experience.

The divisions of the arts. The seventeenth-century academic separation between fine and useful arts first fell out of fashion nearly a century ago. From about 1880 the conception of “fine art” was called a bourgeois label. After 1900 folk arts, provincial styles, and rustic crafts were thought to deserve equal ranking with court styles and metropolitan schools under the democratic valuation of twentieth-century political thought. By another line of attack, “fine art” was driven out of use about 1920 by the exponents of industrial design, who preached the requirement of universal good design, and who opposed a double standard of judgment for works of art and for useful objects. Thus an idea of aesthetic unity came to embrace all artifacts, instead of ennobling some at the expense of others.

This egalitarian doctrine of the arts nevertheless erases many important differences of substance. Architecture and packaging tend in the modern schools of design to gravitate together under the rubric of envelopes; sculpture absorbs the design of all sorts of small solids and containers; painting extends to include flat shapes and planes of all sorts, like those of weaving and printing. By this geometric system, all visible art can be classed as envelopes, solids, and planes, regardless of any relation to use, in a classing which ignores the traditional distinction by “fine” and “minor,” or “useless” and “useful” arts.

For our purposes two urgent distinctions should be added. In the first place a great difference separates traditional craft education from the work of artistic invention. The former requires only repetitious actions, but the latter depends upon departures from all routine. Craft education is the activity of groups of learners performing identical actions, but artistic invention requires the solitary efforts of individual persons. The distinction is worth retaining because artists working in different crafts cannot communicate with one another in technical matters but only in matters of design. A painter learns nothing about his loom and threads from study of the potter’s wheel and kiln; his education in a craft must be upon the instruments of that craft. Only when he possesses technical control of his instruments can the qualities and effects of design in other crafts stimulate him to new solutions in his own.

The second, related distinction touches the utilitarian and the aesthetic nature of each of the branches of artistic practice. In architecture and the allied crafts, structure pertains to traditional technical training and it is inherently rational and utilitarian, however daringly its devices may be applied to expressive ends. In sculpture and painting likewise, every work has its technical
cookery of formulas and craft practices upon which the expressive and formal combinations are carried. In addition, sculpture and painting convey distinct messages more clearly than architecture. These communications or iconographic themes make the utilitarian and rational substructure of any aesthetic achievement. Thus structure, technique, and iconography all belong to the non-artistic underpinning of the "fine" arts.

The main point is that works of art are not tools, although many tools may share qualities of fine design with works of art. We are in the presence of a work of art only when it has no preponderant instrumental use, and when its technical and rational foundations are not pre-eminent. When the technical organization or the rational order of a thing overwhelms our attention, it is an object of use. On this point Lodoli anticipated the doctrinaire functionalists of our century when he declared in the eighteenth century that only the necessary is beautiful. Kant, however, more correctly said on the same point that the necessary cannot be judged beautiful, but only right or consistent. In short, a work of art is as useless as a tool is useful. Works of art are as unique and irreplaceable as tools are common and expendable.

THE NATURE OF ACTUALITY

"Le passé ne sert qu’à connaître-l’actualité. Mais l’actualité m’échappe. Qu’est-ce que c’est donc que l’actualité?" For years this question—the final and capital question of his life—obsessed my teacher Henri Focillon, especially during the black days from 1940 to 1943 when he died in New Haven. The question has been with me ever since, and I am now no closer to the solution of the riddle, unless it be to suggest that the answer is a negation.

Actuality is when the lighthouse is dark between flashes: it is the instant between the ticks of the watch: it is a void interval slipping forever through time: the rupture between past and future: the gap at the poles of the revolving magnetic field, infinitely small but ultimately real. It is the interchronic pause when nothing is happening. It is the void between events.

