L. Moholy-Nagy

vision in motion

Paul Theobald, Chicago

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foreword

This book is written for the artist and the layman, for everyone interested in his relationship to our existing civilization. It is an extension of my previous book, "The New Vision". But while "The New Vision" gave mainly particulars about the educational methods of the old Bauhaus, "Vision in Motion" concentrates on the work of the Institute of Design, Chicago, and presents a broader, more general view of the interrelatedness of art and life. Recognizing the arts as an integral part of our existence, this book takes as its basic premise the unity of the arts with life. Thus this book is an attempt to add to the politico-social a *biological "bill of rights"* asserting the interrelatedness of man's fundamental qualities, of his intellectual and emotional requirements, of his psychological well-being and his physical health. It proposes that new tools and technologies cause social changes; that they shift ways of production, possessions, wealth, and power; yet though the inevitable logic of new technologies, offering easy advantages for labor saving and profit making, is willingly accepted on pragmatic intellectual terms, it is stubbornly opposed in the emotional sphere, where man clings to obsolete standards and empty conventions of the past, unapproachable by logical argument and often against his best interests.

This emotional prejudice—or inertia—is the great hindrance to necessary adjustments and social reforms. The remedy is to add to our intellectual literacy an emotional literacy, an education of the senses, the ability to articulate feeling through the means of expression. Without the balanced performance of intellect and feeling,

man becomes crippled, one-sided. Only the combination fosters growth and leads to an assurance of judgment, security of existence. The goal is to make available to everyone the ways of expression which culminate in the arts. Self-expression, which on the highest level becomes art, forms the opening wedge to that otherwise unreachable realm, the subconscious "feelings". Trained and articulated in this way, the emotional forces will be sublimated.

The contemporary arts try to establish a new morality and a new ethics not hampered by metaphysical absolutes. Within this large scheme the work of the Institute of Design, Chicago, stands as a laboratory of the new trends. And though its investigations have been centered around the training of the industrial designer, my hope is that the principles and the scope of its program, as they are outlined in this volume and as they will be reported on also in future "i.d." books, will become an incentive to our whole general education, from the kindergarten to the university.

As to the illustrations, the logical source was the work of the teachers and students of the Institute and my own experiments.• Beyond this, the paintings of the abstract artists in this country are emphasized. Their achievements are a fine testimony to the common platform of creative people all over the world, clarifying the fundamentals of the visual and other means of expression. Unfortunately, many valuable examples had to be omitted because the number of illustrations and the size of this volume are already beyond the original limit set.

Through the publisher's generosity, I was able to make some progress toward a new book form on which I have been experimenting for twenty-five years. I have always held that—for a better visual communication—text and illustration should be welded together. Illustrations should *accompany* the copy and not be searched for. In this book I use a layout which seems better adapted to the present printing technique of machine typesetting and letterpress than the conventional book form of previous periods. Here, all the illustrations are placed where mentioned in the text, either small-sized on the large margin, or larger-sized within the main text or on the opposite page. The result is (at least this was intended) a functional fluidity and greater legibility, that is, a better communication. In the first chapter, where no pictures have been used, the illustrations become verbal, in the form of quotations or remarks. These are set in italics in order to separate them from the captions and text.

This book is integrated in its text and illustrations, but it also considers the impatient reader, who, at first unwilling to plow through the written arguments, may enjoy the pictorial material. Stirred by this, he may then proceed to read brief captions, glossaries, and footnotes until his appetite is whetted to explore the main text.

• *The illustrations of the students' work are marked with a thin* ○, *those of the faculty with a thicker circle* ●

contents

acknowledgment

Besides my thanks to the publisher for his support, my gratitude goes to the faculty and students of the Institute of Design, Chicago; to its Board and Chairman. Their enthusiasm, ideas, and comradeship carried me through these years and made possible a common achievement.

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L. Moholy-Nagy Chicago, 1946

introduction

To state the case is almost too simple:

The industrial revolution opened up a new dimension—the dimension of a new science and a new technology which could be used for the realization of all-embracing relationships. Contemporary man threw himself into the experience of these new relationships. But saturated with old ideologies, he approached the new dimension with obsolete practices and failed to translate his newly gained experience into emotional language and cultural reality. The result has been and still is misery and conflict, brutality and anguish, unemployment and war.

Emotionally most people live within the old dimensions of anachronistic fixations, tribal prejudices. They are immune against any suggestion for a better use of their resurces because in our verbalistic society all such arguments can be answered by counterarguments for the preservation of the status quo. What is needed is a rediscovery of the elements of existence, work, recreation, and a fearless demonstration of their fundamentals relative to our time without paralogy. We have to free the elements of existence from historic accretions, from the turgid symbolism of past association, so that their function and effectiveness will be unimpaired.

Theoretically, man is the sum total of his psychophysical, intellectual, and emotional potentialities. His reasoning power parallels the emotional forces. What he knows, he could also feel if he would train himself in both spheres. In fact, this is his historic struggle, to arrive at an integrated life in which he would function to the fullest of his capacities through a synthesis of the intellectual and the emotional,

through the coordination of penetrative thinking and profound feeling. To reach this goal—to feel what we know and know what we feel—is one of the tasks of our generation.

To achieve this integrated state there is need for a well-balanced social organization and an appropriate education; an education for personal growth and not a mere training in skills for the purpose of profit; a social organization in which everyone is utilized to his highest capacity.

In the training of the human intellect there is an official standard, comprising logical thought categories, the set mechanism of syllogism and rhetoric. But there is also a need for correlated perceptive and emotional education. This is not even yet acknowledged. At present the nonintellectual development of the individual is entirely his private affair, confined to a hit-or-miss approach. The consequence is emotional illiteracy, which means to be without compass, without assurance of feeling, in a complex, immensely extended world.

Generally, the mechanism of feeling is set in motion by a network of sensations both from within and without. The mechanics of inner stimuli is as yet unexplored, although psychoanalysis attempted revolutionary explanations about the subconscious, its traumas, repressions, regressions, and wish-fulfilments. If not sublimated or released, such psychic maelstroms become the foci of conflicts.

More is known about emotional activation from without, starting with simple sensory experiences, which serve as basic material for the externalization—that is the expression—of emotional life. Expression on a high level produces art which is the most effective agent for emotional articulation. It is a sociopsychologically dangerous mistake to allow art to be classified as remote—a luxury—a nonessential.

One of the functions of the artist in society is to put layer upon layer, stone upon stone, in the organization of emotions; to record feelings with his particular means, to give structure and refinement as well as direction to the inner life of his contemporaries. It is the artist's duty today to penetrate yet-unseen ranges of the biological functions, to search the new dimensions of the industrial society and to translate the new findings into emotional orientation. The artist unconsciously disentangles the most essential strands of existence from the contorted and chaotic complexities of actuality, and weaves them into an emotional fabric of compelling validity, characteristic of himself as well as of his epoch. This ability of selection is an outstanding gift based upon intuitive power and insight, upon judgment and knowledge, and upon inner responsibility to fundamental biological and social laws which provoke a reinterpretation in every civilization. This intuitive power is present in other creative workers, too, in philosophers, poets, scientists, technologists. They pursue the same hopes, seek the same meanings, and—although the content of their work appears to be different—the trends of their approach and the background of their activity are identical. They all must draw from the same source, which is life in a certain society, in a certain civilization. This basic identity is the common denominator, the desire

today to find and investigate the fundamentals in every field so that they can become constructive parts of a new civilization.

