PRINCIPLES OF ART EDUCATION

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A PHILOSOPHICAL, AESTHETICAL AND PSYCHOLOGICAL DISCUSSION OF ART EDUCATION

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PUBLISHER'S NOTE

In presenting this little book to the public, we feel that an extended statement of our interest in art education as an integral part of a well-rounded public school training is not necessary.

Since 1882 we have been engaged, under our present Company name, in the investigation and promotion of art education in the elementary and secondary schools. During all this time we have endeavored to treat the subject in the most thorough and inclusive way, and, in the preparation of the various publications which we have from time to time offered to the public as aids in teaching art to the children in the schools, we have brought to our assistance the best *thought* and *experience* which the country afforded.

The little volume here presented speaks for itself. The ideas which it contains have been to us an inspiration and guide in considering the broader and more humanitarian aspects of the great subject of Art as related to Education, and we present it to the public, therefore, in the belief that the deep thought and logical argument which it presents will inspire the American educator and the American teacher to a broader, more thoughtful, more comprehensive, and more thoroughly appreciative conception of the possibilities of Art Education.

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THE PRINCIPLES OF ART EDUCATION

PART ONE — PHILOSOPHICAL

PHILOSOPHY of Art Education sounds, perhaps, to many ears like too pompous a phrase —philosophy seems too big and too solemn a word to be coupled with the question of drawing instruction in the public schools. The word philosophy reminds us of the highest problems and the widest spheres, of morality and truth, of soul and universe, but not of pencil and brush, of curves and shadows, of tones, measures and shapes. And yet philosophy is not disloyal to its axioms when it approaches the smaller spheres and the little things; and, on the other hand, each problem is for philosophical inquiry at once connected by many ties with the most general and most important questions: we cannot speak of an atom without somehow settling for the moment the problem of the whole universe. We cannot, indeed, all the time

see and do everything under the aspect of eternity and of absolute ends, but we can turn to the wider outlook and to the fundamental problems involved whenever we become perplexed and feel unsafe with regard to that which we are doing even in the narrowest circle. When we become skeptical as to whether it is worth while; when we hesitate whether to go on or give up;—then we must emancipate ourselves from the limitations of those superficial discussions which refer merely to detail and must look out for general principles; in short, then, we must take the way of philosophy, as philosophy alone speaks the final word on the value and meaning of the world and any work in it.

Yes, philosophy does not claim as its object anything outside or beyond the material with which the special sciences have to deal; there is no division possible according to which one part of reality becomes the study of the scientist, and another part the study of the philosopher, and still less has the philosopher the right to interfere with the dispassionate work of the specialist. The philosopher does not dare to come to the physicist or chemist,

to the astronomer or geologist, to the historian or psychologist, as an intruder into his particular work; he does not say, your results must be changed; the specialist alone has to seek the special knowledge and the special truth, and he must seek it undisturbed. And as with the seeking of knowledge — not otherwise with all our seeking and trying and doing. The professional specialist alone can tell us how to go to work; he alone can teach us to adjust the efforts to the ends, to select the tools and to prepare the plans, to fit the material and to train ourselves — our aim may be to teach or to preach, to practice law or to compose music, to cure diseases or to build bridges, to reform practical life or to draw objects, or design posters, ornaments or buildings. The philosopher cannot step in and show us how to do any one of these things. To all our knowing and doing the specialist alone can give us the answers to the special questions and the advice for the special actions; and yet, neither in the one nor in the other field, can the work be conceived without ultimate reference to philosophy.

There is no science which does not start

with certain presuppositions; no action is under way which does not take the value and worth of certain ends as granted. The specialist cannot examine those presuppositions or those ends, he accepts them uncritically — it is the philosopher's task not to accept anything without critical inquiry and to dissolve and to criticise those presuppositions and ideals. The physicist must study all the material causal processes in space and time without interference from the philosopher, but the philosophy of knowledge alone can tell him what space and time and casuality mean; in the physical work itself all this is silently presupposed and philosophical methods only can approach such ultimate problems. In a similar way the historian or the psychologist may study the inner life of man, but he presupposes without criticism that the other men he meets or has heard of have consciousness; that is a blind belief which he does not try to examine; he perceives a man, sees his movements of expression, hears his words, and takes for granted that there is consciousness behind those physical phenomena; philosophy alone can examine such a fundamental idea. Or if the

reformer works in the community toward a better fulfilment of duties or toward a fuller propagation of happiness, he presupposes without hesitation that the happiness of the largest possible number is desirable, or that it is worthy to perform one's duty: he believes in these ends — it is the philosopher who inquires critically into all the possible ideals.

Philosophy,— that is, the research into the fundamental presuppositions and ultimate values and ends of all our knowing and doing,—is thus the only inquiry which does not itself begin with presuppositions, which does not accept any beliefs and theories beforehand, which does not build upon the basis of any science or activity, which is necessarily itself the basis of every possible knowledge and duty. It starts, therefore, not from any scientific results, as one of its functions must be to find out what right and value belong to science. It starts from the immediate experience of life, and from here it must settle, or at least understand, the meaning and value of every possible function of life. It is thus the court of last resort for every work, a court which never takes cognizance of the

question whether the work is well calculated to reach its goal — leaving this fully to the specialist — but which decides whether the aim and the presuppositions are right and what their value is compared with others.

Before this highest court the case of art instruction and æsthetic education ought to be examined. Here, as everywhere, the professional specialist, the educator, the artist, the draughtsman, has alone to decide how the ends can be reached; but whether the end is a true or a mistaken ideal, a purpose not less valuable than knowledge or merely a diversion which wastes the school hours of youth, must be settled by the philosopher. Whoever follows the discussion of art instruction, knows that the arguments, not only of the opponents but often also of the friends of æsthetic education, appeal to a much lower court, as they almost always begin with a complete presupposition. One point is considered and respected as certain, in all these usual discussions, and blindly accepted without examination: and that is, that the world of "things" as they really are, can be learned only by the knowledge

which the sciences impart. The consequence of this popular presupposition seems to be that every dealing in school with those "things" is either serviceable to the imparting of scientific knowledge and to the training in the treatment of these objects of science, or it does not refer to the true real world at all, but is merely a kind of playing with imagined things and thus useless, perhaps even dangerous, as it antagonizes an understanding of reality; in the best case a refined luxury which develops the imagination but cannot enter into competition with the study of the real universe. The practical results of such views are evident. Those school-boards and superintendents, theoretical educators and practical teachers who argue more or less consciously in this direction, will certainly not object to a fair training in the use of pencil and brush. But they will emphasize that it has to suit two purposes. Firstly, it must develop the skilfulness in exact representation by copying the model; this appears useful, as the power to draw with exactitude is necessary both for the communication of true objective impressions and for the technical purposes of

practical work on the real things. Secondly, it must develop the carefulness of observation — whoever copies nature becomes aware of nature's details and thus develops the observing discrimination which is so desirable for full information. The drawing from casts, supplemented perhaps by geometrical drawing, serves the first purpose excellently; and the drawing from flowers, anatomical objects, stones and microscopical tissues, as required in the natural science lessons, is an ideal means to the second end. As this naturalistic fixation of impressions by the students in zoölogy and botany involves, besides the careful observation, also a training in skilful drawing, it even becomes a question whether this alone cannot meet both ends; even the casts and the geometrical drawing thus become superfluous, and the instruction in natural sciences can thus easily and usefully carry all the art instruction which is necessary. That is, indeed, the opinion of many serious scholars — and yet no one can doubt that it means the death of all those ambitions, hopes and idealistic inspirations which the friends of art, connected with the drawing lessons of the

younger generation, are desirous of seeing realized.

But we have said that all these popular arguments start from a certain conviction, from the conviction that science, knowledge, scholarship alone can unveil to us the true nature of things and that we do not respect the real world in which we live when we leave the sphere of naturalistic knowledge. This conviction alone gave the imposing background to the copying of botanical or zoölogical specimens, and, at the same time, degraded the drawing for artistic purposes on the ground that it leads the youth away from the real world and that it cannot be the business of the school to train artists. But that conviction itself was nowhere critically examined; it was accepted as a belief, and as long as the argument is carried on before the tribunal of science a doubt of that belief cannot have any effect. In the realm of science that conviction is the necessary presupposition without which no science can exist. From the standpoint of science an artistic interpretation of nature must, indeed, remain an arbitrary treatment without objective justification. But we have

seen that the special science cannot decide as to ultimate values and presuppositions; philosophy alone can question whether that conviction and belief in the superiority of the scientific truth is well based.