Yet the instant of actuality is all we ever can know directly. The rest of time emerges only in signals relayed to us at this instant by innumerable stages and by unexpected bearers. These signals are like kinetic energy stored until the moment of notice when the mass descends along some portion of its path to the center of the gravitational system. One may ask why these old signals are not actual. The nature of a signal is that its message is neither here nor now, but there and then. If it is a signal it is a past action, no longer embraced by the "now" of present being. The perception of a signal happens "now," but its impulse and its transmission happened "then." In any event, the present instant is the plane upon which the signals of all being are projected. No other plane of duration gathers us up universally into the same instant of becoming.

Our signals from the past are very weak, and our means for recovering their meaning still are most imperfect. Weakest and least clear of all are those signals coming from the initial and terminal moments of any sequence in happening, for we are unsure about our ideas of a coherent portion of time. The beginnings are much hazier than the endings, where at least the catastrophic action of external events can be determined. The segmentation of history is still an arbitrary and conventional matter, governed by no verifiable conception of historical entities and their durations. Now and in the past, most of the time the majority of people live by borrowed ideas and upon traditional accumulations, yet at every moment the fabric is being undone and a new one is woven to replace the old, while from
time to time the whole pattern shakes and quivers, settling into new shapes and figures. These processes of change are all mysterious uncharted regions where the traveler soon loses direction and stumbles in darkness. The clues to guide us are very few indeed: perhaps the jottings and sketches of architects and artists, put down in the heat of imagining a form, or the manuscript trouvillons of poets and musicians, crisscrossed with erasures and corrections, are the hazy coast lines of this dark continent of the "now," where the impress of the future is received by the past.

To other animals who live more by instinct than do humans, the instant of actuality must seem far less brief. The rule of instinct is automatic, offering fewer choices than intelligence, with circuits that close and open unselectively. In this duration choice is so rarely present that the trajectory from past to future describes a straight line rather than the infinitely bifurcating system of human experience. The ruminant or the insect must live time more as an extended present which endures as long as the individual life, while for us, the single life contains an infinity of present instants, each with its innumerable open choices in volition and in action.

Why should actuality forever escape our grasp? The universe has a finite velocity which limits not only the spread of its events, but also the speed of our perceptions. The moment of actuality slips too fast by the slow, coarse net of our senses. The galaxy whose light I see now may have ceased to exist millennia ago, and by the same token men cannot fully sense any event until after it has happened, until it is history, until it is the dust and ash of that cosmic storm which we call the present, and which perpetually rages throughout creation.

In my own present, a thousand concerns of active business lie unattended while I write these words. The instant admits only one action while the rest of possibility lies unrealized. Actuality is the eye of the storm: it is a diamond with an infinitesimal perforation through which the ingots and billets of present possibility are drawn into past events. The emptiness of actuality can be estimated by the possibilities that fail to attain realization in any instant: only when they are few can actuality seem full.

Of arts and stars. Knowing the past is as astonishing a performance as knowing the stars. Astronomers look only at old light. There is no other light for them to look at. This old light of dead or distant stars was emitted long ago and it reaches us only in the present. Many historical events, like astronomical bodies, also occur long before they appear, such as secret treaties; aide-mémoires, or important works of art made for ruling personalities. The physical substance of these documents often reaches qualified observers only centuries or millennia after the event. Hence astronomers and historians have this in common: both are concerned with appearances noted in the present but occurring in the past.

The analogies between stars and works of art can profitably be pursued. However fragmentary its condition, any work of art is actually a portion of arrested happening, or an emanation of past time. It is a graph of an activity now stilled, but a graph made visible like an astronomical body, by a light that originated with the activity. When an important work of art has utterly disappeared by demolition and dispersal, we still can detect its perturbations upon other bodies in the field of influence. By the same token works of art resemble gravitational fields in their clustering by "schools." And if we admit that works of art can be arranged in a temporal series as connected expressions, their sequence will resemble an orbit in the fewness, the regularity, and the necessity of the "motions" involved.

