

Value questions arise not only for the craft and art of scholarship but also in everyday life and in the implementation of public policy. Among the many value questions, not the least are concerned with the nature of beauty. Issues about the nature of beauty can be raised for any place and time in the world. During the 1960s in the United States, some social scientists and government officials were intrigued by the concept of using social indicators along with economic indicators as a guide to national policy-making. At the suggestion of Bertram Gross, formerly an aide to New York's Senator Robert Wagner and to U.S. President Harry Truman, I was invited to Washington, D.C. in 1967 to testify before the U.S. Senate's Harris-Mondale subcommittee on this subject. (My testimony was printed in the report of the Full Opportunity and Social Accounting Act hearings before the Subcommittee on Government Research of the Committee on Government Operations, United States Senate, 90th Congress, First Session on s. 843, "A Bill to Promote the Public Welfare and to Create a Council of Social Advisors, a Social Report of the President and a Joint Committee on the Social Report, July 19, 20, and 26, 1967," (U.S. Government Printing Office, 1968): Part 2, 232- 247.) I brought up the topic of beauty.

Two years later I gave the following paper at the September, 1969 annual meeting of the American Political Science Association in New York City.

Can We Measure Beauty?

Although Americans have never put beauty high on their list of values, except as it pertains to the personal appearance of females, the subject of environmental beauty has been appearing with insistent frequency in public debate in recent years, in discussions of litter, billboard control, New York garbage, slum housing, or air and water pollution. A more intangible kind of beauty has been at issue in the polemic between those who perpetuate manipulative, exploitive, or simply implemental values and those who wish a society that puts more stress on individual and group expressiveness of “soul.” There is in the air a widely held inchoate and inarticulate but urgent wish that America be truly beautiful in some way that she now is not. Predictors claim that beauty will be given higher priority in the immediate future, when the American population has even more education, affluence, and leisure than now;¹ and when population growth and crowdedness put a premium on environmental amenity and more attractive forms of human relationship.

Beauty has already been a governmental issue, however sometimes misguided its promulgation, when building codes have regulated the spacing of buildings from property lines, the placement and size of fences, building heights, protections of view, sign sizes and placement, etc.; when the private deed restrictions on architectural style have been publicly enforced; and in some facets of city and regional planning. The issue of beauty is the sleeper in political debate over the relative shares of public funds to be allocated to military-space and to “cleaning up” the environment; and it is explicit in the pleas of conservationists. Also, the importance of opportunity to create and experience art in all its forms has been recognized—but not enough—by grants from the National Endowment for the Arts and Humanities to arts centers in slum areas or to such efforts as Pittsburgh’s WQED television programs on “The Black Man’s Search for Self Through Arts.” (Something similar might profitably be done for middle-aged women.) Because of adverse reaction to urban renewal’s previous insensitivity to the personal and social goals rather than physical environment, the Model Cities program emphasizes social goals rather than physical environment. But the presence or absence of attractiveness in physical environment cannot be considered irrelevant to social goals.

So that a broader and more accurate accounting may be made of the nation's welfare, the U.S. government is in the process of adopting social and urban indicators to supplement and extend the present economic indicators. In tabulations and assessments of the state of the nation, the quality of beauty should not be left out. The problem is that beauty is so difficult to define and measure. There is no ready and easy count of beauty as there is of crime or sickness. For public policy purposes, perhaps it might be easier and more useful to measure ugliness (after all, we do measure criminal behavior rather than civic virtue, bad health rather than good, and economic production and exchange rather than wealth.) But ugliness is almost as slippery to quantify as beauty. Alvin Toffler has proposed that there be more systematic statistical reporting of showings and performances and audience attendance for the arts.² However, this kind of approach tends to neglect numerous underground or extemporaneous and uninstitutionalized artistic activities—e.g., poetry readings by college students or the street performances of mimes and agitprop actors. Protest demonstrations, carefully planned with an eye to television, sometimes come close to being an art form. Art forms are not static; they evolve. Ballads give way to novels. Burlesque and vaudeville are superseded by movies. The future may see “storefront” museums scattered about like pocket parks. The academy has always given official notice to that which was already being superseded. This same defect is inherent in governmental accounting of the arts. Furthermore, it should be noted that art and beauty are not synonymous. Said Picasso: “Painting is not done to decorate apartments; it is an instrument of war against brutality and darkness.” Art is often not beautiful, and often is not intended to be. Beauty resides in many places outside the arts.