We ask now, therefore, if it is true that science alone shows us the things as they really are and that an artistic rendering of the world is less true to the reality in which we live. It is a question which leads at once from the chance starting point to the deepest problems of truth and beauty. And its discussion cannot be carried on by catchy phrases and emotional appeals to our thrill of delight in works of beauty — it needs hard serious thought which goes in a philosophical spirit to the bottom of things and really frees us from all prejudices and presuppositions. It is, indeed, not an easy task, as it means emancipation for the moment from all our school knowledge and from our cherished theories, in so far as that knowledge and those theories have penetrated our view of the world and made it extremely difficult to return to a naïve view of reality. Nevertheless, this is the only way open to us, as every road which starts from the results of

science must necessarily lead to unfairness with regard to a professedly unscientific interpretation of our surroundings.

It is claimed that physics and chemistry and biology and psychology and history give us an account of all the physical and psychical things which surround us and of ourselves; that there is nothing in the universe which cannot be included in such a scientific report. The scientist, whether he deals with stones or stars, with plants or men, with individuals or nations, claims to show us what they really are: he assumes to give us the truth about them, and, as we cannot prove that his so-called truth is wrong, it seems that all things in heaven and on earth cannot be anything else than that which the scholar with his textbooks has proved them to be. There cannot be an account of reality which is of equal value with the "true" one.

We all know how the scientist reaches his important results on which it is claimed our whole modern civilized life is built up, and which have made our technique possible and have given us an understanding of the past. He analyzes most carefully the objects which he observes, the material

and the mental ones, and thus finds their elements; the physical world dissolves itself into biological cells and chemical elements and physical molecules and all, ultimately, into mechanical atoms, while the psychical world shows itself to be made up of elements which the psychologist calls sensations. The whole universe, and man's life in it, becomes a gigantic combination of atoms and sensations. But the description of the elements is not the only task of the scientist. His second great aim is, as everybody knows, explanation, that is, the understanding of all processes as effects of foregoing causes and, correspondingly, as causes of subsequent effects. Description and explanation are thus assumed to cover the whole ground of physical and psychological researches, and if all is described in its elements and explained by its causes, we then know the real world and every other possible account must remain an arbitrary fancy below the level of truth.

But are description and explanation after all really two different processes? As soon as we look a little deeper into the mechanism of scientific thinking we discover

that it is not so. The describer says: This object has these elements, this ocean yonder contains salt and its water contains hydrogen and oxygen and each drop contains trillions of atoms. What does he mean by that? If we ask him, he will say: I mean by that an account of reality, and that the account is true, I can prove. How does he prove it? Well, he takes a pailful of that sea water and evaporates it and shows us the salt as a result; he brings a galvanic current through the water and shows us the division of the water into hydrogen and oxygen; and if we ask him finally to prove that each drop of water is made from atoms, he begins to show the changes through which the water passes under strong pressure, with high temperature and low temperature, and so on, to give us mathematical proofs that these changes cannot be understood without the theory of atomism. Such proof he thinks must convince us: we can taste the crystalized salt, we can see how the balloons get filled by the gases, how the steam is formed. But does such proof really give us what we asked for? When the salt is crystalized, when the hydrogen is in the balloon,

when the steam is evaporated, we do not have any longer the sea water about whose elements we inquired; the water has been transformed into something else, and, while the scientist was expected to show us what the water *is*, he has practically shown us by his proofs only into what the water can be transformed. When he says the water "contains" the salt and the gases, he means that certain processes, for instance evaporation, have the effect of transforming the given substance into such salt and such gases, while nobody could get salt out of a solution of sugar. The scientific descriptive account of the elements of an object thus does not give any knowledge of the object itself at all, but it tells us what changes can be produced through an analysis of that object, what effects we must expect from it, what new objects can be got from it. The description of the elements bring us thus not nearer to the thing itself, it takes us away from the thing and it teaches us with what effects the thing is connected; in other words: the "elements" are merely expressions of justified expectations as to the behavior of the thing. No proof and no demonstration

can go behind that or beyond that; we may tear in pieces or crush the thing, we may pulverize or boil it to show what it contains, but we are always producing a new object in the place of the old one: the powder is *not* the stone — we have shown only that the stone can be transformed into powder; that is, we have proved that we can bring about a certain change and effect with the stone.

As soon as we have grasped the deeper meaning of all "analysis" we see that it is inseparable from the study of causes and effects. Description and explanation are not two separate logical tasks, but merely one — description works toward explanation, and there cannot be any descriptive analysis which does not find its real meaning in the reference to that which will happen with the thing — that is, to the effects which it causes. Every progress in the description of the world has meant a step forward towards the understanding of causal relations and nothing else; and every new insight into causal laws has brought new modes of description. The day when mechanics is able to describe every atom and every action in the world

no causal problem will remain unsolved; the ideal description, at the same time, will be the ideal explanation. All that science can teach us about the object O is thus merely how it was caused by L and M and N and how it will bring about the effect P and Q and R; and those characteristic expectations as to P and Q and R and those references to L and M and N we express and condense in the account of the *elements* of O; but O itself remains always O: we cannot creep into it, we cannot get more of it than to know that it is O, and if we break it in pieces to show its parts, then it is a group of P's and R's but no longer the O. There is no escape: science does not care at all for O itself; even when science enumerates O's so-called elements, it speaks in reality not of O but of its causal and logical relations to L, M, N, P, Q, R, and the whole alphabet of things. Science makes us believe that it speaks of the thing, and yet informs us merely of the thing's relations to other things in the universe. Whenever we want to grasp one piece of the world, science takes it out of our hand, shows us instead of itself a thousand other things to

which it is related, pushes us ever forward to discover new causes and effects, and hides the situation by calling this search for the future connections an "analysis" and those features which determine those connections the "elements." It may be said the only meaning of all knowledge, description and explanation, is the search for the connection of things — when the world has become to the human intellect a connected whole, the goal is reached.

Such insight into connections is, of course, of fundamental importance, because all our practical actions must be regulated by it. If I want to act, the things in the world are my means and tools — I do not care what they "are," I then care only for what they can produce, how far they can serve my ends. And if I deal with men, I do not ask what they really "are" but how I can influence them, what I can expect from them, how I can connect them with my hopes and fears. If I want to understand a product of civilization, an institution, a law, a religion, a government, again I must needs establish their connections with the human efforts of the past, their causes and effects, their relations to all the

institutions; and, if I want to grasp a thought, I must understand its relations to the other thoughts which are involved and connected with it. All that the philologist, the historian, the psychologist, the naturalist are offering is indeed invaluable at every step in the walk of life, and from the primitive knowledge that guides the child's behavior in the nursery and the savage's life in the forests up to the most complex knowledge which directs the actions of the modern engineer or physician, every new understanding of connection has been an assistance in the world of men and things, of nature and civilization in which we live.

There is thus no reproach to the scientist in our insisting that he gives us knowledge not only of the thing itself, but also of its connections; but the fact remains that his truth — his description and explanation — does not bring us nearer to the reality of the thing itself, — in fact, it leads us away from the object we are interested in, leads us away to other objects with which it may be connected.

How vain sounds now the claim that the truth of science is the only possible

truth and that every presentation of objects which is not based on scientific knowledge carries us away from the objective facts. No, it is science which veils the real thing which we want to know, and turns our attention to that which the thing is not. Is it not possible to come nearer to the object itself, to grasp its true reality, to feel its life, to sink into it, to penetrate into its fullness? Instead of crumbling it into pieces, — for its scattered fragments are no longer the thing, — is it not possible to give the whole of our mind to the presentation of the one thing alone, with all that it gives us, with all that it shows and suggests, while the world about it and the world around us are forgotten? The highest truth about the thing must be the knowledge of the thing itself, not of its causes and its effects; the thing itself with all its richness and all its meanings to the human mind, and not the substitution which the scientist proposes for the explanation of future events. The thing itself is not its past or its future, it wants to be understood just as it offers itself to our mind in the present experience, and there cannot be any rest for us until we accept

what it offers this moment instead of looking with the eyes of science to what it promises for the future. The highest truth thus lies not in the inference to future transformations, but in the appreciation of present offerings; not in the study of the elements, but in the acceptance of the whole in its human relations. Thus, if you really want the thing itself, there is only one way to get it: you must separate it from everything else, you must disconnect it from causes and effects, you must bring it before the mind so that nothing else but this one presentation fills the mind, so that there remains no room for anything besides it. If that ever can be reached, the result must be clear: for the object it means complete isolation; for the subject, it means complete repose in the object, and that is complete satisfaction with the object; and that is, finally, merely another name for the enjoyment of beauty. To isolate the object for the mind, means to make it beautiful, for it fills the mind without an idea of anything else: we are interested in the impression as it is in itself, without any reference to anything outside of it in space and time; and this

complete repose, where the objective impression becomes for us an ultimate end in itself, is the only possible content of the true experience of beauty.