Like the astronomer, the historian is engaged upon the portrayal of time. The scales are different: historic time is very short, but the historian and the astronomer both transpose, reduce, compose, and color a facsimile which describes the shape of time. Historical time indeed may occupy a situation near the center of the proportional scale of the possible magnitudes of time, just as man himself is a physical magnitude midway between the sun and the atom at the proportional center of the
solar system, both in grams of mass and in centimeters of diameter. 8

Both astronomers and historians collect ancient signals into compelling theories about distance and composition. The astronomer’s position is the historian’s date; his velocity is our sequence; orbits are like durations; perturbations are analogous to causality. The astronomer and the historian both deal with past events perceived in the present. Here the parallels diverge, for the astronomer’s future events are physical and recurrent ones, while the historian’s are human and unpredictable ones. The foregoing analogies are nevertheless useful in prompting us to look again at the nature of historical evidence, so that we may be sure of our ground when considering various ways of classing it.

Signals. Past events may be regarded as categorical commotions of varying magnitudes of which the occurrence is declared by built signals analogous to those kinetic energies impounded in masses prevented from falling. These energies undergo various transformations between the original event and the present. The present interpretation of any past event is of course only another stage in the perpetuation of the original impulse. Our particular interest is in the category of substantial events: events of which the signal is carried by matter arranged in a pattern still sensible today. In this category we are interested less in the natural signals of physical and biological science, than in the artifact signals of history, and among artifact signals we are concerned less with documents and instruments than with the least useful of artifacts—works of art.

All substantial signals can be regarded both as transmissions and as initial commotions. For instance, a work of art transmits a kind of behavior by the artist, and it also serves, like a relay, as the point of departure for impulses that often attain extraordinary magnitudes in later transmission. Our lines of communication with the past therefore originated as signals which become commotions emitting further signals in an unbroken alternating sequence of event, signal, recreated event, renewed signal, etc. Celebrated events have undergone the cycle millions of times each instant throughout their history, as when the life of Jesus is commemorated in the unnumbered daily prayers of Christians. To reach us, the original event must undergo the cycle at least once, in the original event, its signal, and our consequent agitation. The irreducible minimum of historical happening thus requires only an event together with its signals and a person capable of reproducing the signals.

Reconstituted initial events extracted from the signals are the principal product of historical research. It is the scholar’s task to verify and test all the evidence. He is not concerned primarily with the signals other than as evidences, or with the commotions they produce. The different commotions in turn are the proper territory of psychology and aesthetics. Here we are interested mainly in the signals and their transformations, for it is in this domain that the traditional problems arise which lace together the history of things. For instance, a work of art is not only the residue of an event but it is its own signal, directly moving other makers to repeat or to improve its solution. In visual art, the entire historical series is conveyed by such tangible things, unlike written history, which concerns irretrievable events beyond physical recovery and signaled only indirectly by texts.

Relays. Historical knowledge consists of transmissions in which the sender, the signal, and the receiver all are variable elements affecting the stability of the message. Since the receiver of a signal becomes its sender in the normal course of historical transmission (e.g. the discoverer of a document usually is its editor), we may treat receivers and senders together under the heading of relays. Each relay is the occasion of some deformation in the original signal. Certain details seem insignificant and they are dropped in the relay; others have an importance conferred by their relationship to events occurring in the moment of the relay.

and so they are exaggerated. One relay may wish for reasons of temperament to stress the traditional aspects of the signal; another will emphasize their novelty. Even the historian subjects his evidence to these strains, although he strives to recover the pristine signal.

Each relay willingly or unwittingly deforms the signal according to his own historical position. The relay transmits a composite signal, composed only in part of the message as it was received, and in part of impulses contributed by the relay itself. Historical recall never can be complete nor can it be even entirely correct, because of the successive relays that deform the message. The conditions of transmission nevertheless are not so defective that historical knowledge is impossible. Actual events always excite strong feelings, which the initial message usually records. A series of relays may result in the gradual disappearance of the animus excited by the event. The most hated despot is the live despot: the ancient despot is only a case history. In addition, many objective residues or tools of the historian's activity, such as chronological tables of events, cannot easily be deformed. Other examples are the persistence of certain religious expressions through long periods and under great deforming pressures. The rejuvenation of myths is a case in point: when an ancient version becomes unintelligibly obsolete a new version, recast in contemporary terms, performs the same old explanatory purposes.\(^9\)