Even if a set of indicators could be developed to include beauty, there are important hazards.

It can be argued that the social indicators movement is an expression of man's desire to control a society that is now more interdependent and therefore more potentially dangerous than formerly, as an extension of man's long-standing struggle to control nature. Indicators are part of the voodoo doll syndrome—to count and name a thing (to recreate its image) is a form of recognition but also of control, just as art itself has often functioned like a voodoo doll to picture and therefore both evoke and attempt to control the mysterious powers of time, eternity, and environment. Freud said: Art is a way to restore a destroyed object, control a feared object, love a hated object. And also: Form comes out of sadistic aggression; control, out of narcissistic exhibition. As the environment becomes more man-made, society and machines supplant nature as the most potent forces to be controlled. In the past, Americans have dealt with the potential force of beauty by suppressing it or ignoring its possibilities.

As the inchoate need for beauty, the yearning for its magic, for its doorway to eternal and mysterious things, bubbles up in the body politic, then is felt a more direct need to control it by naming it and seeming to sponsor it, to control it by co-opting it. For though beauty can be profoundly conservative, it is often the harbinger or even the heavy artillery of revolution, as well as the fearsomely attractive godstuff variously seen in water, fire, earth, children, Negroes, heroes, and women.

The traditional American values that downgraded beauty have been woof in the whole fabric of American culture, have been tangled within the total American socio-economic-political system. Protestantism eschewed church ornament or elaborate ritual as a way of challenging the power structure of established religions. The relation of asceticism to capitalism is well-known. Ornament, ritual, “beauty” were part of the trappings of feudal and royal power, and hence were tactically devalued by a rising middle class that lacked the means to compete effectively on such grounds. In the U.S., an immigrant society of plain origins, with little training and experience in the arts, and with a wilderness to conquer, had to strip for action. This meant a distrust of that beauty which lured the senses to hedonistic pleasure. In the 19th century, it often meant a distrust of the beauty in nature, since nature was enemy—an attitude reversed in the 20th century when nature was more domesticated.

It also meant the equating of beauty with functionalism. Seventeenth-century American Puritans said beauty is that which pleases the eye by its shape and satisfies one’s sense of the appropriate by the inner fitness of its parts, the obvious and useful function of its forms. Sculptor Horatio Greenough, writing in the first half of the 19th century, said about the same thing. Later, so did architects Louis Sullivan and Frank Lloyd Wright. Form, they said, should be consistent with the materials used, the setting, and the human use of the building or object. Functionalism persists in present admiration of sharp, clean, ascetic, *male* expertise, so that “beautiful!” is an expletive to comment on a home run or the takeoff of the lunar landing vehicle.

Allowing for these exceptions, Americans have believed that beauty is otherwise synonymous with leisure, expense, upper-classness, femaleness or femininity, relaxation, and possibly even weakness. The kinds of ambivalence that led 19th-century American men to divide women into two distinct and separate categories, good and bad, also let them distinguish between fact and ideal, between everyday life and “culture,” and to keep the members of each of these pairs a conspicuous distance from one another.

This bias in defining beauty still pervades governmental policy. Beauty is regarded as ornament, separable from utility. Highway departments budget “beautification” separately, implying that beauty is an added luxury, not

something integral with the highway itself. When the U.S. Army Engineers gives formal instructions to its architects, set amounts are specified for “architectural treatment” (i.e., beauty) as if beauty were separable from the whole building. For some buildings, such as national guard armories, architects are instructed explicitly not to beautify, on the assumption that beauty is extra and costs more but also (apparently) that it implies laxness or weakness, that ugliness is more appropriate for an armory and similar buildings. An equivalent bias appears in the prevailing view that factories and houses (i.e., home and work, male world and female world) ought to be widely separated, not jumbled together in charming *gemeinschaft* as they are in Paris suburbs.