Yes, connection is science, but the work of art is isolation; more than that, isolation is beauty whether nature or the imagination of the artist offers it. We have here reached the highest point of a philosophical discussion, the point from which we can overlook the two worlds together, the world of knowledge and the world of beauty. Neither the scientist nor the artist gives us the world of immediate experience, as in our real life we experience neither a system of connected things nor a series of isolated objects. To produce a connected system or to have an object isolated, and thus cut loose and separated from everything else in the world, is to demand an artificial transformation of reality to serve the purpose of our will. As every descriptive and explanatory knowledge, yes, every analysis, serves indeed the purpose of connection, every æsthetic rendering of the world really serves this other end, to isolate the factors of experience, to make them independent of every possible

connection, and thus to present them to our mind just as they really are in themselves. Wherever nature gives us such an experience which is closed in itself and does not point to anything else, and brings to silence every practical desire and makes us forget all things besides the one which offers itself to our mind, there nature herself is the artist. But more often, the genius of men must transform chance experience, must paint the landscape, must form in marble the figure, must express in songs the emotional affection, must render in dramas the actions of men.

That ocean yonder was my experience which I wanted to know in all its truth and reality. The scientist came and showed me the salt which was crystalized out of it, and the gases into which the galvanic current dissolved it, and the mathematical curves in which the drops were moving,—most useful knowledge, indeed, for all my practical purposes,—but in every one of his statements, that ocean itself with its waves and its surf and its radiant blueness had disappeared. But let us not ask what can be done with the water, how it can be used, what is its economic value, how it

will carry my boat, what has caused its movements; but let us ask only once, what is it really that I see; the water itself must give us the answer. Let it express itself, give to it, too, a chance to communicate to us all that it can bring to our mind, to show us to its best advantage every one of its features, to tell us its own story, to bring to the highest expression every hidden meaning of reality; let us only once give our whole attention to that one courageous, breezy wave, which thunders there against the rock; let us forget what there was and what there will be; let us live through one pulse-beat of experience in listening merely to that wave alone, seeing its foam alone, tasting its breeze alone,—and in that one thrill we have grasped the thing itself as it really is in its fullest truth. The painter alone can succeed in holding that wave in its wonderful swing on his canvas, and his golden frame can separate that painted wave forever from the rest of the universe. He has created, then, a thing of beauty, because it satisfies us as it is; and what his brush tells us is not less true than the formula of the mathematician who calculated the movement of the wave, and the

formula of the chemist who separated the elements. But, of course, the painter must really succeed, the frame alone cannot isolate that bit of experience. If his painting is nothing but a colored photograph which makes us ask, what the name of that shore is, whether there is good bathing and fishing there, and where the way from that rock leads, then, of course, we are in the midst of connections, the thing of beauty has again become a thing of information; we may have a good advertisement of a sea-shore place, but a poor painting; the real work of art on the other hand holds our mind to the object itself, its way leads nowhere and its frame ends its world. And so we may say: to isolate an object for our mind; to show the object as it really is; to give us repose in the object; to make the object beautiful; —are only four different expressions of the same fact.

One aspect more ought to be emphasized at once. Science is connection, but not every connection is science; art is isolation, but not every isolation is art. In fancy, or in superstition, we might mentally connect any objects whatever in the world, but that would not be knowledge; and, on

the other hand, we might, in a sensual enjoyment, give over our whole mind to anything which captured our senses, and yet that alone would not constitute the basis for a declaration of beauty. Both science and art, knowledge and beauty, are independent of individual, personal desires and instincts and fancies. Both make a general claim; they are not meant as individual decisions, they demand an over-individual value; that which is knowledge for one is taken to be knowledge for all; that which is declared beautiful by one is assumed to appear beautiful to all. Knowledge and beauty are thus postulates: you ought to connect the things of the world in this way if you want knowledge, and you ought to isolate the things of the world in that way if you want beauty. It is exactly as with the prescriptions of morality; any one may construct individual rules, but he can demand only that the others fulfil his prescriptions if they want to escape his punishment, there is no moral obligation in such an individual, arbitrary rule. Morality, on the other hand, is over-individual, and claims you ought to follow it even to your personal disadvantage. This

"ought" which morality attaches to human actions, logic attaches to the scientific connections of things, and æsthetics attaches to the artistic isolation of things. If we give our whole mind to an object which we isolate with the understanding that we do not claim that it ought to absorb the mind of others, that object may be agreeable but cannot be beautiful, just as the individual rule which the master gives to his servants may be useful and practical, but cannot as such be of moral value. That which we eat and drink, though delicious, can as such never be beautiful, because we destroy it while we are enjoying it, and in our pleasure we thus exclude the demand that others ought to enjoy it with us; the more lasting the object, the larger the circle of those individuals which can take part in it with us, the greater are its æsthetic possibilities. The statue of snow stands on a lower plane than that of marble.

And one more consequence ought to be considered from the beginning — if science means over-individual connection and art over-individual isolation, one most important difference of scientific and of artistic

work must follow at once. The scientist seeks a connection whose ideal is thus the complete system which comprises the whole universe, and which leaves, therefore, no room for anything outside of the one system; there can be, therefore, only one science and all scholars of the world are co-operating in working out that one system of knowledge; every progress made is for all time and for everybody. For the world of art, exactly the opposite must be true; if beauty means isolation, the perfect rendering of one object has in itself no relation to the rendering of other objects and every one can try the process of isolating again. While a scientific problem once solved is solved for all time, an æsthetic subject can be taken up with ever new freshness. The Pythagorean theorem cannot be created a second time after Pythagoras, but Madonnas can be painted, and will be painted, without end after Raphael, and again and again Spring and Love will be sung in lyrical poems. Science, therefore, moves forward in a straight direction, every generation knows more than the foregoing did, but art does not know such continuity. The continuity in

the history of art is formed by the influence which the works of art have on the imagination of the artists of a later generation; a cumulative influence thus certainly exists and every artist stands to-day under the influence of the æsthetic productions of two thousand years: but the artist of to-day does not continue the work of the artist of yesterday; every work is closed in itself and has no objective reference to any other work of art.

But we must return to our central proposition. We said that science connects but art isolates; that we find knowledge in transforming the object so that it can be linked with all others, but that we find beauty in transforming the object so that it stands for itself alone, gives us its own reality, separated from the rest of the world. We can characterize the difference also by saying the scientist analyzes where the artist interprets, the scientist seeks elements where the artist aims at the meaning, the scientist works towards laws where the artist seeks values, the scientist explains where the artist appreciates; but both, that must be clear, aim to give us an understanding of the objective world, both

give us truths. Both are, on the other hand, more than mere passive mirrors of the world; both come with subjective energies towards the world, as the scientific account with its aiming at connection involves just as many subjective activities as the artistic rendering with its aim towards isolation of the special thing.

Whether the one truth is more valuable than the other depends upon our purpose. The purpose for which we looked out in scientific knowledge was practical mastery of the world for the outer achievements; we had to know what causes were connected with what effects. No other kind of truth can help us for this end; what can be the use of sinking with our mind into an isolated object, which by its isolation is separated from its causes and effects if we want to manage the affairs of practical life? But is that really the only end in our existence; is the world really for us merely a material to be used and never a material to be enjoyed; is the object merely a cause to produce certain effects, never an end in itself; can our life be complete in itself if everything comes in question for us merely as a means to something else

and never as valuable in its own offering; does not our mind in all the striving and rushing of daily life long for the rest of satisfaction? Certainly our life would not be worth living if the transitory stages of using the world were not alternating with periods through which our mind rests in the world. Religion and philosophy seek this rest of the mind, this repose of our existence in the contemplation of the eternal totality. The lover of beauty seeks it in the contemplation of the single object; he isolates it from the world and by that act of isolation it does not come in question any more as means to an effect, as tool for an end, as product of a cause, as a stepping-stone to something else, but merely in its own existence, and, therefore, because it does not suggest anything outside of itself, it brings a final rest to the mind of the subject. Now the tree is not lumber, the animal is not food, the waterfall is not machine power, but in their beauty alone are they appreciated.