The problem of our generation is to bring the intellectual and emotional, the social and technological components into balanced play; to learn to see and feel them in relationship.
Without this interrelatedness there remains only the disjunctive technical skill of handling human affairs, a rigidity stifling biological and social impulses; a memorized, not a lived life.•

vision in motion

vision in motion

is simultaneous grasp. Simultaneous grasp is creative performance—seeing, feeling and thinking in relationship and not as a series of isolated phenomena. It instantaneously integrates and transmutes single elements into a coherent whole. This is valid for physical vision as well as for the abstract.

vision in motion

is a synonym for simultaneity and space-time; a means to comprehend the new dimension.

vision in motion

is seeing while moving.

vision in motion

is seeing moving objects either in reality or in forms of visual representation as in cubism and futurism. In the latter case the spectator, stimulated by the specific means of rendering, recreates mentally and emotionally the original motion.

vision in motion

also signifies planning, the projective dynamics of our visionary faculties.

• *"The head is not more native to the heart." (Hamlet)*

I
analyzing the situation

the discrepancy

Since the industrial revolution our civilization has suffered from a growing discrepancy between ideological potentiality and actual realization.

The metamorphosis of the world through mass production, mass distribution, and mass communication forced man to think in economic terms and organize his business affairs on a global scale. But his life philosophy remained provincial. He absorbed the technological and economic aspects of the industrial revolution with surprising speed but without an understanding of their manifold implications, never realizing their dangerous antibiological and asocial dynamics if accepted without planning. The new technological trends developed rapidly but their social effects soon got out of control. In spite of exultant forecasts, the prodigious potentialities for healthy living, the fair participation in the benefits of mass produced goods, the persistent hopes to generate harmonious social relationships, have as yet not been fulfilled.

Man has invented pseudofundamentals to camouflage the ancient ailment of economic inequality and squalor. Only very slowly if at all, have the manifold advantages of the amazing technical improvements seeped down to the bottom of the economic pyramid. (The last census revealed a staggering percentage of American homes without plumbing, electricity, cooking gas, or adequate heating installations.)

The great metamorphosis served mainly for the accumulation of individual profits; for a sharp increase in the destructiveness of competition decided by force; by a

social ethics based on economic superiority rather than on the principles of justice. The result was an open fight between labor and management, and a half-hidden, smouldering class struggle between those who could afford the benefits of technological progress and those who could not. These ills, with their resultant monopolistic and fascist tendencies, finally led to repeated world wars which were cruel attempts to win capitalistic competition, and to check the upward spiral of the social progress so vigorously undertaken by the American and French revolutions. Our generation must stop the recurrence of these wars by understanding the hazards of a planlessly expanding industry which, by the blind dynamics of competition and profit, automatically leads to conflicts on a world scale.

The social and economic chaos of the world and the intellectual, emotional, and spiritual misery of the individual are appalling. There is, however, no use blaming earlier generations or specific nations whose actions apparently laid the basis for the prevailing confusion. What they did and how they did it were the effects of short-term measures resulting either from lack of imagination or class-determined actions and social ignorance. It is the duty of our generation to point out this fact in order to counteract the assumption that a providential power is behind human shortcomings and an injurious economic and social machinery; that not we but our ancestors are responsible for our plight. We can hope for improvement only after we have surrendered metaphysical interpretations in favor of a scientific analysis of human history. Tradition is man-made and must be constantly reevaluated, adhered to, or discarded, depending upon fundamental, common needs, not upon delusions which only extenuate social guilt.

By concentrating insight, passion and stamina, we may recover the neglected fundamentals. Our generation must accept the challenge to reinvestigate the elements of healthy living so that these can be used as yardsticks to clarify conditions around us. By integrating this newly gained knowledge with the existing social dynamics, we could direct our steps towards a harmony of individual and social needs.

Concerning the idea of "competition" and "natural selection" Julian Huxley states (in "Evolution: The Modern Synthesis," Harper & Brothers) that "future human progress is dependent on an increase of intraspecific (i.e., within the same species) cooperation *until it preponderates over intraspecific competition." He sees the future of man in the development of man's capacities. "There are many obvious ways in which the brain's level of performance could be genetically raised—in acuteness of perception, memory, synthetic grasp and intuition, analytic capacity, mental energy, creative power, balance, and judgment." "Increase of control, increase of independence, increase of internal coordination; increase of knowledge, means of coordinating knowledge, of elaborateness and intensity of feeling—those are trends of the most general order."*

He also speaks about a ". . . . . widespread fallacy—namely, that natural selection and the adaptations that it promotes must be for the good of the species as a whole, for the good of the evolving type pursuing a long-range trend, for the good of the group. . . . In actual fact," he states, "we find that intraspecific selection frequently leads to results which are mainly or wholly useless to the species or type as a whole." "This conclusion is of far-reaching importance. It disposes of the notion, so assiduously rationalized by the militarists in one way and by the laissez-faire *economists in another, that all man needs to achieve further progressive evolution is to adopt the most thoroughgoing competition: the more ruthless the competition, the more efficacious the selection, and accordingly the better the results." . . . "But we now realize that the results of selection are by no means necessarily 'good,' from the point of view either of the species or of the progressive evolution of life. They may be neutral, they may be a dangerous balance of useful and harmful, or they may be definitely deleterious. For the statesman or the eugenist to copy its methods is both foolish and wicked."*

the inalienable rights

The industrial revolution started with an enthusiastic emphasis on human values. The American and French Revolutions were test fights. Although the change from handicraft and shop-manufactured goods of feudalist society to modern machine production was a technological shift, the accent was in the beginning not so much on economic aspects as on biological and social ones. This was even more strongly emphasized later when the individualistic nature of the crafts was superseded more by the social character of machine production in factories. The enthusiasm generated by the slogan "liberté, fraternité, égalité" quickly liquidated the paternalistic transgressions of the nobility; and the preamble to the American Declaration of Independence, written years before the French Revolution, stated "that all men are created equal, that they are endowed by their Creator with certain inalienable rights: that among these are life, liberty and the pursuit of happiness: that to secure these

rights Governments are instituted among men, deriving their just power from the consent of the governed: that whenever any form of Government becomes destructive of these ends, it is the right of the people to alter or abolish it and to institute new Government, laying its foundation on such principles, and organizing its powers in such forms, as shall seem most likely to effect their safety and happiness."

The creative bourgeois forces had the sincere intention of making these principles work. However, the task of building a new society was enormous, and the methods of realization were limited by the unconscious dependence upon the previous structure. The bourgeoisie concentrated all its power on the task of breaking the might of the nobility. In so doing it moved into the place and function of the feudal master. Where the prince had previously reigned, the merchant was now the ruler. But he was far from sharing his liberated life with the fourth class—the workers. The bourgeoisie fought against the discriminations of the class above it, but inherited the ancient ideology of superiority over those on the next lower level with whom it was not considered fit to share the responsibilities of government. In fact, in the later phases of capitalism, the nobility, otherwise purely vestigial, was permitted further existence in order to traditionalize that myth of superiority.

specialists

Industry expanded quickly. The happily prospering businessman needed a vast number of mechanics, engineers, and supervisors to fulfill the profit requirements of an economic strategy which served exclusively the demands of mass-production prosperity. The common denominator was quick specialization, without any consideration of biological fundamentals. Vocational schools were founded for the required specialists. Fields of production were specialized and segregated from each other in the hope that the output would be greater if they were not distracted by manifold interests. Creative abilities, concentrated on limited problems, produced stunning results, expanding the boundaries of the capitalistic economy.