It might be very unfortunate if social and urban indicators perpetuate traditional American biases in the definition of beauty. The indicators then would be conservators of values which ought to be reassessed. On the other hand, to adopt new definitions of beauty might give a mighty shove to the ongoing shift away from Protestant middle class values (implied when we speak of the beautiful people—who toil not, neither do they spin—or say that black is beautiful.) There are profound power implications in any such shift in values. Traditional American biases in defining beauty, which took their stamp from yeomen farmers and a bourgeois emphasis on work and process, have been continued by the presently highly influential corporate managerial class. If new definitions of beauty are adopted, this may signal a leap forward into a strange new value-world with new power patterns. But let us ignore the danger and move ahead.

To make rabbit stew, first one must catch the rabbit. To measure beauty, first one must define it. Following are some of the kinds of definitions given by thoughtful men at various times in Western history.

1. Beauty is the quality of a thing, intrinsic, integral, unique—and also inef-fable and incommensurable.
2. Beauty is a human emotion (e.g., pleasure) or physiological reaction; or it is a psychological symbol.
3. Beauty is an attribute of perception; it is in part a creation of the gestalt, the way we codify and react systematically to, the way we organize, sensual stimuli.
4. Beauty is a social norm, or the quality in a social symbol that binds the individual to the group or polity. Beauty as social ritual or reinforcement of social values may be an instrument of conservation, control, or suppression.
5. Beauty is a channel of escape from social pressures (i.e., in carnival) or from the ego, superego, or id. Sometimes this escape is from the social order to the uncodifiable and ephemeral, from abstract rule to emotion. Comedy, said Freudian critic Simon Lesser, is a release from social tensions. Schillinger, on the other hand, claims that science in art—that is, the rule of natural law principles—liberates the artist from parochialism.³

Constance Rourke, describing early 19th-century frontier humor, said, "Comedy was conspiring toward the removal of all alien traditions, out of delight in pure destruction or as preparation for new growth. Laughter created ease, a sense of unity, among men whose deepening mood was one of disseverance."⁴

Art forms may clear away the old to make way for the new, or they may provide a temporary holding action for people on the make. Usually the latter forms are borrowed and eclectic. Late 19th-century *nouveaux riches* saw beauty in borrowed power and grandeur, something out of the past to indicate stability in time, and so they built imitation palaces on Fifth Avenue, in Buffalo, Newport, Detroit, or Chicago's White City. Suburbs of the 1920s, with their Swiss chalets and miniature Tudor houses, carried out this theme on a more modest scale. Beauty was borrowed form, grafted prestige. Art, mainly realist art, not necessarily beautiful, may also be used as a means of taking social inventory, or it may be the vehicle for social polemics. Or art may express the heat and dust of effort, movement, and aspiration. Alfred Kazin has said art is synonymous with energy, change, disturbance.⁵ Classicism in architecture occurs when society has found a form, a balance, a discipline which is meant to last.

6. Or beauty might be play, to express spontaneity, purposeless creativity, or purely for personal and social display (as suggested by Schiller and more recently by Norman Brown and Herbert Marcuse).⁶

7. Beauty may be metaphysical truth, or a token of fundamental Being, or an isomorph of Nature.

Seventeenth-century Puritans said that art should imitate the rule, order, and harmony which are in nature. Since the senses were a possible source of error, joy and sensuousness were to be severely restrained. But American Puritan art was its most sensuous in its concept of grace as God's gratuity, received in a moment of ecstasy or gently infused over time, a rapturous almost sexual union with God. This sexual imagery, at once passionate and restrained, appeared both in late 17th-century poetry and in the carvings on gravestones.

In 18th-century rococo architecture, movement was held lightly in tension by orderly boundaries, expressing an ideal of moderation and balance but also permitting freedom. Time was held and controlled within space; grace was a balance between society and nature.

The 19th century made icons to nature because it was at war with time and death. It made a fetish of tangible disparate material things because things, like cash, were of the moment, of moments that were serial and therefore precarious. Beauty was also in that dark underground place from which life sprang and of which Gauguin's Polynesians or Kipling's Mandalay woman could be the living symbols, or in that transcendent sphere, the Ideal, which was both death and beyond death. Edgar Allen Poe had his European counterparts, and he was not so atypical of the United States as many people think.