Exactly as the power of knowledge must be developed through training and education for the purposes of later practical life, so the power of æsthetic appreciation

must be developed in early youth for this not less important and not less valuable other aim of human life — to seek rest in the things of our world. Nowhere, perhaps, is this need greater than among our American youth. Not only the impressions of the life of adults, not only the rush and push of the public life which they see, suggest a one-sided aspect, an unbalanced over-estimation of the practical, of the looking on things as means of practical ends; but even their play and their childish enjoyment is but imitation, fully shaped by this same one-sided idea. The European children are accustomed to devices of play which stimulate the imagination first of all; the American child grows up with movement plays which train the skill and the practical initiative, but are useless for the development of imaginative power. A youth who does not learn early to appreciate the objects in their own meaning, but sees them as causes for effects, cannot be expected to have in later life other than practical interests and must lack that repose which gives the only complete satisfaction, that repose which a mere restless striving for practical ends

ever promises but can never give. The most systematic effort must be made to train the young man from the first for the true aspect of the world which takes the things as they really are in their highest import and not as they appear in the system of causes and effects.

To be trained to the understanding of this highest truth it is not necessary to learn anything by heart or to make experiments; and yet serious and severe training is required. We have said that to understand anything as it is in itself, we must be able to abstract it from all its connections; the one power of the mind which we ought to train is thus the power of abstraction, of isolation, the power which suppresses the thought of everything which lies outside of the object and inhibits every desire which is not satisfied by the object in its immediate presentation. From this point of view, it is immaterial whether the beauty appears in nature and life or in the rendering of the artist and poet. The landscape which the painter gives us on the canvas is separated from the world by its frame, the roads in that landscape do not lead anywhere outside of the frame

and there are no people behind those hills; if we begin to connect it with anything outside of itself, it becomes merely a geographical illustration, and thus a part of science. But the beautiful sunset there over the ocean in real nature is not less separated from the world, and, if we connect it with that which was before and with that which will follow, it becomes astronomical knowledge and the restful absorption of our mind is gone. This suppression of the thought of where the road is leading needs more careful preparation and more insistent training than the stimulation of such inquiries, which must be brought into the service of knowledge. To see the marble statue but not to ask for the color of the living being, to see the bust and not to ask for the arms and legs, to hear the poem and not to ask to whom the poet addresses it, to read the drama and not to inquire what will happen after the last act, is possible only if the scientific attitude with its desire for connection is suppressed and the attitude of satisfaction in the isolated object is developed. Art instruction in the school is the great social scheme which the community has at its

disposal to train this power; that is, to open the mind for that truth which is more complete in itself than the truth of scientific knowledge, for that truth which understands the immediate reality of the objects.

With the clear insight into the rôle which the artistic rendering of reality plays in the world of human interests, the philosophy of art has reached the point where it goes over into special æsthetics. Philosophy, to condense all into one phrase, has shown that all scientific knowledge leads us away from the real object, giving us merely its connections; that if we want the real object, we must separate it from all its connections, must grasp it in its complete isolation, and that it is the function of art to bring about this isolation and to show us the object in its immediate truth. Æsthetics has now to show us by what steps and schemes the different arts can fulfil that end of bringing about the complete isolation of the things in this world so that our mind finds rest in their presentation.

PART TWO—ÆSTHETICAL

PHILOSOPHY shows us the general principle of art; æsthetics develops the consequences of that principle for the different spheres of beauty. Philosophy says that it is a function of art to make us understand the world we live in in its true reality by impressing us with the facts of the world as they are in themselves, holding our mind to the one experience by isolating it from the remainder of the universe. Æsthetics must show us how this demand for isolation can be fulfilled, what rules have to be obeyed, what methods of rendering are available, what transformations become necessary to succeed in such a complete separation so that our mind can be given over to the one bit of experience without wandering to anything else. Yes, transformations are necessary; the object, as nature offers it, cannot fulfil the demand,

or at least can fulfil it only in those exceptional thrills of life where we sink our whole mind into the enjoyment of natural beauty. But even in such cases, the demands of life and the demands of knowledge in the service of life speak to us all the time; we may enjoy a beautiful landscape, and yet, if we want to live in it, quite other questions than those of the impression approach us; we may be fascinated by a human figure, but if we have to deal with the man, he cannot remain for us an isolated piece of reality, he is connected with a thousand other experiences; and if we hear beautiful words spoken to us, we cannot isolate them, we cannot fully give our mind to them alone; they seek an answer and they turn to action. The beauty of men and of things in life remains thus only a passing pulsebeat of experience; we cannot hold our mind to one object because life pushes us forward and demands from us the attitude of knowing without a chance to find repose and quietude. To cut the single experience really away from everything else it must be transformed, and that transformation is the mission of art.

We cannot follow here the æsthetics of music or of poetry, and yet the poet, too, has to transform life while he encloses it into his novel, his poem, his drama, and isolates the personalities and their actions from the historical world in which we live. We are here concerned merely with the arts of design, and, again, especially with pictorial design. All pictorial art begins with the separation of the things from the sphere of our practical activity by bringing the objects into the two-dimensional plane, while we and all our practical objects exist in the third dimension. The still-life painting of fruits may bring out every feature of the grapes and apples, and yet, by their being projected into the two-dimensional plane, there is no fear that we shall connect them with those effects which we connect in our mind with real fruit; that is, there is no fear that we shall desire to use them for the satisfaction of our appetite; we do not long to eat them, we shall merely contemplate them. And the room in the painting may be most skilfully painted, and yet there is no chair on which we want to sit; and the portrait may be most true to life, and yet we do

not think of asking the man in it for a talk or a walk. The projection into the plane has cut off all the connections between the object and the practical causes and effects: thus deception is clearly not the ideal of the painter, he ought not to give us the belief that the object is the true object of practical life. The illusion of practical reality is a pseudo-art; the artist has a higher aim. Of course, projection into the plane is not the only method by which objects can be separated from practical affairs. The sculptor, for instance, leaves the human beings or the animals in three dimensions, but as a compensation he changes the color, gives us the man in white marble or brown bronze, and thus excludes the possibility of taking the reproduction for a real object of life. It belongs to the vulgar circles below the level of art to exhibit colored wax figures which give us the illusion from which effects can be expected. If real art desires to give color to plastic objects, the size of these objects must be so much below or above life-size that no illusion can enter.

On the other hand, as soon as the transformation into the practically impossible

color effect of the marble statue or into the practically impossible space effect of the plane picture has been made, every object of reality, and not the beautiful thing only, may be welcome material for the artist. In life only that object which was beautiful for us, through its own qualities, had the power to exclude for a while our thought of its connections with other objects and effects, and we had to call indifferent or ugly that thing which lacked this power and which thus had meaning for us merely as something to be used, to be changed, to be developed, and thus merely as foothold for our thought of connection. As soon as the artist finds a way to separate such a non-beautiful object by his technical means, — for instance, by rendering his idea of it in marble or projecting it on the canvas, — and yet to interest us in the thing, then he does not need any longer the natural beauty of the model, and can make the portrait of the ugliest man a most beautiful work of art. Thus, neither that kind of *realism* which seeks the end in the most exact copying of nature with the possible effect of an illusion of reality, nor that kind of *idealism* which believes that

it can use beautiful objects alone as material for art, can be justified by serious æsthetics. The work of art must be different from the real object of practical life, because only then it isolates its subject from the practical demands and effects, and, on the other hand, as soon as this separation is effected, any object, even the ugly one, can be the subject of the highest art.

We may, in the following, concentrate our interest on that special type of design that is concerned with the pictorial rendering of the world. Each complete picture involves two essential factors: it shows us, firstly, a content, and secondly, a filling of space. Both together must form a unity. It is almost an artificial abstraction to consider one independently of the other; and yet the two aspects must be at first separated, the more as we shall find artistic products in which the one factor is realized without the other. We said that the picture involves the filling of a space; this filling is a filling by lights which are different in their sizes, their shapes, their colors, their values, their intensities, and, as these lights are beside each other, their

differences must lead to forms, and the outlines of these forms constitute the lines which divide the space of the whole picture into smaller spaces. Such a filling of the space by lines, straight or curved, and lights, is not in itself a complete picture; nevertheless, it may be so arranged that it holds the mind in itself and separates itself thus from everything else and becomes a beautiful work of art. It is then a true ornament which satisfies the first requirement of a good picture, presenting a good design; or, if it connects itself with objects of practical use, it may enter into the purpose of architecture or of industrial arts and crafts. On the other hand, it becomes a pictorial design only if those lights and lines not only fill the space in a beautiful way, but express a content, perhaps a flower or a whole landscape, a single face or a whole historic scene.