The wheels of industry turned fast and prompted a clear division of all labor, neglecting everything but these divided functions. All former responsibility and pride of the craftsman in the wholeness of a product was now eliminated. Participation in the mass-production process was limited to the execution of a small detail. As the laborer was deprived of the incentive and assurance of working for a creative result dependent upon his abilities for completion, the vital fluid which, as in a battery, carries the current from one unit to the other, evaporated. He became inanimate, working in the maze of tunnels and gangways of the specialized labyrinths.

With growing industrial opportunities the entire educational system attained a vocational aspect. Schools lost sight of their best potential quality: universality. They lost their sense of synthesis to the extent of a complete separation of the various types of experience. On the other hand "prosperity" increased, and with it the temptation to enlarge profits. Everyone seemed satisfied. Production figures and balance sheets "spoke for themselves," being sufficient justification of training for profit. High

premiums were paid for labor-saving devices, automatic machines. The specialists, proud of their abilities which could be translated into dollars and cents, knew more and more about less and less. With the exception of a few, their complex biological capacities became inert, their vision narrowed.

moral obligations diminish

The specialists had much detailed knowledge but their work floated in the air, missing both human and social direction. They were busy within their own territory of specialized tasks which had trained them to "mind their own business," neutralizing human sympathies, the natural social reflexes of a healthily developed individual.

This was the age of isolation, marked by fierce competition between specialists in the same field who at the same time maintained an attitude of *laissez faire* toward all others; consequently lessening the sense of obligation to cooperate, and fostering an unwillingness to share in the complex problems of society. The specialists worked to the best of their ability, aiming at an optimum performance of their given task. But their actions were determined by unrelated thinking, without the broad vista of social planning.

Early capitalists had accepted the basic premise of protestantism that man's greatest virtue is his conscience, responsible only to himself and God. They communicated personally with "providence" when a decision had to be made, and felt themselves—rightly or wrongly—as executors of God's will in the management of their merchant empires. Today no one feels even this responsibility, neither the abstract stockholder nor the usually inactive board of directors.

Irresponsibility prevails everywhere. An advertising artist, for instance, makes a layout for the sale of a product. He is responsible for nothing but his own art; that is, his professional standard. The merchant sells the product which is advertised. But he is not responsible for its possibly inferior contents, as it is already packed before it reaches him. The manufacturer is not responsible either because he only finances the production; the formula comes from the hired staff of a research laboratory trained to produce results which will compete with products on the market. Altogether, responsibility has been subdivided to the evasiveness of the microscopic.

indivisible education

At the dawn of human history preliterary education was by myth and folktale which had nothing but the spoken word to wield influence. Boundless fantasy created test cases of human endurance, courage, kindness and intelligence, instilling in the hearer a deep feeling of responsibility by the inevitability of cause and consequence: the good was rewarded and the evil punished, and it was up to the hero to choose the right side. The human urge to follow great examples, and to continue the threads of the old tales, inspired originality, challenged skill, and broadened knowledge. The solutions of the heroic figures were ideal solutions of problems facing man. These provided him with guidance and a deep inner security embedded in a greater tradition that had found ways of coping with life. And everywhere, they were surrounded by paintings, sculpture and architecture.

Later, education, already removed from the close contact with the elements and the soil as in Greece, had to broaden its scope. Mind as well as body had to be developed simultaneously; skill and shrewdness were no longer enough. In the Greek gymnasium the curriculum of elementary and high school (to the age of sixteen) consisted of play and sport "in order to eliminate the doctor" as Plato said. When social adjustment and health were well established, the education of the mind was started. Emotional development was molded by contact with the arts, especially through music. Even when learning mathematics, the pupils sang the rules in chorus.

In intellectual training, importance was given to the grasp and enjoyment of logical concepts, categorical thinking; the organized approach to problems, the ability to contemplate and think independently.

official and unofficial education

In the Middle Ages the "leader" education of the privileged benefited only a small number of people. But within this small group the emphasis was again put upon the *integration* of *all* abilities, including sports, music, science, philosophy, history, literature, sculpture, and painting. In that society, until the French Revolution, the toilers had the role of beasts of burden—no literacy was needed for their work.
Yet even they enjoyed on a modest level, a totality of existence through their arts, crafts, and folk festivals, songs, music, and dance and an all-embracing common religion.

This preliterary culture was destroyed by the industrial revolution because skilled and semiskilled labor had to be acquainted with a multitude of printed technical instructions. This necessity did not seem to be a bad basis for a democratized general education which had long been the desire of visionary educators. A wholesale literacy seemed at first to open new and happy vistas for everyone. But, paradoxically, mass distribution of schooling accomplished a negative miracle. The speedy dispensation of education for *immediate* use neglected biological orientation without which the urge for creative activity was lost and with it the most important aid to maturity and judgment. It provided the masses with a quick training but threw overboard its

"But I thank God, there are no free schools nor printing, and I hope we shall not have these hundred years; for learning has brought disobedience, and heresy, and sects into the world, and printing has divulged them, and libels against the best government. God keep us from both." (Sir William Berkeley, governor of Virginia, in the year 1671, in answer to inquiries by the lords commissioners of foreign plantations. In William Waller Hening, "The Statutes at Large." N. Y. 1823. Vol. II, p. 517.)

King James II, on ascending the English throne in 1685, sent this instruction to Governor Dongan, in New York: "And for as much as great inconvenience may arise by the liberty of printing within our province of New York; you are to provide by all necessary Orders that noe person keep any press for printing, nor that any book, pamphlet or other matters whatsoever bee printed without your special leave and license first obtained." (In John Clyde Oswald, "Printing in the Americas.")

purpose, namely, that "not knowledge but the power to *acquire* knowledge is the goal of education."• Exactly this was circumvented. The masses received a training by verbalization, emphasizing the process of receiving instead of producing. The goal was not to express oneself, to think independently and be alert, but to "apply" education for running machines according to instruction.

This may not have been obvious at the beginning of mass education. Only after the machine age had shed its revolutionary character as the great liberation from the toil and slavery of manual labor, did its masters think of methods to stabilize the privileges of a new ruling class. In addition to law and justice, which were amended to handle overt offenses against the status quo, other, more subtle devices for its preservation were found. Among these devices the most efficient was and still is the *unofficial* education which tries to confuse even the meager knowledge handed out by the official education in order to make it ineffective for social orientation. This unofficial education is the sum total of a thousand forces which try to influence public opinion, from advertising to town hall meetings, from art to science; a mighty propaganda machine run by intricately interwoven interests of lobbyists and pressure groups, monopolists and hired politicians from whose tentacles there is almost no escape.

confusion around science

As common sense grew into organized science and scientific research became more and more independent of metaphysics, the scientists had quite a battle to stabilize their hard-won new positions. Complications arose when they tried to investigate subjects which were considered taboo either because they served the interests of a socially privileged group or because they were rooted in the theological sphere of the supernatural.

For example, the theory of evolution of the species of Darwin was considered as dangerous and immoral as were the economic studies of Marx and the psychoanalysis of Freud.

The bourgeoisie found themselves in a great dilemma. On the one hand they needed organized science because research was the great reservoir from which profit-making inventions could be developed; on the other hand, science was a potential explosive capable of destroying beliefs essential for the status quo.

Since Galileo's mechanistic statement: "The goal of science is the mathematical and quantitative formulation of all experiences and relationships," science has been constantly fighting for its own definition. Galileo's definition was in tune with the 19th century idea of specialization which segregated the fields and listed them without relation to each other.