For some American poets and critics, between about 1910 and World War II, definitions of beauty changed because assumptions about the nature of reality changed. Perhaps eternity was not in the beyond but hidden somewhere deep in the fact and in the moment, whether that moment be felt and known with sharp clear precision, or deeply imploded, or amplified through time-binding, through the weaving of riches from past and future into the present.⁷ Death, said Wallace Stevens, is the mother of beauty because it turns us back to life, to the grain of experience, to the intensity of the now. The New Critics said art may be a way of recovering the denser, more refractory original world too long screened from us by social conventions.⁸ More recent emphasis on beauty as “now” and now as beauty would—were it needed—impede the planar thrust, the bulldozing momentum of planners and politicians hellbent for the future.

Suzanne Langer has said about art (and I paraphrase): A work of art expresses a conception of life, emotion, inward reality. But it is neither a confessional nor a frozen tantrum; it is a developed metaphor, a non-discursive symbol that articulates what is verbally ineffable—the logic of consciousness itself. The economy of daily life makes us read only the labels of things. Art—being virtual rather than real—enables us to see pure perceptual form. Art—unlike science—does not generalize. The artist abstracts significant form directly by means of one concrete incarnation, to make us not construe it but see it as a form. Artistic form is a projection, not a copy. Consequently there is no direct correlation between the constituents of an organism and the elements in a work of art. The artist creates a virtual space that has no continuity with the actual space in which he stands. Its only relation to actual space is one of difference, otherness. Music presents an auditory apparition of time, but musical time has a sort of voluminousness and complexity and variability that make it utterly unlike metrical time.⁹

In recent decades, Western man, feeling betrayed by eternity, outwitted or abandoned by God, and belittled by reality, has responded in the arts by the sardonic cool of pop art, Picasso’s war against the cosmos, valiant individual action, or numb or willing acquiescence. Among those who use art as a weapon, some are optimistic, some pessimistic. Art, said one man, is the reinforcement of the capacity to endure disorientation so that a real and significant problem may emerge.¹⁰ All art, said another, is subversive. Said Albert Camus: Art, whatever its aims, is always in competition with God. The world is divine because the world is inconsequential. That is why art alone, being equally inconsequential, is capable of grasping it.¹¹ Or, as Sartre wrote in his commentary on homosexual, thief and poet Genêt, beauty is the transcendence of Being; it is the transformation of reality into appearance. “It is the freedom that corrodes the world.” Elegance is “the quality of conduct—gratuitous and destructive—which transforms the greatest quantity of being into appearing.”¹²

In the paintings of Jackson Pollock or in beat poetry, art was not an object but an action, a dynamic demonstration of the self engaged in a conflicting pattern of choices and decisions. In a world whose ground was chaos or Nothingness, the self—as Sartre said—was what one did, and one did by making active choices. Painting, one critic said, is created out of Nothingness. It is human freedom acting in Nothingness.¹³ Or it might be a portrait of the underlying chaos, of a universe made up of protons and neutrons bombarding each other where the only rule of law is the law of statistical change.

So, Merce Cunningham has choreographed by chance, by tossing pennies, thereby “obeying the energy and law of the universe.” In the theater of happenings, beauty is acquiescence to chance and contingency.¹⁴ And John Cage has said (again I paraphrase): How silly it is to select out only certain sounds and arrange them arbitrarily according to fixed principles, when we have all the richness of sound available to us. And the richness of lots of silence. Music should have no beginning, middle or end, and there should be no separation between art and life. We live in process, process is eternal, and the process of nature is not causality (authority, will, and power), but chance. The musician need not play the music as it is noted. The listener may make his own interpretation and even add his own sounds. The rhythm is not ordered thrust and check, but rather simply time lapse. God is not authority, will and power but the totality of things, of which man is a part. Man does not have to strive to be there. He is there already. Beauty lies in assent to what is.¹⁵

Beauty, someone has said, is truth assented to by man. The assent might not be of will but rather of sensibility, as in Eric Hawkin’s dance style, his effort to discover movement that is irreducible and immediate, to express—with clarity, subtlety, sensitivity, innocence—the bedrock emotion of wonder. The paintings of Paul Klee, Marc Rothko, or Clifford Still offer to serve as mediators between the concrete present and some idealized mysterious otherness. The bareness and inertness of so-called monotonal or silent art lures the viewer into the numbing devastation of silence.¹⁶ Or one thinks of the paintings of Jean Dubuffet, where man is simply part of the universal landscape, of the primal ooze. The universe, he has said, is more important than our recognition of it. French novelist Robbe-Grillet has urged that we accept the fact that the universe is not indifferent, but merely there. Man, he said, should cease anthropomorphizing the world.¹⁷ If he does this, definitions of beauty will greatly change.