To be sure, the form of the design has its content too; it has as content the expression of certain spaces and the expression of certain colors, and we shall do full justice to this truth; and yet it is clear that in a picture in which the filling of the space represents a landscape or a portrait,

the space-divisions and colors subordinate themselves to the subject and become a mere form of the content, while they may themselves play the rôle of content in the design. The form of the picture is thus its distribution of lights and lines which fill the space, and its content is the subject which is expressed by such filling if the picture is to live up to the demands of beauty. A complete isolation must be reached in both instances: the space with its filling must separate itself from all the other spaces in the world, and the content which expresses itself must stand there isolated, cut off from everything else in experience. The picture will be perfect if both factors support each other so fully that the character of the filling aids in the isolation of the space — in short, that form and content demand each other for the fulfilment of complete isolation. It must be our purpose to consider the two factors at first separately and then in their combination; we have thus to ask at first how pictorial design succeeds in isolating an experience; then, how pictorial design can isolate the filling of the space; and, finally, how both factors have to coöperate.

We abstract thus at first from the form and ask merely what is the experience, the content which the artist shows us. If we wander through the rooms of a gallery, we learn quickly that there is nothing in the world of perception which may not become his prey, the smallest and the largest, the funny and the pathetic, the simple and the complex. The light of a candle in a small shabby room and a brilliant sunset over glorious landscape, a simple peasant at his labor and a world's hero on the battle-field, a simple flower and the gigantic ocean, all speak to us from the canvas of the painter. What is then the content of the pictorial presentation? The first most natural, most usual, but, as we must add, most superficial answer is that the artist shows us a thing or a group of things. But here, too, our philosophical insight must help us to avoid a serious mistake. Bold as it may sound at first, we must insist that it is never the part of the artist to give us things, to show us objects. What do we mean by a thing, by an object? A feeling, an emotion, a will, a doubt, is never a thing; also, in the outer world, we do not call a thing that which gives out all its existence in the act

in which it presents itself; the tone we hear is not a thing, the flavor we taste is not a thing, the movement we see is not a thing. That movement, that flavor, that tone may result from things, may belong to things, but in themselves they are offerings of reality which are not things, as they do not last, as they cannot be found again in a new act of experience. If a bird sings its melody twice, it remains the same bird, but its second song is not the same song that the first was; it may be exactly like it, but it is a new part of reality. The bird is thus an object, its song is merely an action which is new every time it is repeated. We speak of objects, of things, merely when we mean that that which we perceive lasts beyond our perception as something which has continuity and can be found again. It may have changed its forms, its appearance may have become different, but all those changes are still merely movements of its parts; the object itself remains and its substance goes over from the present to the future experience. But as soon as we understand that the conception of the thing, yes, that every idea of an object involves this thought of

continuity, we must see clearly that it is utterly contradictory to the meaning of art. Continuity demands the connection of the present experience with a possible experience of the past or of the future; that is, it demands a connection with something which is not given to us in our present experience; but it is just the suppression of every connection which we recognize as the first condition of art. Every connection, we have seen, belongs to our practical knowledge; the conception of a thing thus has a meaning merely for the world of practical activity; it expresses our confidence that the object towards which we act will have its effect in the future. Even the most elementary idea of a thing thus tends, in principle, in the direction of scientific knowledge.

If the artist really seeks isolation, he must understand that the reality he presents is never to be considered from the point of view of its possible connection with future experiences, of its possible persistence beyond the present stage; in short, that it is not with a group of things that he has to do. That which the artist shows is thus never the object which natural

science describes. There is not the slightest anatomical difficulty in the fact that the body in the portrait picture ends perhaps in the middle of the chest, and no botanical difficulty in allowing the branches of the tree to which no trunk belongs to hang over into the landscape, and no physical difficulty in seeing on the ocean, for any length of contemplation, the wave which in nature disappears at once. All those naturalistic facts refer to objects; the artist's presentation comes not as an information about nature, but as a challenge to understand and to appreciate the immediate reality. The content of the picture offers itself more like an activity, and yet even the idea of an activity refers us too strongly to the idea of the thing which makes the activity. Let us say, rather, that it is a demand, a claim, a suggestion. The content of the picture does not say, I am such and such a thing, it says, understand me.

But if the content of the picture is not a thing or group of things, our difficulty seems to have become still greater. How can the artist now hope for that isolation which we demanded? A thing presents

itself through the continuous connection of its parts, somewhat as a unity in nature, and is thus isolated from all other things; if the artist relinquishes this most natural opportunity to isolate the content of his offering, how can he succeed in separating for our mind his subject from the remainder of the universe? Only one way is open to him: instead of the unity of the object, he must give us the unity of its meaning; that is, instead of that unity which results in a scientific connection of the object with its past and its future, he must impress on us a unity by a meaning which holds together the manifoldness of the immediate present experience in our own consciousness. As long as an impression has no meaning for us, we cannot decide whether its parts belong together or are parts of very different things; we need the knowledge of natural science, we need the references to the behavior of those parts in their mutual relation in the future and in the past, to find out whether they are one thing or not — whether the bird on the tree, for instance, belongs to the tree like its fruit or is a thing for itself. The variety of present impressions can, therefore, have

a unity, if we take it without reference to future and past connections, only if it has a unity of meaning; and this meaning it is which the content of the picture demands to have understood. The word meaning must certainly not be understood to refer to an abstract idea, a logical thought or a moral doctrine. The painting has not to teach us anything, it has not to preach and not to inform us — it has merely to express that piece of the world which it shows us; but to express it, it must show us a meaning, it must represent to us something of objective reality, and just in so doing does it become more than an abstract design, more than an ornamental combination of colors and figures.

But another misinterpretation is conceivable. The meaning, you might say, is not in the impression itself but in the subject who sees it; it is an association in our mind, but not a quality in the perceived object. I see the sword; if it means for me fight, it is my own association which suggests that meaning, and, moreover, such association in me is the product of my past experiences. I have seen the fighting use of the sword, I know its bloody effects,

all my knowledge and experiences are reproduced and condensed in that interpretation of the sword in the picture; it is just the connection of the present experience with earlier ones which allows a psychological explanation of this meaning, and thus the æsthetic process, when it involves a meaning, seems to demand a connection after all. But there is no contradiction here. As soon as we want to explain the meaning of a work of art psychologically, we must indeed consider it as an associative idea in us and must connect it with the past, but psychological explanation of an æsthetic act is not itself an æsthetic act; psychological explanation is, like every explanation, a scientific activity and is thus, like every science, based on connection. This psychological explanation, however, does not here come in question for us at all; it will interest us when we have to do with the psychology of our subject, but we are dealing here with its æsthetics. We do not want to give here a causal explanation of the process, but we seek an understanding of the factors which we experience in the enjoyment of the work of art. In our immediate contemplation

of the beautiful picture, the meaning is certainly something belonging to the picture itself; we do not feel ourselves to have from the canvas an optical impression only, which secondarily awakes a reproductive idea in our mind, but the impression and its meaning are one unity. And as there is no reference to our associative imagination involved, there is also no reference to the past. If the face of one portrait expresses to us peaceful serenity and that of another cleverness or insincerity, it may be that the psychologist may explain that fact as the after-effect of our earlier observations and experiences; but in our æsthetic appreciation there lies no conscious memory of other men with similar features; no, the faces which we see here and now in the frames are alone before our mind and have this meaning in themselves.

This meaning, we said, furnishes the unity of the content, for which, as we saw, the natural scientific unity of the object as a thing cannot be substituted. This unity of meaning, on the other hand, isolates the content completely; everything which is necessary for the expression of the meaning belongs to the content, everything

which is superfluous or external to the meaning is an element of disturbance, and the content is thus sharply separated from the rest of the world. There cannot be a sixth act to the perfect tragedy which has fully expressed the meaning of the struggle of that one life, and nothing can be added to the perfect landscape painting. We understand now why we cannot have a picture of a part which has no meaning for itself; the leg of a chair, one leaf of a tree, the tail of a dog, and the nose of a man are no possible contents of a picture. The anatomist may draw the nose most exactly and skilfully; it remains a piece of information, valuable merely for the purposes of connection; taken in isolation, as the artist must take it, it has no meaning without the other parts of the face, while the head alone, without arms and legs, gives a complete picture as it has a complete meaning. The botanist may draw the smallest part of the flower with the same interest as the whole flower; the artist has no use for such a part.