Francis Bacon's words crystallized the issue better. "There is another great and

• *stated by J. H. Pestalozzi (1746-1827) one of the great educators of history.*

powerful cause why the sciences have made but little progress. It is not possible to run a course aright when the goal itself has not been rightly placed." This was nearer to the greater concept that science is the body of ordered knowledge which can be used most productively by being related to a social goal. The more this idea gained in popularity, the stronger grew the efforts of certain business groups to neutralize the social function of science and emphasize its application for business only. It was stated time and again that scientists have to be neutral, objective, and not take sides in any case. "Objective science" had the same connotation as *l'art pour l'art*, that is, minding one's own business. Science was considered as a lucrative method of research and as such was commandeered for technological and industrial development. It was further declared that scientific teaching is not contradictory to theology or metaphysics. Consequently, in spite of such scientific facts as are known, the axiom of submission to supernatural authority, belief in manifestations of divinity in human life and in the offerings of nature, were retained as the fundamentals of education. The obvious contradiction between the two types of teaching came to cloud the thinking of the individual, burdening him with a double loyalty that was torn between what is vaguely referred to as "intellect" and "faith."

"He who has science and art has religion. He who has neither, needs religion," said Goethe.

"The supernatural is in part the region of the natural that has not been understood, in part an invention of human fantasy, in part the unknowable. Man must not attempt to put off any of his burden of responsibility onto the shoulders of outside powers. To become truly adult, we must learn to bear the burden of incertitude. The most difficult lesson to learn is that irrational and intolerant certitude is undesirable. When men assert that the scientific approach is incomplete it is because they are mistaking an early stage in its growth for full development." (Julian Huxley)

Individual as well as social problems, from child education to the conduct of world wars, have been and are being decided in this state of confusion, the emotional-sentimental or the realistic-scientific argument being used, depending upon the advantage to the powers involved.

the propaganda machine

Besides the basic ideological confusion concerning "objective" and "subjective" truth, a widely organized advertising, publications, books, fairs, exhibitions, press and radio, bombard the public with information desirable for the protection of vested interests. This service is rapid and versatile and covers a multitude of subjects without being concerned with human or social essentials. It simply stuffs the public with spot news, spectacular but unrelated facts. If there are no "thrillers," they are deliberately manufactured. The emotional life of the individual becomes filled with worthless schemes. Being in the midst of a thousand details, but missing all fundamental relationships, his world becomes shallow. The public is eager to learn; but without having been taught to think analytically, it succumbs to the influence of flash-quick commentators hired by, or unconsciously servile to, pressure groups. They fill the minds with straw and prejudice; they machine-gun their victims with half knowledge, conglomerations of significant and insignificant facts. Not given the tools of integration, the individual is not able to relate all this casual and scattered information into a meaningful synthesis. He sees everything in clichés. His sensibility dulled, he loses the organic desire for self-expression even on a modest level. His natural longing for direct contact with the vital, creative forces of existence becomes transformed into the status of being well informed and well entertained. Typical examples are the radio quiz programs which offer cash to the best memorizer; the comic strips which deal in episodes with-

out any psychological foundation; the round table discussions which always present both sides, with the wittiest and not the wisest drawing the applause; and—above all—the digest mania which tailors fiction and fact till they fit a prescribed number of pages and a predetermined attitude of the group financing the publication. In all these, the public is fed predigested pap by commentators as a substitute for independent thinking.

careerists

People are taught that the best way of living is to use other people's energy, other people's results. They buy not only material goods on the free market but also emotional commodities. Specialists in entertainment provide for a passive recreation. The industrial era marks the extinction of the amateur and the arrival of the careerist, whose only aim is to commercialize the means of expression; that is, not to produce out of conviction, but merely to deliver technical skill for whatever subject is asked. Art is taken not as elevation of individual effort through the sincere expression of feelings or as evoking an intense range of emotional experiences, but as an escape or *ersatz* in a kind of spectator's art.

In the past, group activities gave the people a feeling of solidarity, coherence, and articulation. At present they cannot even celebrate. Jubilant festivals of former times are transformed into dull fairs; eruptive and expurgating carnival into organized parade, an event for the benefit of parking lot owners. Canned music, phonographs, films and radio have killed folksong, home quartets, singing choirs, market plays, *commedia dell' arte* productions, without canalizing the creative abilities in other positive directions.

To measure up to the gigantic scale of machine production the most intensive and genuine of human standards should have been marshaled. To be specific: The biological evolutionary progress of man was possible only through the development and constructive use of all his senses, hands, and brains, through his creative ability and intuition to master his surroundings; through his perceptive power, conceptual thought, and articulated emotional life. But concomitant with the stabilization of the industrial revolution these biological functions were suffocated under the tinsel of an easy-going life full of appliances and amenities, much too overestimated in their value. Man who is by nature able to express himself in different media allowed these most valuable biological potentialities to be amputated or paralyzed.

It is an individual as well as a social waste to have eyes and not see; ears and not hear; to destroy the endowment of instincts to create. The result is an atrophy of capabilities, a step-by-step deterioration. Man's strong nature may endure for generations but the end is disintegration. The biblical statement that the sinner will be punished even unto the third generation appears here in a new light. Man, as a whole, is affected. He is gradually reduced to a blunt tool and ignorant of his needs. He is forced to fall back into passivity so that he no longer functions through an integration of all his abilities.

The unofficial education forced men—worker and employer alike—into a fallacious conception of their role in society. They were taught to master a ceaseless competitive rush for the utilization of the earth's treasures and consider money the sole measuring rod of success. They were turned into human machines with record output in specialized fields.

But specializing the individual too early leads to a tragic impasse: to the neglect of physiological and psychological impulses of acquiring and releasing a broad range of emotional and intellectual experiences.

Admittedly this complex world cannot exist without the arduous detail work of the specialist. But the education of the specialist should not start with the training of a single ability before a harmoniously related, all-round education has been completed. This specifically must be the difference between the new and the old specialist. Otherwise flexibility and adaptability will be thwarted. The new specialist will have to integrate his special subject with the social whole. This integration must be based upon a carefully fostered intuitive *and* reasoning power, the result of emotional and intellectual development in balance.

At present, there is a trend to eliminate or reduce the "cultural education" in the grade and high schools and replace it with vocational training. The argument is that because only ten or fifteen percent of the high school graduates go on to college, "the others should be prepared to take their places in the business world so that the first day a graduate is working he can make money for his employers".

Thus, why teach humanities, cultural subjects, when the greater part of the pupils will become workers, technicians, clerks? The others, in the professions, will have a liberal arts education in college.

It is of utmost importance to show the fallacy of this reasoning. Exactly because the majority of the American boys and girls never go to college, everyone should have his cultural education in the high school. Otherwise the majority of the people will not have it at all. The consequence would be an educational and cultural monopoly of a minority making an empty shell out of democracy.

liberal education

"Liberal" education, which is considered a positive step to counteract a one-sided vocationalism, is at present not much different from it. Vocational education provides external skills while liberal education furnishes the skill of verbalization, both usually a mechanical accumulation.

Vocational education, without the brake of the newest technological information, often conditions the student to obsolete patterns of approach and execution; similarly, the classics of the liberal arts—without the brake of social thought—may condition the student to petrified forms of class-determined thinking. Though this is, for the uninitiated, hard to detect, liberal education easily can lead to the worship of the past and can make zealots out of employers and employees alike. Saturated with the "absoluteness" of past philosophical schemes and thought categories, they rigidly carry out formulated or intimated orders. There are cases where instead of inhaling the often paralyzing atmosphere of liberal education, its evolutionary, historic substance has an impact upon the student, so that he learns to grasp the mechanics and the quality of an intellectual performance per se. But without a biological and social goal even such an impact may act as a two-edged sword. It can cut a path toward a social or an antisocial direction.

stabilizing the transitory

Superimposed upon official schooling is the more powerful unofficial education. Research institutes, opinion polls, donations, scholarship grants, create a perfect framework for any required type of influence. The consequence is that ephemeral aims transform gradually into solid facts, stabilizing the transitory.