8. Beauty might be at the peak or most intense or central point of relationship—between person and object; between various elements of a social and symbolic situation; or between all the elements that make up existence in any given nation, culture, and era. A substantial body of literature exists in the theory of signs and symbols pertaining to all three of these categories. Several years ago, I taught two courses which were very

successful, but which I never repeated. One, on “The Nature, Meaning, and Expression of the Self,” covered a gamut of insights from the past and from the physical sciences, social sciences, and arts, with a heavy emphasis on audiovisual presentation. The other, also audiovisual, on “Symbol and Rhythm,” developed a kinetic or dynamic analysis of the relationships between contemporary society (and polity) and symbols. Some of my conclusions were published in an article.¹⁸ I am still working on the subject.

Relevant to beauty as relationship are the comments of John Dewey: Quality in art is a constitutive element, integralness, wholeness, continuity, fusion. Quality is temporal as well as spatial—the fusion of elements into a total pattern. “Art celebrates with peculiar intensity the moments in which the past reinforces the present and in which the future is a quickening of what is now.” “To be good altogether, an experience needs to include control of the causal conditions that enter into as well as celebration of the final happy results. This is art.”¹⁹

Also relevant is the analysis of Horace Kallen: “An aesthetic experience grows out of struggle toward inner and outer congruency, among all the tangent and discordant elements, both for the individual and society.” “The way an object is beautiful is as singular, as specific, as personality itself, and is never quite the same two times running.” “Consensus about experiences of beauty is the aesthetic norm shaped by the mood of the age.” “The scope of a judgment of beauty is no greater than the range of the individuals who freely acquiesce in it and freely employ it. Their consent establishes its boundary. Only the arts of trade or the art of war can carry it beyond this boundary.”²⁰

Obviously, this way of perceiving beauty lends itself well to the fusion of aesthetic measure with other facets of systems analysis, a possibility I have also been exploring in depth and about which I have written in part in my work on values and more in other forthcoming publications.²¹

The scope of the system to be considered, where art and beauty are concerned, often must include metaphysical elements. To the 17th-century Puritans, beauty was at the point where time and the finite met eternity. T.S. Eliot, certainly one of the great poets of this century, used a metaphysics which continued 17th- and 19th-century themes: sexual asceticism, spiritual purgation, and the importance of traditional religion for inner control; the stress is on worldly time and human sensuality as the dangerous paths to timeless transcendence, if one can reach that still point with its “hint” of grace where time intersects eternity and desire gives way to love. He said life at its highest moments of meaning and intensity resembles death, but this is a different kind of death from the death in life most people live.²²

Whether we speak of the relationships of person to object or symbol and person to group or institution, or attempt to trace the configurations of a national

or cultural system (including that system's metaphysics), time, space and rhythm create and emblemize the parameters of the system or relationship and its internal bonds.

Quite obviously, how we measure beauty and if we measure beauty depends on which of these possible definitions is adopted. Some definitions of beauty do not lend themselves readily either to a technology or measurement or to systems analysis. To some, beauty is commitment. Measure implies detachment. Beauty may be now or eternity. Measure is in time, in social time, a reified continuum, a perceptual construct. When Americans talk about systems, they mean something man constructs, the way one builds an automobile in the backyard or a factory; or they mean something one maps and becomes a part of (society as Big Construction, built by Social Forces), which can be redirected a little but much of which goes on whether or not it has the consent and assent of individual men. Each epistemology and methodology has its own ontology. To "measure" something which has an ontology quite different from that of the system of measurement is not to measure the thing at all, but to sever from it those elements which can be subsumed within the measuring system's value-universe, an act of vivisection which does not really map or capture by portrayal the whole and living alien thing.