The essential condition of historical knowledge is that the event should be within range, that some signal should prove past existence. Ancient time contains vast durations without signals of any kind that we can now receive. Even the events of the past few hours are sparsely documented, when we consider the ratio of events to their documentation. Prior to 3000 B.C. the texture of transmitted duration disintegrates more and more the farther we go back. Though finite, the total number of historical signals greatly exceeds the capacity of any individual or group to interpret all the signals in all their meaning. A principal aim of the historian therefore is to condense the multiplicity and the redundancy of his signals by using various schemes of classification that will spare us the tedium of reliving the sequence in all its instantaneous confusion.

Of course, the writing of history has many extremely practical uses, each of which imposes upon the historian a viewing range suited to the purpose in hand. For example, the judges and counsel in a law court may expend upon the determination of the sequence of events leading to a murder, an amount of effort vastly greater than the events themselves required for their happening. At the other extreme, when I wish to mention Columbus' first voyage to America, I do not need to collect all the signals, such as documents, archaeological indications, earth-clock measurements, etc., to prove the date 1492: I can refer to credible secondary signals derived from firsthand sources. In between these extremes, an archaeologist tracing a buried floor level with his assistants spends about the same energy upon reading the signal as the original builders put into the floor in the first instance.

Hence a primary signal—meaning the evidence closest to the event itself—may require a great expense of energy for its detection and interpretation, but once the signal has been brought in it can be repeated at a fraction of the cost of the original detection. In this way the fundamental determinations of history relate to detecting and receiving primary signals from the past, and they usually concern simple matters of date, place, and agent.

For the most part the craft of history is concerned with the elaboration of credible messages upon the simple foundations afforded by primary signals. More complex messages have widely varying degrees of credibility. Some are fantasies existing in the minds of the interpreters alone. Others are rough approxima-

---

tions to historical truth, such as those reasonable explanations of myths called euhemerist. 3

Still other complex messages are probably stimulated by special primary signals of which our understanding is incomplete. These arise from extended durations and from the larger units of geography and population; they are complex, dimly perceived signals which have little to do with historical narrative. Only certain new statistical methods come near to their detection, such as the remarkable lexicostatistical discoveries made in glottochronology, the study of the rate of change of languages (pp. 60–61).

**Self-Signals and Adherent Signals**

These remarks so far pertain mainly to one class of historical signals, to distinguish them from the more obvious messages of another kind which we have not yet discussed. These other signals, including writing, are added to the self-signal, and they are quite different from it, being adherent rather than autogenous. The self-signal can be paraphrased as the mute existential declaration of things. For example, the hammer upon the workbench signals that its handle is for grasping and that the peen is an extension of the user’s fist ready to drive the nail between the fibres of the plank to a firm and durable seat. The adherent signal, die-stamped on the hammer, says only that the design is patented under a protected trade-mark and manufactured at a commercial address.

A fine painting also issues a self-signal. Its colors and their distribution on the plane of the framed canvas signal that by making certain optical concessions the viewer will enjoy the simultaneous experience of real surfaces blended with illusions of deep space occupied by solid shapes. This reciprocal relation of real surface and deep illusion is apparently inexhaustible. Part of the self-signal is that thousands of years of painting still have not exhausted the possibilities of such an apparently simple category of sensation. Yet this self-signal is the least honored and the most overlooked of the dense stream of signals issuing from the picture.

In the consideration of painting, architecture, sculpture, and all their allied arts, the adherent signals crowd in upon most persons’ attention at the expense of the autogenous ones. In a painting, for example, the dark foreground figures resemble persons and animals; a light is depicted as if emanating from the body of an infant in a ruined shelter; the narrative bond connecting all these shapes must be the Nativity according to St. Luke; and a painted scrap of paper in one corner of the picture bears the name of the painter and the year of the work. All these are adherent signals composing an intricate message in the symbolic order rather than in an existential dimension. Adherent signals of course are essential to our study, but their relations with one another and with the self-signals make up part, and only part of the game, or the scheme, or the problem that confronted the painter, to which the picture is the resolution in actual experience.