The emphasis on quick vocational education, for example, was not an order issued

by the industrialists to the educators. The technical and commercial forms of vocational education became the desired goal through the constant ridiculing of the "impractical" professor and the "idealistic" intellectual, and glorifying the "hard realist" who knows the "practical" needs of the country and "serves progress." Attempts to counteract any such process usually come too late.

To redirect the industrial world toward a balance between a biologically sound human existence and the present industrial society, and to create a planned cooperative, economy, requires almost a revolution. Because of the hidden or open animosity against reform, the well-knit influence-team of a purely economic leadership usually condemns or suppresses constructive proposals for necessary changes.

The severe criticism of the present educational system has become the common property of every intelligent observer. In the book "Speaking of Man," by M. F. Guyer (Harper & Brothers) is the following statement: "Unfortunately much of the young student's efforts . . . demand memory and skill in the mastery of symbols, and are therefore not only not conducive to reflection but may even be antagonistic. Consequently, we need an equal amount of training in observation and judgment to counteract this danger. Yet such corrections are sill largely lacking in our schoolwork. . . . Hence the phonographic mentalities —insofar as mentality is discernible— which confronts us in our high schools and colleges."

One has to add to this a socioeconomic point: the high valuation of the school as a place of education makes most people believe that in visiting one they have already accomplished the process of education. This puts a false emphasis on the purely receptive part of the learning act. The passive attitude is especially strong with people who believe only in the economic benefits of education, its value to be measured in dollars and cents alone. In reality, only a give-and-take action—in the language of education: creative collaboration— can lead to results.

second-hand facts

Every epoch has its own theories about education. Today, for most people formal education merely means an abbreviated, intellectually condensed form of other people's experiences, the result of which can easily be utilized to earn one's living. To be well educated today one must have memorized the seemingly useful experiences of the past in order to be able to repeat them mechanically on the proper occasion. This type of education had at one time a kernel of truth in it. It was and is essential that mankind assimilate experiences of the past but not literally, not without critical analysis. Tradition must be dynamic. It cannot be a creative agent if it is mechanically adopted and changed into empty convention; if its content is limited to verbalizations only, ignoring one's own experiences, observations and deductions; if it becomes the repetition of repetions of repetitions. To memorize facts one has never experienced will result only in showy demonstrations of unrelated learning. This is the "Information Please" culture where the participants shine in admirable versatility. In reality those participants represent only encyclopaedic symbols. They personify an auxiliary instrument functioning with the *semblance* of a meaningful scheme. They are the prototypes of an education which advertises learning through quantitative verbal information, turning away from the organic practice of self-experience and self-expression. When such "derogatory" matters as arts, crafts, and machine technology are regarded as ballast and thrown out from liberal arts education, the student is left in a thin atmosphere of mere verbalism.

attempts at improvements

It is obvious that a fundamental orientation is more rewarding than the knowledge of incoherent details. Naturally, through the ages, every type of education from kindergarten to university tried to approximate this idea and set up a framework of cross-fertilization of thoughts. But it makes a difference whether in practice this leads to a synthesis of knowledge-elements or only to an accumulation and juxtaposition of second-hand facts.

The Montessori kindergarten made a good beginning. It brought the child into the atmosphere of correlated activities and of complex dealings through re-enacting the

metropolitan adult life in miniature. This had its points. It organized in a short time psychophysical experiences which otherwise would have been only casually and insufficiently accumulated. It brought the child into contact with the group and made him socially conscious. However, Montessori had a shortcoming. It neglected the child's ability to transform the accumulated experiences into *creative* action. The imagination of the children in the Montessori kindergarten easily became flattened by being turned to immediate practical applications. To be sure, a part of their potentialities were used, but fantasy and originality of solutions were ignored.

Grade and high schools are experimenting today with "progressive" schemes. The program includes independent investigation accomplished by the students and a free study plan offering opportunities for experiencing the realities of life. The difficulty here lies, in many instances, in the fact that the exercises and problems lead the student only to a collection of data with the aim of a verbalized performance. The possibility of a simultaneous creative concept which would guarantee a chance to synthesize the results is disrespected. In the future, if progressive education is to be successful, it has to correlate the verbal performance of acquired knowledge with other means of expression such as painting, sculpture, poetry, play and music. Then it may better fulfill its revolutionary aims.

The importance of coordination has been recognized by colleges and universities which introduced new professorships for the interrelation of faculties to bridge the existing gaps between the different departments. Yale University found a good name for this task of integration, "The Institute of Human Relations," but as yet not the proper function. At the University of Chicago, the College for Undergraduates made a good beginning in studies with a threefold schedule in survey courses of natural and social sciences as well as humanities. The courses still neglect the fact that social thought has to be taught by every teacher just as English has to be part of all the courses. At the same time capacities of the student must be considered also on the technological and artistic plane, beyond verbalization; that is, his potential expression by means other than the word.

In order to bring education into a state of equilibrium of hand and brain, intellect and emotion, the task is to give the student enough opportunity to use his brain together with his emotional potential; to provide for sensory experiences of eye, nose, tongue, and fingers, and their transformation into controlled expression. The student must be allowed to find the facts himself by experiment with his material. He should not be "led" in any certain direction; his brain should not be filled with plaster casts, nor at too early an age with books descriptive of second-hand experience ineffective for activating his thinking, or with books beyond the limit of his understanding. Education must be the opportunity to make one's own discoveries and to form one's own expression, providing the purposeful fusion of social tradition with the individual's experience, practice, and conclusions. The knowledge of historical continuity is one of man's most valuable steppingstones in his evolutionary progress. The purposeful accumulation of experiences can protect him from the repetition of mistakes, so that

his creative power can gradually be saved for socially productive tasks. This productivity should be the alpha and omega of education, the translating of all the elements of learning into a creative sociobiological living.

Education should bring to the individual dignity and refinement of his human status, furthering the better and more conscious use of his intellectual and emotional capacities. But naturally, he has to have the security, too, that in addition to these benefits he also will participate in material accomplishments. Earnest consideration must be given to the freedom from want, to a decent living standard. This should begin with the teachers themselves. In China, for example, teaching is the highest esteemed profession among social groups. In this country the businessman is supreme. This is shown in the social and economic evaluation of the intellectual professions. The teachers are paid not on the basis of their educational proficiency and human excellence but by arbitrary fixation of the age groups they teach. The best teachers, however, belong in the kindergarten and elementary schools as there lies the decisive beginning of educational influence.

In democratic countries of Europe such as Switzerland and Sweden, the greatest care is paid to the education of the youth before entering the universities. This is possible only by an adequate teacher training in which the whole community is interested. For example, in Switzerland every teacher for the grade schools is appointed for life by the vote of the citizens of the respective districts. Their payment guaranteeing a decent life is according to the belief that no democracy can exist without the most careful education of its citizens.

When this country also comes to realize the importance of competent teachers in kindergartens, elementary grades, and high schools as well as in the universities, and pays them adequately to secure the calibre of teacher who will really teach, and not merely relay information, an important step toward better education will have been made.