This is the defect of attitude polling as an approach to the measurement of beauty, though certainly if beauty is to be measured it is important not only to define it but also to locate it. People who are inarticulate about their own definitions still "know it when they see it." An egalitarian approach would be to say that the greater the number of people who say, with some scaling for intensity of belief, that something or some place is beautiful or ugly, who spontaneously point it out in some kind of open-ended questionnaire, the more it is likely that beauty or ugliness resides in that particular thing or place.

The questionnaire or polling method, however, runs the risk of making bourgeois utilitarian assumptions about the nature of beauty. All too easily could we resurrect the ghost of the sturdy Englishman who wrote in the Westminster Review in 1825 that he would be "glad to be informed, how the universal pursuit of literature and poetry, poetry and literature, is to conduce towards cotton spinning." Or of Jeremy Bentham, who said, "The game of push-pin is of equal value with the arts and sciences of music and poetry. If the game of push-pin furnish more pleasure, it is more valuable than either."²³ Even John Ruskin believed that art should serve the greatest good of the greatest number, and this is an assumption we should not perpetuate without question. (Its opposite would not be anti-egalitarian, but more sensitively insightful into the valuable idiosyncracies in people.)

It would be unfortunate if we perpetuated the hedonistic calculus that puts beauty on the same spectrum of values as comfort and utility, which makes of beauty merely a “satisfaction.” The heights and depths inherent in beauty deserve not to be leveled in this fashion. The problem cannot be resolved by polling savants or artists rather than the general public. Nor by careful sampling on the basis of age, ethnicity, sex, socio-economic status, or geographic region. Nor by a content analysis of the statements of lobbyists who speak about beauty to public legislators and administrators, or of protest groups leading the cause of beauty either to government or to education or business institutions. (In the spring of 1969, the issue between the University of California at Berkeley and those who demanded a People’s Park was in a large part a dispute over the nature and purpose of environmental beauty. What was each side assuming?) Remember not only that cultural definitions of beauty may be in transition but also that the very same people change their minds over time. Initial reaction to most great art has been hostile. Originally Parisians detested and protested their presently cherished Eiffel tower.

However, if all these cautions are kept in mind, polling questionnaires and content analyses might be very useful. Perhaps also, as a start, we ought to narrow the field and focus upon environmental beauty. What is beautiful, what ugly, in the smells and texture, the light and sound, the color, line, shape, form and movement of American cities? Relevant are the purity of air and water, the prevalence and location of grass, trees, and open space, of places to walk and sit; such amenities as flower boxes on lamp posts or student paintings on construction fences or children’s art down airline corridors; or the style, variety or uniformity of buildings; the nature of lighting; the presence of water and symbolic fire, of symbolic artifacts and of evidences of a regard for the city’s history and its future, as well as for its present. Not to be ignored is the shape of the whole environment: how dams, high tension wires, and oil refineries fit into the landscape; how roads and highways shape the aesthetics of movement. Also relevant is industrial design, remembering not only visual elements but also aural or tactile ones. Some people find beauty in the feel and sound of a boat or a sports car. We might ask why resonator mufflers at a cost of about \$25 apiece are desired to give a purring sound, when mufflers might be designed to give no sound at all. To the driver, the sound of his car may be a part of its beauty, but sometimes there is an issue between the beauty of individual sounds and the ugliness of their collective impact. Also, how do people really feel about music piped into parks, restaurants, or buses?

If “beauty” and “ugliness” are located through attitude polls, this might be a step toward measurement of beauty. Also, such polling acts as a locator device, as a geiger counter, to uncover areas of intense feeling that in turn may be important new clues to the structure of systems.

Once beauty or ugliness are located, then more precise scientific measures are possible. If society were stable and homogeneous, we could use objective criteria for direct measurement of the beauty in buildings and objects—e.g., Greek ideas of scale, balance, and proportion, or Le Corbusier’s modular. Lacking that condition, we fall back on measurements of physiological reactions and of sociopsychological behavior.