On the other hand, if the unity and isolation lies in the meaning and not in the scientific unity of naturalistic connection

of the parts, then it is clear that the whole landscape has exactly the same unity as the one tree, and the whole historic scene has the same unity as the one figure. That scene does not contain a multitude of single contents; as the face is not a bundle of features but, through its expression, one realization of life, so the scene is not a bundle of men, but the whole crowd is one pulse-beat of reality with one meaning, while the meaning of the whole is not expressed in any one of the parts, and can never be grasped if it is taken as the sum of the meanings of the parts. Now we understand quite well that the isolated content of the picture may contain elements which, from a standpoint of natural history, cannot be considered at all in such separation. The landscape shows us there in the foreground some branches of trees whose trunks do not exist; in the middle ground is a stream which has no source; in the background a church tower which has no base; and yet they are, in the frame of this picture, not parts which demand the other parts of the church, of the stream, of the tree for a logical supplement — they are not parts at all; they are

all together inseparable features of one unity which brings before us the peace of the autumn, and, while the other parts belong to it for the botanist, for the geographer, for the architect, they do not belong to it for the painter who does not seek knowledge of natural history. And as he has not to seek it, he may not only abstract from it and eliminate the superfluous features, but he may just as well add to it whatever is fit to bring out fully the meaning of the content. If it fulfils the meaning more intensely, he may give wings to the shoulders of men, may give a luminous halo around the head, may put a man's trunk on the body of a horse, and may give to the mermaid a fish's tail. He may add anything, whatever natural science may say, with the exception of that which is superfluous for the meaning or which antagonizes the expression of the meaning.

It must be, then, the first and principal task of art instruction to train the child in this direction. The child must learn to render an experience with pencil or brush in such a way that it expresses its meaning completely; he must thus learn to discriminate between an accurate reproduction

which gives us information about the thing or groups of things or part of a thing, and an artistic presentation which is the realization of a meaning. The child must learn that many features of the object must be omitted in the artistic reproduction, because they are not characteristic for the whole, and that others must be readjusted or reinforced, because the meaning of the whole is centred in them. From the standpoint of knowledge everything which can be discriminated is equally important for the accurate reproduction; the child must learn to see the characteristic features, the selection of which, together with the elimination of the less characteristic ones, makes the copy less correct but more internally true, less instructive but more suggestive, less helpful for natural science but more helpful for general education and for the formation of a happy personality. In the lessons in botany, zoölogy and physics the child ought to learn to make the most exact sketch possible of the living and inanimate things in nature; in the art instruction he ought to learn to work over such sketches till merely the characteristic lines and shades and tones are brought out

and the chair or the fruit, the flower or the bird, the house or the forest, have become merely expressions of a meaning and have thus reached a complete unity in which everything is necessary for the whole and nothing which is necessary is absent. Then alone will the child feel a perfect satisfaction in the sketch; the mind will rest in it, the isolation has become real. And thus, I say, give the child æsthetically neutral pictures of natural objects, flowers, animals, household things, exact copies without any aim towards beauty, merely adapted to the purposes of information, and let the child now transform them into things of beauty by making them means of expression; show him how to look out for the most characteristic lines and lights, for the most expressive features, and how to reinforce them and to omit the inexpressive; how external features may be added; how the gracefulness of the fine flower may be brought out more charmingly by putting it into a graceful vase; in short, show the child how to move from the reproduction of practical life to a rendering in the service of the true expression of the reality, of meaning. A new world will open itself

to the young susceptible mind, a world so often closed to the adult man who has not been trained for the perception of that difference by early guidance and surroundings, and to whom every picture thus remains merely a graphic description of something which has happened in practical life or which exists somewhere in nature — to him the forests always remain lumber and Niagara useful water-power.

But we insisted from the first that the meaning which is expressed in the pictorial design corresponds only to one aspect and that there is another aspect — that which refers to the lights, the colors, the lines, the figures, the spaces by which the meaning expresses itself. We used also the usual terms: content and form. They fit our purpose perfectly if we understand that form does not here mean space-form only, but all the external means of expression, light and dark, light and shade, as well as lines, and that the colors are thus not content but form, while the meaning alone is content. This formal aspect of the pictorial design demands a separate consideration and its importance for the work of beauty must also become familiar

to the child. Of course, when the child trained itself in the expression of meaning by sketching a flower or a bird, a house or a tree, lights and shades, lines and spaces were involved; but their relations were not considered for their own interest; they came in question merely as means of signification. Can these means have their own beauty? The formal means of the pictorial art are confined to light and space-forms in one plane; the space-forms of the third dimension, which the sculptor needs, are unknown to it, and still more so are the time-forms and the sounds of music and poetry. The pictorial presentation has no temporal form, it is as such not in time. Can we have thus a beauty of light and space-form? Certainly. We have said before that an ornamental design offers nothing but that kind of beauty. And also the condition under which their appearance will be æsthetically valuable, we know beforehand; it is given as soon as they exist completed in themselves, as soon as they are isolated without suggestions for anything else. But the problem arises at once: how can lines or lights in themselves be isolated? A line can be

prolonged without end, one space-form can be laid by another, one light can shine beside another; they have no unity in themselves.

It is quite true that the colored light as physical ray, the curved line as geometrical object, have no limitations in themselves and thus no unity, no isolation, no artistic possibility. But forms and lights, too, can have their objective meaning whose expression demands limitation and selection and whose completeness gives us unity indeed. What do they mean to us? The answer is: movement and excitement. Movement! Not the space-form as part of the space means movement; space, as such, means to us only a mere possibility, the possibility of filling it with visual impressions. The space, as such, is therefore æsthetically indifferent; but the limited space, the special space-form, takes the characteristics of its limiting lines. It is space determined and embraced by certain lines which stand in certain relations—and these lines and their relations mean movements and tensions. Follow with an open mind the play of lines in any ornament, and you feel how these movements,

these impulses and tendencies, speak to you. This line tries to lift itself up; this line, with its noble swing, shows you its freedom; while that, with its forced bending, is pressed down; this which connects two others pulls them together, and that one pushes two lines to their distance; this curve returns in graceful movement to itself, and that carries you away with it; this moves on in a straight impulse, and that plays easily in its wave form; this closed curve presses the space together, and that other one gives you the freedom of unlimited space. No one understands the language of these lines better than the architect, whose work gets life through the movement impulses and movement suggestions of the parts. The column erects itself to carry the burden of the masses, the tower points upwards, the horizontal masses press down on the lower parts. How expressive the differences between the pointed arc of the Gothic window and the half-circle of the Romanic style; how eloquent the difference between the noble lines of the Renaissance palace and the frivolous play of the Rococo lines!

And now the child must learn to perceive and to understand the meaning of lines and spaces and to express their reality in isolated completeness. Even the simplest form may represent such unity; the simple circle or ellipse, the simple division of the oblong into two equal halves, may appear as a complete expression in which nothing is superfluous and to which nothing has to be added, and the child must now learn how this self-centred appearance of spaces and curves can be kept up with growing complication, by which the meaning becomes richer and richer. Now the lines are no longer geometrical lines only, they cannot be continued any more without limit, they have their measure in themselves, they are complete as soon as they express their meaning fully. The graceful Rococo curve cannot join the heavy classic line, for the meanings of those two movements contradict, their expression cannot be brought into unity, they cannot be combined, just as we cannot think of the pretty little shepherdess of the Rococo pictures in the pose of a classical goddess. Let the child divide the simple spaces into unequal parts, which are yet not

inharmonious; or let him fill the space with various lines whose movement tendencies balance, so that neither the one side is pulled down nor the other jumps up, but so that we feel the harmony of those balancing powers. Let the child find out how this balance is changed by most different influences, how the long and the short line, the concave and the convex line, the heavy and the light line, the line moving to the centre and that moving away from the centre, have most different influences on this balance; and how different is the play of these movements when they move about a vertical or about a horizontal axis. The children must really feel the meaning of these variations.