The solution is that man must have the insight and the intellectual power to utilize the entire body of culture and civilization. He cannot turn away either from past knowledge or from present reality. He must face both with all their ramifications and possible interferences and be prepared for the fact that their waves can strengthen or extinguish each other. This involves selective ability in continuing specific trends or abandoning others if they prove to be damaging. Teaching focussed on learning for learning's sake will always bypass the ultimate objective which alone can give sense to the attempts of integration. Choices are easy if the goal is clear. Knowledge should not be suspended in a vacuum; it must be in relationship with sociobiological aims. This integration gives to human life content, direction, and a sense of security.

The large scope of such an objective should not be frightening. The hundred year's struggle of the workers for solidarity shows that there is nothing more satisfactory to an individual than to belong to a group which has a social goal and through it a firm coherence.

With a social goal, education will develop everyone's capacities for his best performance; at the same time it will provide the basis for group cooperation since a common aim is the best activating agent for the efforts of the individual.

A social goal can incite most valuable qualities in young people, unselfishness and devotion to a task even if the work does not promise a specific reward. But only when all interests are focussed on social justice and social harmony will the essential role of the individual be secured in the realization. Such a concept will produce coalescence and will give a mighty stimulus to the individual for his personal growth. The better he learns and works, the more his usefulness increases within society: a supreme identity of personal and social gain! Once this knowledge is attained, individual ability cannot be used for competitive suppression of seemingly lesser talents. Since everyone's best is needed, cooperation must become the standard. Thus a new education can lead to a simultaneous affirmation of individual and social needs and can become the instrument of a happier and healthier life.

It is a generally accepted premise that capitalism with its industrial technology has to serve in the most economical way for the realization of profit. However the "economical" should be subordinated to human requirements to make technology a benefit instead of a curse.• We must control the application of material, technique, science, and art not only economically but also biologically and socially. To meet the manifold requirements of this age with a definite program of human values, there must come a new mentality and a new type of personality. The common denominator is the fundamental acknowledgment of human needs; the task is to recognize the moral

• *"Think in efficiency, not in dollars and cents." (Gropius)*

obligation in satisfying these needs, and the aim is to produce for human needs, not for profit.

the task of this generation

Each generation differs from the preceding one in the determination of its task. The task of this generation is to search for its roots. It must try to understand the significance of natural functions so that everyone may become aware of the essential purpose of living: the preservation and refinement of the biological nature of the individual within a harmonious social existence. The value of such an existence will be measured in terms of cooperation, social usefulness and personal happiness. This new life requires a new methodology for approaching problems; a social mechanism of production and a creative education.

But the teachers of mankind are not only the personnel in schools, colleges and universities. To reach different temperaments, intellectual, verbal explanations alone are not effective. There are a great number of other approaches needed. The arts, for example, can take the individual by storm through sensory experiences, directly by feelings, without involving too much intellectual participation. The arts can play an important role in the re-education of the people.

For the time being everything is in a state of flux. The best we can do is to expose ourselves to contemporary art and its formulations which are based mainly upon the direct sensory impact of its means. The result is a grasp of new imagery and its new rhythmic structure; a purification and strengthening of the perceptional and conceptual faculties. This new imagery is the essence of the manifold potentialities of this yet-chaotic world translated into a language of directness and intensity.

capacities

It has to be said again and again that every healthy person has deep within him the biological capacity for developing such a language. Everyone has a creative nature. Everyone is naturally equipped to receive and assimilate sensory experiences; to think and to feel. The schools must know the *technique* of developing this natural equipment in the most formative years of youth.

That a general standard of self-expression without specific talents can be reached is proved by the age-old European education of the wealthy where a relatively high cultural average was produced through the tutor system or by private schooling. It has to be said again and again that everyone is sensitive to musical tones, to colors, to touch and space relationships: that is to say, everyone is able to participate in the entirety of such experiences and everyone can produce non-verbal expression in any medium. Every normally healthy man can articulate the material of the musician, painter, sculptor just as he can articulate language, the verbal material of the speaker. The truth of this is apparent in everyday life. Individuals in moments of emergency

It is often said that the European high school (gymnasium) had a higher standard than the American because through free public education here anyone can go to high school and the less talented pupils are said to retard the advancement of the more talented ones. The implication is that in Europe only talented pupils registered in the "gymnasium." That is not true. The European high school (gymnasium) demanded rather high tuition fees. It was an agency for class education and had little to do with any principle of ability selection other than the parent's purse. The high educational standard came from the teachers. They were able to carry the less talented youth through the scholastic curriculum. This result could be achieved in this country, too, if the educational requirements of the teachers were raised.

break down conventions and inhibitions and perform "miracles" beyond their "normal" capacities. Another proof is offered in the works of children and primitive peoples; their spontaneous expressions usually spring from an inner sense of adequacy not yet shaken by the doubts of a perfectionist. Children sing, draw, paint, dance in moments of emotional intensity. These types of expression are not always synonymous with the "art" of the "professionals" but they are examples of a life governed by inner necessities. Without this emotional articulation and expression life becomes one great frustration.

". . . the art of primitive culture seen now as the whole ritual, the symbolic expression of the meaning of life, appeals to all the senses, through the eyes and ears, to the smell of incense, the kinaesthetisia of genuflection and kneeling or swaying to the passing procession, to the cool touch of holy water on the forehead. For Art to be Reality, the whole sensuous being must be caught up in the experience. Our present practices, by which people sit on stiff chairs and listen in constrained silence to a piece of music, or wander in desultory unpatterned groups in an art gallery looking at framed pictures hung in desperate disregard of any relevance which might exist among them, is the very opposite process."

fear

Fear and self-consciousness are the most serious psychological hindrances in life. Awed by reports of great achievements of historic personalities, most people become perfectionists. They "know" beforehand that their work cannot be worthwhile because they can "never" match historical standards. The result is paralysis of any creative attempt, brought about by the fear of being laughed at. Unfortunately, many educators promulgate the idea that certain celebrated accomplishments can never again be achieved. The students walk in the shadow of geniuses, often distressed that they can never attain such creative greatness. However, the instinct of self-preservation in young people will often react against such a vicious dogma of inferiority and will free them for their own individual attempts.

Every school should build up an elementary curriculum with exercises that do not allow a comparison of the student's self-expression with the work of a "genius." The student must gain a range of experience through his own experiments, form his own judgments, develop his own abilities before he studies the historically great. Then the student will discover in himself something resembling a sixth sense of which he had not been conscious before, a coordinating creative ability not to copy from, but to use indigenously. No matter how he employs this power later on, whether he uses it as painter, designer, lawyer, doctor, housewife, or bookkeeper, he will have gained a sense of joyous confidence in his own performance. If we could know point by point why in the present educational set-up the adolescent loses the directness, sincerity and intensity which he possessed as a child, we should have a powerful weapon against the prevailing tendency to produce automatons.• If the ban of self-consciousness and obsolete standards could be removed, everyone could retain the truthfulness of observation, fantasy and creativeness which are the preliminaries to expression, and—on its highest level—art. And art is the best means to fuse all the elements of personality.

". . . in primitive societies, the artist is not a separate person, having no immediate close relationship to the economic processes and everyday experiences of his society. The concept of the artist whose gift sets him apart, or who only becomes an artist because his life history has set him apart, is almost wholly lacking. The artist, instead, is a person who does best something that other people, many other people, do less well. His products, whether he be choreographer or dancer, flutist or pot-maker, or carver of the temple gate, are seen as differing in degree but not in kind from the achievements of the less gifted among his fellow citizens. The concept of the artist as different in kind is fatal to the development of any adequate artistic form which will satisfy all of the

the amateur

It is good to believe that some day the mechanics of art will be explained with greater clarity in scientific terms. Then it will be possible to understand more of its com

• *A little boy, when asked how he had made such a beautiful picture, said that he "only thought a thought and just drew around the think."*

sensibilities which are developed in individuals reared under the impact of these forms.