Since beauty is often defined in terms of pleasure or perception, relevant are the numerous laboratory experiments to measure body heat, breathing, eye movements, and changes in muscle tension that accompany the acts of perceiving and imaging. There is a large literature on the nature of visual sensitivity to brightness, color, shape, and movement. Studies of tactile perception have shown how much more accurate is active touch than passive touch. Relevant also are data on physical reaction to sound, and the psychophysical effects of high and low frequencies and different tempos and beats in music. Experiments with Rorschach blots show the kinds of psychological sets that condition perception of images. Through controlled experiments, gestalt psychologists have collected a vast amount of data on the way perception is organized. Maps have been made of the way eyes travel over pictures—where the centers of interest are, and the duration of fixation to different shapings of environmental space. Gestalt experiments have shown how vision is selective in its perception of the relation of figure to ground in pictures or designs and how the structural and formal qualities of the field influence what is seen or heard.²⁴

Jean Piaget, among others, has studied scientifically how ways of perceiving develop in children. There is a substantial psychoanalytical literature on human relations to art forms—both for normal people and abnormal (e.g., schizophrenics).

Although psychometric aesthetics has accumulated a number of statistical studies of the aesthetic preferences of different types of people, not enough psychophysical studies have been made to permit a comprehensive theory of the reactions of males and females and different age, ethnic, socio-economic, and cultural groups to aesthetic stimuli, but the methodology is sufficiently developed so that the necessary data could be gathered. Sociologist Warner’s analyses of “Yankee City” and Russell Lynes’ histories of popular taste, among others, indicate how socio-economic position correlates with personal taste in housing, clothes, furniture, food, and other artifacts.²⁵

Joseph Schillinger, who believes universally applicable scientific laws do exist for art forms, in his book *The Mathematical Basis of the Arts* presents mathematical formulae—applicable at once to several art forms—for continuity; periodicity; permutation; distributive involution; balance, unstable equilibrium, and crystallization of event; ratio and rationalization; positional rotation; and symmetry. And for quadrant rotation, coordinate expansion, and composition

of density.²⁶ Further development of mathematical theory of the arts should ensue from presently ongoing production of computer music and computer drawings.

Since most psychophysical experiments have been done in laboratories or under special test conditions, more data are needed about reactions to aesthetic stimuli during normal family living, in social and public gatherings, and at work.

For assessment of human response not only to buildings but also to neighborhoods or larger urban patterns, attention has been given to how people perceive and relate to space. Perception of space is not only visual, but also auditory, olfactory, thermal, and tactile. Infrared thermograph devices can measure human heat emission under varying environmental circumstances—a vital clue to emotional reactions.²⁷ Since a different set of nerves (proprioceptors) relate to muscles than the exteroceptors which respond to touch and thermal stimuli, kinesthetic space is different from thermal space and requires separate study. Philip Thiel has attempted to develop “A Sequence-Experience Notation for Architectural and Urban Spaces” similar to labanotation in choreography. Since surfaces, screens and objects, as defined by light, create visual space, he includes symbols to note their positions and qualities (size, direction, number, shape, color—hue, brightness, saturation—and texture).²⁸

Sociometry and the science of proxemics have measured intimate, personal, social and public spatial zones, and what can be seen, felt, and heard at different distances. Controlled comparative studies have been made of mental mapping. Thiel’s notations refer to physical space and therefore need to be combined with social spatial data—since the environment is seldom devoid of other people. Photography could be used more than it has been to study human spatial behavior and responses, including high speed, slow motion, lapse-shot, and aerial photography. Aerial archeology has sometimes produced astonishing new insights for the analysis of ancient sites. Similar techniques could be used to study crowd responses to monumental civic areas or to parades (both presumably forms of urban beauty).

Kracauer’s interesting theories about the psychological impact of film as a medium might be expanded and modified to cover psychological response to complex physical-social environments.²⁹ The principle of controlled living group experiments (such as the Penthouse experiments at Berkeley) conducted to simulate spacecraft or moon living for protracted periods could be adapted to a systematic study of group response to different kinds of everyday aesthetic environments.

Architects and city planners build three-dimensional models of proposed buildings or urban areas. More sophisticated techniques of three-dimensional photographic projects (modelsopes, pictures taken with fishbowl lenses) are now possible, as are acoustical reverberation models. At some time in the future,

laser beam holographs might be used to recreate 3D pictures of environments (actual three dimensions, not illusions) to be used for experimental purposes.