The existential value of the work of art, as a declaration about being, cannot be extracted from the adherent signals alone, nor from the self-signals alone. The self-signals taken alone prove only existence; adherent signals taken in isolation prove only the presence of meaning. But existence without meaning seems terrible in the same degree as meaning without existence seems trivial.

Recent movements in artistic practice stress self-signals alone, as in abstract expressionism; conversely, recent art scholarship has stressed adherent signals alone, as in the study of iconography. The result is a reciprocal misunderstanding between historians and artists: the unprepared historian regards progressive contemporary painting as a terrifying and senseless adventure; and the painter regards most art scholarship as a vacant ritual exercise.

This type of divergence is as old as art and history. It recurs in every generation, with the artist demanding from the scholar the approval of history for his work before the pattern is com-

plete, and the scholar mistaking his position as an observer and historian for that of a critic, by pronouncing upon matters of contemporary significance when his perceptive skill and his equipment are less suited to that task than to the study of whole past configurations which are no longer in the condition of active change. To be sure, certain historians possess the sensibility and the precision that characterize the best critics, but their number is small, and it is not as historians but as critics that they manifest these qualities.

The most valuable critic of contemporary work is another artist engaged in the same game. Yet few misunderstandings exceed those between two painters engaged upon different kinds of things. Only long after can an observer resolve the differences between such painters, when their games are all out, and fully available for comparison.

Tools and instruments are recognized by the operational character of their self-signal. It is usually a single signal rather than a multiple one, saying that a specific act is to be performed in an indicated way. Works of art are distinguished from tools and instruments by richly clustered adherent meanings. Works of art specify no immediate action or limited use. They are like gateways, where the visitor can enter the space of the painter, or the time of the poet, to experience whatever rich domain the artist has fashioned. But the visitor must come prepared: if he brings a vacant mind or a deficient sensibility, he will see nothing. Adherent meaning is therefore largely a matter of conventional shared experience, which it is the artist's privilege to rearrange and enrich under certain limitations.

Iconographic studies. Iconography is the study of the forms assumed by adherent meaning on three levels, natural, conventional, and intrinsic. Natural meaning concerns primary identifications of things and persons. Conventional meanings occur when actions or allegories are depicted which can be explained by reference to literary sources. Intrinsic meanings constitute the study called iconology, and they pertain to the explanation of cultural symbols. Iconology is a variety of cultural history, in which the study of works of art is devoted to the extraction of conclusions concerning culture. Because of its dependence upon long-lived literary traditions, iconology so far has been restricted to the study of the Greco-Roman tradition and its survivals. Continuities of theme are its principal substance: the breaks and ruptures of the tradition lie beyond the iconologist's scope, like all the expressions of civilizations without abundant literary documentation.

Configural analysis. Certain classical archaeologists in turn also have been much concerned with similar questions about meaning, especially in respect to the relations between poetry and visual art. The late Guido v. Kaschnitz-Weinberg and Friedrich Matz are the principal representatives of this group, who engage in the study of meaning by the method of Strukturanalyse, or configurational analysis, in an effort to determine the premises underlying the literature and art of the same generation in one place, as, for example, in the case of Homeric poetry and the coeval geometric vase painting of the eighth century B.C. Thus Strukturforschung presupposes that the poets and artists of one place and time are the joint bearers of a central pattern of sensibility from which their various efforts all flow like radial expressions. This position agrees with the iconologist's, to whom literature and art seem approximately interchangeable. But the archaeologists are more perplexed by the discontinuities between painting and poetry than the iconologists are: they still find it difficult to equate the Homeric epic with Dipylon vases. This perplexity reappears among students of modern art, to whom literature and painting appear sharply divergent in content and technique. Erudition and pornography are exalted and conjoined in present-day literature, but they are both avoided in painting.