"Both of these differences, the difference between a ritual which involves all of the senses and our present artistic practices which fractionate the sensuous man, and the difference between an artist who is merely best of a host of fellow practitioners and the artist who is different in kind from men who are hardly his fellows at all, are not inherent in the nature of civilization as compared with the nature of primitive society. Our own middle ages, as well as many cultures of the past, developed complete, harmonious rituals which involved every type of sense experience, and the concept of the artist and the related concept of the fine arts are both special bad accidents of our own local European tradition.

"By making art a specially precious part of life, we have demoted it from being all of life, seen from one point of view. When this is done, everyone suffers—the 'artists' and all the people to whose lives significance might have been given."

(From "Art and Reality," by Margaret Mead in College Art Journal, *May 1943, Vol. 4)*

munity function as well as its vital importance to the individual. Psychoanalysis already shows through the mechanics of dreams the role of the subconscious existence. This justifies the hope that the sources and mechanics of creative work will one day also be unveiled. Then we shall be able to incorporate art not only into education but into everyone's daily routine.

In this sense art is the realm of emotional communication, inspired by the subconscious as well as the conscious existence. Its imagery is inherent in and connected with the sensory experiences which express a concept beyond the intellectual grasp, often the imponderable relationships of man as a biological and social species. This language of art has to be learned by frequent exposure to it. But even if psychological research should one day uncover the creative mechanics and the rich motivations of art, the aim would not be that everyone can or should become an "artist." Art cannot be taught, only the techniques to express a concept. This can lead to "art," namely, to an organization of the elements of expression directed toward communication and social coherence.

•

Formerly, in the academic art school, analyzing and imitating past works of art was enough to stabilize art as a profession. The assumption was that if you learn the rules and repeat the recipes, you will become an artist. But the better advice is: "Be yourself! Alert, honest and human!"

The sincere expression of the layman in any medium can be the start for "art." This is why the amateur is one of the hopeful promises of a future society. He is an authentic testimonial of the manifold abilities of the human being to act and react purposefully if emotionally stimulated.• "Art" may be the result of an inner drive, a relieving catharsis, an elimination of inhibitions and conflicts. It can be also a purgation of emotional overflow. Such an expression is the "art" by the people and of the people; art as part of the normal living, as natural as breathing. In such cases the expressions may have varied degrees of quality; "good," "better," "best," as the goods in a mail-order catalog. But only the person who is able to rise beyond private sensations and translate his intuitive grasp of the unadulterated problems of his time into imagery, into a coherent expression; that is, into visible, audible or tactile forms, can be "best." Such a peak—emotionally, technically and spiritually the highest—can usually be reached only by a "fulltime" worker on a broad basis of unceasing experiment, saturated in the knowledge and the spirit of past and present civilization. This does not mean that everyone who tries to express himself has to fall back upon the technical and spiritual heritage, the historical accumulation of the past. People may start with the eternal recurrent psychophysical reaction to their surroundings as well

• *An analogy from other fields may clarify this point. One does not have to be a judge to have a sense of justice, though there are professional judges. It would be a bad sign for our adaptability if only doctors had the knowledge of healing. Little children, for example, when ill, will not touch food. This is the intuitive impulse to protect the organs from further strain and leave the healing process to the body itself. "The best doctors in the world are Doctor Diet, Doctor Quiet, and Doctor Merryman," said Swift.*

as to the materials of expression, such as color, sound, volume, space. Theoretically, everyone may start out almost as prehistoric man, because even such a start would help him to gain an emotional "literacy," that is, the ability to articulate material stimulated by emotional impulses. This can lead to recreation and enjoyment through the asthetic appreciation generated by experience and acuity of discrimination. But this is yet rare. Our culture is full of those illiterates who cannot read or write and the others—the illiterates of the emotional life, who live without ever attempting to translate their emotions into meaningful expression. To live without this means emotional starvation just as missing food means starvation of the body.

the function of art

Art is the most complex, vitalizing, and civilizing of human actions. Thus it is of biological necessity. Art sensitizes man to the best that is immanent in him through an intensified expression involving many layers of experience. Out of them art forms a unified manifestation, like dreams which are composed of the most diverse source material subconsciously crystallized. It tries to produce a balance of the social, intellectual and emotional existence; a synthesis of attitudes and opinions, fears and hopes.

Art has two faces, the biological and the social, the one toward the individual and the other toward the group. By expressing fundamental validities and common problems, art can produce a feeling of coherence. This is its social function which leads to a cultural synthesis as well as to a continuation of human civilization.•

Today, lacking the patterning and refinement of emotional impulses through the arts, uncontrolled, inarticulate and brutally destructive ways of release have become commonplace. Unused energies, subconscious frustrations, create the psychopathic borderline cases of neurosis. Art as expression of the individual can be a remedy by sublimation of aggressive impulses. Art educates the receptive faculties and it revitalizes the creative abilities. In this way art is rehabilitation therapy through which confidence in one's creative power can be restored.

the "professional" artist

The best representatives of the arts whether in music, poetry, sculpture, or painting, even in their single works, always express the spiritual state of the age. Today a painting or a sonata is a tightly woven fabric of which the historic warp may often disappear under the richly textured modern yarns of the weft. Nevertheless, the soundness of the weave is dependent on both. The contemporary artist organizes his work within this given historical and cultural framework, but he derives his subject matter from his social and spiritual interests. These are expressed in different periods with different means and themes, such as a still-life, a portrait, a landscape, or an

• *"Culture" and "civilization" are used in this book as synonyms, though in German, for instance, a differentiation is made between the two: "civilization" is the term for the technological and "culture" for the humanistic sphere.*

abstraction, all possessing a sensory directness as well as freedom, order, and harmony which are among the organic qualities of art. On the other hand the intensity of the artist's work is dependent upon the uniqueness of his purpose and his ability of transference. Thus the professional artist's solutions are dependent upon the existing body of knowledge in addition to the sociobiological components. But if he wishes to stir his audience and appeal to their senses, he has to create powerful new relationships. He can do so either by developing tendencies or by opposing them. The gradual elimination of the still existing feudal residues, that is, obsolete economic theories, obsolete patterns of individual behavior, obsolete sexual and family relationships is not an automatic matter.

It is unimaginable that, along with the economists, philosophers and politicians who advance suggestions for social changes, the most intuitive and responsive people in a society, namely, the artists, have no say. Tyranny and dictatorship, manifestos and decrees will not recast the mentality of the people. The unconscious but direct influence of art represents a better means of persuasion for conditioning people to a new society either by its projective or satiric-destructive means.

The true artist is the grindstone of the senses; he sharpens eyes, mind, and feeling; he interprets ideas and concepts through his own media. In the midst of vast social controversies he cannot escape that task. He has to take sides and proclaim his stand; indeed the artist has a formative ideological function, otherwise his work would be only an exercise of skill in composition. Hitler was aware of this. He propagandized trash, he tried to destroy modern art, science, and philosophy as the greatest sources of opposition to his vicious system of oppression. He banned the contemporary, the "degenerate" art, as he called it, from the galleries and museums, burned books, and forbade the teaching of Einstein's theories.