If urban dwellers are regarded as participant-audiences, their relation to urban form can be analyzed in terms hitherto used primarily for the arts: attention span, psychic distance, and so forth. If the cityscape is seen holistically it can be analyzed as a single complex art form. Philip Thiel speaks of merges, ports, and ends in spatial articulation; Kevin Lynch divided urban images into five elements—paths, edges, districts, nodes, and landmarks.³⁰ The kinds of skills and concepts informed critics use to analyze the rhyme and meter of poetry, the texture, color, and composition of painting, movements in dance, or style in architecture are all applicable to cityscapes. Lewis Mumford has indicated the relationships between urban form and total cultural setting.³¹ In a paper presented to the 1968 annual meeting of the American Political Science Association (a paper entitled “City Form, Governmental Structure, and the Space of Power”—Chapter 9 in this present book), I extended this method by analyzing comparatively the form of several world cities as a notation of the socio-political, spatial-temporal system of which each city was a center. This paper, in turn, developed out of several other studies I had made over a span of more than ten years on relationships between spatial-temporal behavior and perception and social structure. In the near future, I plan to link my conclusions from these studies to the analysis of the relationships between division of labor patterns and the structure of governmental and educational institutions that I made in *Hidden Hierarchies: The Professions and Government*.³² Because I am an historian, with background both in the social sciences and humanities, I have not used the term “systems analysis” in my work, but systems implications can be (and have been) readily extracted from analyses I have made in other terminology.

There is no doubt that environmental studies are moving in the systems analysis direction. As Patri has said, “The future environmental designer, faced as he is with an increasing number of variables, options and complexities, and with the need for greater and swifter feedback, must turn toward the systems approach tied in with computer programming to get the answers he needs. He must realize that the systems approach and its supporting computers, rather than becoming inhuman limitations on the designer, are, in fact, tools which enable him more fully to express his humanness and creativity.”³³

Planners use the techniques of systems analysis and model simulation for such aspects of urban life as crime control, land use, waste disposal, and transportation. Carl Steinitz and Peter Rogers, in their *A Systems Analysis Model of Urbanization and Change*, developed models for industrial, residential, recreation and open space, commercial centers, transportation, political, fiscal, pollution, and visual aspects of a proposed plan for a specific urban area.³⁴ There is no reason why systems analysis cannot include more detailed and profound

aesthetic elements, even to the point of keeping in mind all the different possible definitions of beauty outlined at the beginning of this chapter.

Of practical interest, however, is Lessing's cautionary statement:

To get beyond the study phase, urban systems programs need long-term, heavy commitment of funds. . . . [T]he broad systems approach to urban problems must contend with politicians' lack of comprehension, the shifts and vagaries of administration, national apathy and antipathy toward long-range planning, the jealousies of professional and special interests, and the incredible fragmentation of federal, state, and local governments. In the federal sphere alone, more than ten departments or agencies handle aspects of the big-city problem. No single agency—or single purpose—guides the urban program, as NASA does in space or the Pentagon in weaponry.³⁵

If all these problems are resolved, and beauty as measurable and immeasurable becomes an important part of the equation, I would like to urge one more precaution. The idea of system, however sophisticated, implies a continuation of the old 19th-century concepts of determinism paralleling the concepts of force in Newtonian physics. Men may have learned how to direct the forces (the system), but often there is in systems analysis and among those who talk about social and urban indicators a worship of technique, and an excessive humbleness toward the relation of past structure and dynamics to future possibilities. By virtue of their professional role, these experts are on tap, not on top; and this stance carries over into their epistemological and ontological assumptions and their methodology.

One corrective might be for them to think for a while in terms of style—the kind of style Albert Camus had in mind when he spoke about art as rebellion,³⁶ or André Malraux has had in mind in discussing whole cultures.³⁷ The crown of all great civilizations is a unique style. In the past, styles were articulated because of the patronage of emperors, kings, and nobles. In his 1969 campaign to be nominated as mayor of New York City, Norman Mailer spoke of the city's rage because it could not find style. Style was a large part of the appeal of Jack Kennedy. National style requires leaders who have the gifts both of profound assent to fundamental truths and of prowess, command, over that which is man's to do with what he will. Aesthetics are at the very core of human existence, of morality and meaning. Perhaps it might help if we each and all of us thought of ourselves as chivalric nobles and philosopher-kings.