12. Friedrich Matz, Geschichte der griechischen Kunst (Frankfurt, 1950), 2 vols. The introduction is an exposition of Strukturforschung, for which an English approximation might be "studies of form-field relations."
where the quest for non-representational form has been the principal aim in our century. The difficulty can be removed by modifying the postulate of a central pattern of sensibility among poets and artists of the same place and time. It is unnecessary to reject the idea of central pattern altogether, because the quest for erudite expression, for instance, was shared by poets and painters alike in seventeenth-century Europe. It is enough to temper the conception of the governing configuration (Gestalt) with the conception of the formal sequence set forth here on pp. 33 ff. Formal sequences presuppose independent systems of expression that may occasionally converge. Their survival and convergence correspond to a shared purpose which alone defines the field of force. By this view the cross-section of the instant, taken across the full face of the moment in a given place, resembles a mosaic of pieces in different developmental states, and of different ages, rather than a radial design conferring its meaning upon all the pieces.

The taxonomy of meaning. Adherent meanings vary categorically according to the entities they clothe. The messages that can be conveyed in Meissen porcelain differ from those of large bronze sculpture. Architectural messages are unlike those of painting. The discussion of iconography or iconology immediately raises taxonomic questions, analogous to those of distinguishing the fur, feather, hair, and scales of the biological orders; all are integuments but they differ from one another in function, in structure, and in composition. Meanings undergo transformations by mere transfer, which are mistaken for changes in content.

Another difficulty arising from the treatment of iconography as a homogeneous and uniform entity is the presence of large historical groupings within the body of adherent meaning. These are related more to the mental habits of different periods than to incorporation as architecture, sculpture, or painting. Our historical discriminations still are too imprecise to document these mental changes generation by generation, but the outlines of large, coarse changes are clearly evident, such as the differences of iconographic system before and after A.D. 1400 in Western civilization.

In the middle ages or during antiquity, all experience found its visual forms in a single metaphorical system. In antiquity the geometrical enveloped the representation of present happening. The Greeks preferred to discuss contemporary events under a mythological metaphor, like that of the labors of Hercules, or in terms of the epic situations of Homeric poetry. The Roman emperors adopted biographical archetypes among the gods, assuming the names, the attributes, and the titles of the deities. In the middle ages the lives of the saints fulfilled the same function, as when the regional histories of Reims or Amiens found their expression in the statues of local saints standing in the cathedral embrasures. Other variations on the principal narratives of Scripture conveyed further details of local history and sentiment. This preference for reducing all experience to the template set by a few master themes resembles a funnel. It channels experience into a more powerful flow; the themes and patterns are few in number but their intensity of meaning is thereby increased.

About A.D. 1400 many technical discoveries in the pictorial representation of optical space allowed, or more probably, accompanied, the appearance of a different scheme of stating experience. This new scheme was more like a cornucopia than a funnel, and from it tumbled an immense new variety of types and themes, more directly related to daily sensation than the preceding modes of representation. The classical tradition and its reawakening formed only one current in the torrent of new forms embracing all experience. It has been at flood height and steadily rising ever since the fifteenth century. The survival of antiquity has perhaps commanded the attention of historians mainly because the classical tradition has been superseded; because it is no longer a live water; because we are now
outside it, and not inside it.\textsuperscript{13} We are no longer borne by it as in a current upon the sea: it is visible to us from a distance and in perspective only as a major part of the topography of history. By the same token we cannot clearly descry the contours of the great currents of our own time: we are too much inside the streams of contemporary happening to chart their flow and volume. We are confronted with inner and outer historical surfaces (p. 54). Of these only the outer surfaces of the completed past are accessible to historical knowledge.

\textsuperscript{13} E. Panofsky, \textit{Renaissance and Renascences} (Stockholm, 1966), has commented at some length on the end of the modern age in the present century.