I should not trouble them with abstract formulas which prescribe, for instance, that if the heavy long line on the right side is so far from the centre, the light short line on the left side must be so far from the centre to produce a balance between the two movements and thus a unity in the whole space arrangement. And still less should I rely on the metaphors which are to-day too much afloat in educational art circles. We hear that a short line far from the

centre balances a longer line near to the centre, according to the mechanical laws of the lever which demand that the smaller weight have the longer arm of the lever. Such metaphors may be convenient if the facts chance to agree, but they ought never to be used to draw conclusions as to facts. The small weight needs always the longer arm of the lever, the shorter line needs often the shorter arm of the lever to balance the longer line, and the metaphor of the weight merely stands in the way of the right apprehension of the facts. We may say, for instance, that just this latter case, in which the short line must be nearer to the centre than the balancing long vertical line, is always given when the centre is determined by a frame around the whole field. The frame accentuates the middle point, energies irradiate from the centre and give increased strength to the movement impulses of those lines near the centre. The result is that the lever theory fits merely the unframed designs, but never a framed picture. Whatever is constructed after that popular lever theory, therefore, gives the impression of a mere pattern which might be multiplied without end on

a wall paper, while it would never do well for a well composed limited painting. But we must go still further; the child must not only learn to bring out the meaning of the space and of the lines, but must also learn to subordinate the impression of objects to these space relations. Let the child take the picture of a flower or of an animal and transform it as a merely space filling material. At first the child learned how to bring out the meaning of the flower or bird, now he has to learn to abstract from the meaning and to use the picture of the flower or bird merely as a means to fill the space so that the lines and resulting divisions of space completely express themselves and thus form a unity, which, as such, is beautiful. Now the flower or the animal becomes schematized, perhaps quite unlike the forms of nature, but carefully adjusted to the whole given space.

But the lines and spaces make up merely one form of external presentation. We saw that the light, as such, with its values of shades and with its manifoldness of colors is in volved in every pictorial presentation, too; it also speaks to us with its own meaning. If we see a white snow

landscape through a dark gray glass, then through a red glass, and finally through a blue glass, and compare the impressions with the natural one in full sunlight, the difference between light and dark, between red and blue, speaks to us as the expression of a different mood or different key in the outer world. How exciting and warm that brilliant red; how cool and soft and almost depressing that mild blue! Do not let us think here of a symbolic meaning of the colors; just as the things did not mean something to us through a symbolic reference, but merely through their immediate presentation, and just as the lines were not symbols of movement but carried that movement immediately in themselves, so it is with the colors; we do not say that green means hope and yellow means envy, we speak here merely of the immediate power of the color itself — the meaning of the color, which must have a chance to express itself to be complete and thus to be beautiful. As long as one color only is given, it expresses itself naturally and thus, as we see, in an absolutely dark field every pure colored light gives æsthetic satisfaction. But most lights are mixed; more than one

light impression enters into our field of vision, and the meanings may contradict each other; the one does not allow the full expression of the other, there is no unity of expression in their combination; as we say, their combination is ugly. Let the child find out for himself: give him the training in the appreciation of the different colors with their tints and shades, with their different degrees of saturation. Best of all, perhaps, let the child make the colors with his own brush from a few simple colors; with red and yellow and blue every color can be produced and the more the child is obliged to bring out the color by his own efforts in mixture and dilution, the more he will be trained to give full attention to the characteristic differences of the colors and their moods and meaning. Then let him combine the different colors in adjacent spaces; let him find out how the meaning of these lights becomes scattered and contradictory and loses unity of expression when they are not scaled on a fundamental value of light and color tone. Again, I should say that the child must be trained to subordinate even the pictures of objects to the mere ornamental play of

colored lights; the color of the flower has then to be harmonized with the color of the background and thus, in lines and lights equally, the child must learn to express the various movements of forms and of lights by a free harmonization of all the energies involved.

Only one step more remains to be taken if the child has learned to express the meaning of the content and the meaning of the lights and lines; he enters the region of real art when he learns to bring out finally the highest unity, that in which the content and form themselves demand each other; that harmonization in which the expression of the content is reinforced by the form, and the expression of the lines and of the lights is reinforced by the content. Every true picture must give this harmony of expression, this completion through which the picture becomes absolutely isolated from the rest of the world, giving the highest repose and satisfaction in such a perfect harmony of all its meanings. The first step thereto is, of course, to take care that both expression and form show beauty. A well-drawn head may be put so badly into its space that the portrait

as a whole becomes intolerable. An expressive landscape may be ruined by the color of the sky which is out of harmony with the color of the foreground. A beautiful combination of lines and colors may be made worthless by the emptiness of the expression in the chief subject. And yet to avoid such positive blunders in the presentation of content, space and light is certainly not enough. What real art demands is that higher stage in which the special expression of the content and the special choice of lines and colors require each other to fulfil the conditions of complete unity. The peaceful idyllic landscape demands mild curves and soft colors. It might be quite possible to give to every part of its content a very different form; the branches of the trees, the rocks on the pasture, the outlines of the huts, the movements of the sheep might be impressed on us in acute angles, in sharply broken lines, in contrasting loud colors, and these new angles and lines and colors might be not less beautiful space-forms and combinations in themselves, and yet the whole harmony of the picture would be destroyed. These new lines and lights would have fitted a

gigantic mountain scene with forests in storm and with men in excited action, but not the light country landscape breathing quietude. The solemn symmetrical forms of the Madonna picture would be intolerable for the dramatic action of an historic scene. If a picture shows a woman in a room, every fold of her dress, every line of the chair, every form of the flowers on the table, every color in the rug and curtain must be different according to the expression of her face, according as she is a mild, sweet, naïve woman or a passionate heroine; and if her eyes tell us that she is a frivolous flirt, every ribbon on her dress, every stem in the vase of flowers, every ornament on the wall must be coquettish with her in its pretty play of lines and colors.

This highest æsthetic fact which finds the complete unity of expressive content and expressive form cannot be reached by the average draughtsman without long and careful training, and it is clear that he will never reach it by his own efforts only. He must come in contact with the noblest work of real art, and this is the point where the serious study and inspiring interpretation of works of art must play its

part in the æsthetic school of instruction. Even small black and white reproductions can give all the essentials for the educative purposes if they are carefully chosen from the most excellent productions of artistic genius, presenting a large variety of subjects and a full variety of historic styles, and if, above all, the teacher induces an æsthetic attitude in the child; while their effect is lost if he encourages the logical attitude of curiosity concerning the things or scenes presented; they then become mere illustrations without æsthetic value. The child must learn to see how the world can be expressed with the naturalistic detail of the realist or with the characteristic abbreviations of the impressionist, in classic or in romantic mood, in Italian or in Dutch or perhaps in Japanese style, and how in the greatest variety of subjects and of ways of treatment the true work of art yet reaches a complete harmony of content and form, so that the one reinforces the other, and so that content and form together produce an ultimate isolation of the given experience.

The pupil's own efforts to produce æsthetic compositions must thus be

supplemented by the study and enjoyment of masterpieces; but we must not forget that still another supplement is necessary. The task which the child was to fulfil demanded a certain amount of technical skill in the handling of pencil and brush and, still more, an eye trained in the discrimination of forms and colors and light values. Special instruction in careful drawing from copies and models with pencil, charcoal and brush must be thus an additional feature of the instruction, and especially the drawing of small details in the room or in the landscape. Not seldom the natural science lesson will give a good opportunity to develop these powers, as training in observation, skill in drawing, and exactness in copying will be the more readily reached the more strongly the child feels that the exact rendering of the botanical or zoölogical object, and not the production of a pretty picture, is the only purpose of his effort. If the training in exact drawing is brought into the special art instruction, the exactness easily suffers as the beautifying impulse too often makes beauty an excuse for carelessness. In the scientific lesson such fancies of the imagination

less easily enter, but there remains the danger that the science teacher is unfamiliar with the task of developing those powers in the child when they are defective; thus, practically, the drawing of "details" in the art lesson is the best method of securing exactness, skill, and power of observation.

But whether we consider it under the title of art instruction or under the title of science lesson, the chief thing remains that such a training of eye and hand is indeed only a step towards art instruction, and not art instruction itself; it is preparatory to it, but no more than preparatory, just as the learning to read is not scientific knowledge, but merely a step towards its acquirement. The child ought to get a fine manual training, but it is absurd to speak of it as æsthetic education if this training is considered as the principal, or perhaps, the only end. The child, who, with a few clumsy lines, aims at dividing a space in the most pleasing manner, is nearer to the ideal of beauty than the other child who is able to copy most exactly and in all its details a complicated ornament. While there is no

lack of the sure eye and safe hand among this people, a young generation which feels the meaning of beauty to the bottom of its heart is the great need of our community.

PART THREE—PSYCHOLOGICAL

THE teacher, who tries conscientiously to build up in the classroom the sense of beauty, is naturally interested in the question: What goes on in the mind of the child; what mental factors are involved in the æsthetic attitude; what subjective conditions are necessary for the enjoyment of beauty? Psychology is the science which describes and explains the mental processes; an inquiry into the mental processes by which we perceive and produce and appreciate works of art, from the simplest drawing to the masterpiece, is thus a psychological investigation. If we insist on calling every scientific inquiry which has a relation to art, æsthetics, then, of course, this psychological inquiry also belongs to the wide field of æsthetics. But it is more correct to use the word in a narrower sense, and to call only that

part of science æsthetics which asks what the characteristics of the work of art ought to be, and to take the descriptive and explanatory account of the mental processes in the production and enjoyment of art as belonging to psychology. Æsthetics gives rules, prescriptions, norms; psychology gives mental facts and their causes. The æsthetical consideration of pictorial art lies behind us; before us is the difficult psychological study.