He sensed that the content of art is basically not different from the content of our other utterances. The only difference is that art is produced mainly by subconscious organization of the means implicit in the cultural and social setting of the period. To be sure, there are numerous opportunities for expression and research in all fields but among them only a few which are positively related and favored by the dynamic forces of the age. In intuitively choosing certain esthetic or technical problems, the most sensitive and advanced artist is a tool for the recording of the time-expressive contents. That is, form and structure denote definite spiritual trends. The work of the artist corresponds to the creative problems in other fields, complementing them in the structure of civilization of that particular period.

Art may press for the sociobiological solution of problems just as energetically as the social revolutionaries do through political action. The so-called "unpolitical" approach of art is a fallacy. Politics, freed from graft, party connotations, or more transitory tactics, is mankind's method of realizing ideas for the welfare of the community. Such a "weltanschauung" is transformed by the arts into emotional form, and becomes retroactive in the realm of the conscious existence. This suggests that not only the conscious but also the subconscious mind absorbs social ideas which are

then expressed in the specific media of the arts.• Otherwise any problem could be successfully solved only through intellectual or verbal discourse. The difficulty lies in mass participation. The masses are filled with a petit bourgeois ideology, the masculine superman ideal promoted by papers and radios, books and films—by the unofficial education which the people have been taught to enjoy in spite of lip service to casual revolutionary political ideas. Once their sensitivity is killed, they are unable to receive the message of art whether contemporary or old.

The success theory of the profit economy pays a high premium to the anti-artist. Artists are considered effeminates who do not have the stamina to participate in competition. This is not only untrue, as are most clichés, but tragic since at present art is perhaps the only field where convention does not completely suppress sentiment and where the omnipotence of thought and the independence of emotion are kept relatively intact. To follow the divining rod of intuition and expressive desire may often act as a psychological lifesaver especially in periods of hidden and open suppression of independent thought. The phrase that "the artist represents the consciousness and memory of his time" is a good characterization of his function. No society can exist without expressing its ideas, and no culture and no ethics can survive without participation of the artist who cannot be bribed.

Art represents the uncensored statement of its author; this is one of its most positive characteristics. No one but the painter, the author, the composer is the sole master of his performance. The simpler his medium and the less investment it involves, the easier it is to avoid possible censorship and to preserve the ways of genuinely free expression.

Through his sensitivity the artist becomes the seismograph of events and movements pertaining to the future. He interprets the yet hazy path of coming developments by grasping the dynamics of the present and by freeing himself from momentary motivations and transitory influences but without evaluating their trends. He is interested only in the recording and communicating of his vision. This is what materializes in his art. He cannot misuse such a situation. To be a "fulltime" worker, a "professional," involves a moral responsibility. This is why the secured existence of the uncompromising and incorruptible artist is so important to society. If he does not have adequate tools and materials, he cannot produce his best. His records cannot be fluid

• *Alfred Korzybski, the leader of the general semanticists, states that if a "translation is made into the language of lower centers—namely into 'intuition,' 'feeling,' 'visualizations'—the higher abstractions gain the character of experience. By re-translating our higher order, verbal abstractions of relations and order into simplified but direct manifestations which can be visualized and felt, modern art affords immediate subcortical experience of essential structure." (Quoted by Oliver Bloodstein in "General Semantics and Modern Art," in "etc." Vol. 1, No. 1, 1943)*
This suggests the intertwined nature of human experiences and their expression. I question only the biological justification of discriminating between "higher" and "lower" orders of experiences. Biologically seen, they are of equal *order and without their balanced, interpenetrated performance no satisfactory life exists.*

and direct if he cannot consecrate his life to constant work in his craft, if he has to fight for minimum subsistence.

The silly myth that the genius has to "suffer" is the sly excuse of a society which does not care for its productive members unless their work promises immediate technological or economic applications with calculable profit.

"We must have now sciences at the places where formerly intuition directed us." (Frank Lloyd Wright)

Among the artists in the 19th century there are Philip Otto Runge in Germany, Delacroix in France, who had the reputation of being competent color research workers. They applied science to their art. But there is a reciprocity, too. Seurat, for example, with his pointillist art, intuitively anticipated the science of color photography.

Sometimes a whole chain of successive influences can be traced from science—to technology—to art—and back again to science. Examples can be found in the research of photographic speed exposures such as that of Muybridge, Thomas Eakins, and the industrial motion studies of Taylor and Gilbreth which were transferred into art by the futurists around 1912. This in turn influenced scientific studies resulting in the stroboscopic photodiagrams of Harold Edgerton, MIT.

Rodin, the sculptor, was fascinated by light problems in the time of Helmholz' investigation of optics. As a result, Rodin introduced a new type of chisel-cut to achieve transparent shadows, in contrast to the heavy shadows of the renaissance sculptures.

At present it would be a great help for the painter to know more about scientific optics so that he would be able to make controlled light paintings without the use of pigment, with only polarized stresses of material; or by gratings (almost invisible lines engraved into a transparent surface) and lit from behind so that prismatic light effects could be produced at will for colored light compositions.

The new artist working with plastics inevitably has to take up scientific studies or else wait decades until the knowledge about plastics becomes a commonplace.

art and science

The task of the professional artist is not only to vitalize people but also to continue and synthetize spiritual traits. For this, besides the unconscious elements, he must have conscious source material, sound scientific outlook though not necessarily a method. But most people educated in the liberal arts, and frightened by badly-taught mathematics and physics, have an awed respect for science in any of its possible interpretations. Because of this fear, they are suspicious of an art which uses elements reminiscent of geometrical shapes, synthetic materials, and optical instruments.

In popular short-cut theories there is the problem of "chaotic nature" versus "organized machine;" sober science versus mystical religion; social planning against free enterprise. This is oversimplification. The eyes of the artist record cows and dynamos, trees and skyscrapers equally well. They represent visual raw material for him. And this is the real issue. The actual aim is sociobiological synthesis. This cannot be achieved without "laboratory experimentation," though this is another objection to contemporary art, voiced often by the layman. But without experimentation there can be no discoveries and without discoveries no regeneration. Although the "research work" of the artist is rarely as "systematic" as that of the scientist they both may deal with the whole of life, in terms of relationships, not of details. In fact, the artist today does so more consistently than the scientist, because with each of his works he faces the problem of the interrelated whole while only a few theoretical scientists are allowed this "luxury" of a total vision. The main difference between the problems of artist and those of scientist is the difference in the form of their materialization and grasp. Plastic art is expressed with means largely comprehensible by sensory experiences on a non-verbal level. Even if, as in old paintings, the creative impetus is screened by the logical presentation of a describable theme, it is not the landscape or still-life that results in art, but the creative act by which the subject matter is transmuted into visual form. On the other hand, a scientific discourse is stated in rational intellectual terms even if the impulse to it comes from subconscious regions of the intuition. On the basis of sentimental education, many still believe that the emotional depth of the artist will be endangered by the attempt to organize his elements consciously. But the artist ought not to be afraid of conscious traits in his work, as the conscious approach will be translated by him into terms affecting the senses. The conscious problems of research are on a rather modest scale anyhow, overshadowed by the intuitive forces and the subconscious mechanism of expression. In every art work there remains a great number of components which cannot be verbalized, only approached intuitively. Even product designs executed with a largely

conscious approach generally answer more questions than their producers originally expected they could. The reason is that so far product designs have shown the most obvious integration of intuition and science, form and function. Their analysis can sometimes be helpful in giving more effective information; it may stimulate new techniques in the subconscious transubstantiation of such information. Analysis can eliminate also the repetition of overused elements and create an inner security for new solutions.