We thus turn from the objective work of art to the subjective content of consciousness, from the objective picture to the subjective impression, from the objective color, space and line to the subjective sensation, from the objective factors of beauty to the subjective enjoyment. It must now be quite clear to us, after the foregoing discussion, that the æsthetic value of art lies in its reference to reality, and that the popular notion that science alone deals with objective reality, art with subjective creations, is quite misleading. We have seen that artist and scientist alike express the objective truth of real experience, only the scientist fixates the connected experience and the artist fixates

the isolated experience. On the other hand, if we designate as subjective every account of the world which has been shaped by the spiritual energies of man, then science is not less subjective than art, inasmuch as the human seeking for connection must select and transform the reality just as much as does the endeavor for complete isolation. And we know that the view is also wrong which, as sometimes in popular discussions, draws the demarcation line between objective and subjective in the middle of the æsthetic field, — when it is claimed that the content of the picture — for instance, the flower — has objective character, but that the form of presentation — for instance, the position of the flower in the framed space — is subjective. No, we have seen that this beautiful space-division is just as much the expression of the objective characteristics of space, as the flower-picture is an expression of the flower. And, finally, when we turn to the really subjective facts, to the psychological processes, we again find the situation of art and science not different. The mental processes by which we produce scientific judgments and logical

conceptions and conclusions are, in the same way as those by which we gain beauty, material for psychological inquiry.

We may begin our study of the psychological factors with those involved in the perception of spaces and outlines, the simplest of the various elements; and yet even here we find a most complicated psychological problem. Æsthetics, we saw, demands that the lines which divide the space shall have such and such relations, that they shall balance with regard to the middle line, that the vertical composition shall have principles different from those of the horizontal, that the curves shall be in harmony with each other, and so on; and we saw that all this resulted from the fact that the lines in the picture are not geometrical lines, but expressions of the energies of forces which characterize the resulting spaces. Psychology must now ask how it happens that mere lines awake in our consciousness the ideas and feeling of energies, and that a certain combination of these lines satisfies us while other combinations displease us. The question itself, and correspondingly the possible answer, is clearly one of theoretical scientific interest

only; the artist himself has no answer ready in his æsthetic instinct; he is not even conscious of our problem; he feels the existence of those energies, their struggles, their balance, their unity, but he does not look on them as processes determined by his own psychical mechanism. For the question we seek to answer there is thus no help to be found in the studios, but only in the psychological laboratory, where the modern psychologist is nowadays engaged in analyzing the mental states and in finding their psychological and physiological explanation by all the elaborate methods and schemes of the so-called "new" psychology. And the laboratory work of recent years has given especial attention to the particular problem which we have here before us.

In the light of these modern experimental studies the processes may be explained in the following way. Our whole visual space is a product of a combination between optical light sensations and movement sensations of the muscles of the eyeball. Whenever our eye is reached by light rays which come from any one point in the outer world, the lens in the eye brings the rays

to convergence at one point of the retina. This retinal point then becomes stimulated, and, as the retina is connected with the brain by several hundred thousand nerve fibres, from each stimulated point of the retina the excitement is carried over in a special track to a special cell in the brain which reacts in a special light sensation. But this sensory stimulation of the brain is only the beginning of the process; if it were all, we should see light, but we should not localize it; we should feel many colors, perhaps, but we should feel them like the odors of a bouquet or like the tones of a chord, as a manifoldness without any order in space. But in reality the stimulation of the special brain cell produces at once a secondary process; the brain gives and must give a special motor impulse to the muscles around and in the eyeball, an impulse by which certain movements, rotations and accommodations of the eye are effected. This action is necessary for our clear discriminating vision, because only in the middle of the retina, in the fixation point, are the elements of the retina so near together that a sharp, distinct stimulation can be secured; only there does a

special nervous end-apparatus correspond to every light point of the outer world. To see distinctly, we must see with the fixation point, and to do so we must rely on a mechanism which moves our eyeball so that every ray of light which reaches our eye is immediately brought over the fixation point. Every brain cell which is connected with a special point in the retina has, therefore, one special motor impulse of its own — the impulse which gives to the eye just the turn by which the image of the outer thing is brought exactly into the centre of the retina.

These movements have again a secondary effect; like all movements in our body, they give again sensations on their own part; the moving upwards or outwards of the eye gives us movement sensations, and, as we saw that each retinal stimulation must secure in the brain one special motor impulse, so each light sensation must couple itself with one special movement sensation. The system of these movement sensations gives to the light sensations to which they are attached their "local signs"; that which we call the position of a special light point is the movement sensation which

results when we turn the eye by brain-reflex to bring the light on the fixation point. The system of these movement sensations is the optical space, just as the movement sensations connected with the tactual sensations give us the tactual space. Anything which reinforces these eye movements makes us overestimate the space distance; anything which reduces the eye movements leads to underestimation. Here lies the reason for all the well-known optical illusions; the divided line appears, for instance, larger than the undivided line, because the points of division force the eye to move in jerks from one point to the other, and these many small movement-impulses give stronger muscular sensations than the one straight movement from the one endpoint of the line to the other. Of course we cannot really pass through all the eye movements which would be stimulated by the thousands of light points which we see, for instance, in seeing a room. The points on the right push the eye to the right; the points on the left, to the left; and if they are equally strong, the result must be that the eyeball remains at rest. It is true that the movement does

not actually result, but, as each stimulation has often been accompanied by the characteristic movement in earlier experience, the stimulation of the special brain cell and its sensation enters into a central association with the movement sensation, and each impression has thus its local label of associative reproductions of movement sensations, even when the movement itself is not going on. We consider intentionally here merely the simpler case of local relations in the two dimensions of the plane, as they alone are important for pictorial art; the third dimension, the plastic seeing, is more complex, but involves no other principles, as its perception is also a function of eye movements; the eye movements involved, however, are more complicated, they are movements of convergence produced by the difference of the two retinal images and movements of lens accommodation produced by the blurring of the retinal stimulus. Our result, up to this point, is then, that we are conscious of the local relations of optical points not from the optical sensations themselves, but from the movement sensations which originate with the eyeball muscles, and that these muscles

move by brain-reflex for the purpose of bringing one point after the other into the middle point of most distinct vision. *Every curve or line or space-division is thus psychologically a system of eye movement sensations.*

Is this enough to explain why certain combinations or divisions of lines and spaces are agreeable or disagreeable? Certainly not. If it were all, we should see the lines and spaces merely as geometrical figures, and while certain movements would be more difficult for the eye than others, this increase of difficulty would be felt as stronger effort, and the stronger effort would be interpreted as a greater local distance. Of course we *can* see the spaces and lines as geometrical constructions only, and in ordinary life most of our optical impressions come to us in that way alone in that case nothing beyond the characterized processes happens. But there is another possibility. The motor impulse of the brain may radiate to other muscle groups of our organism. The light points on the right may stir up not only the eye muscles to move our eyes to the right, but may excite our whole organism

to turn to the right side, to extend the arms in that direction, to grasp with the hands for the object. The brain mechanism for this transmission of stimulation into bodily action does exist and must exist, for it is clearly the condition for the local adjustment of our actions in practical life. Whenever one object in the field of vision demands our practical action, perhaps our grasp of it, the locally related system of movement-impulses is brought about through the optical impression. The object high in the field of vision turns our whole body upwards, the low object downwards.

Now there are three possibilities, three cases which we can clearly separate theoretically, although practically no sharp demarcation line exists, and endlessly many combinations and transmissions between the three schemes are found. The first case is that in which the motor impulse to the body finds the organism engaged in other activities under the control of more vivid impressions or ideas or thoughts. The new excitement is thus inhibited; that is, the eyes follow the outlines of the visual objects, but the body as a whole

remains unmoved. That is, of course, the most frequent case. We see in every instant plenty of forms, but they do not engage our organism outside of the eyeballs, and the result is that the forms are merely local distances and directions. The second case is that in which the objects in the visual field demand from us an action; whether we approach the thing or escape from it, whether we change it in one way or in another is, of course, determined by the qualities of the object, but the general local adjustment depends necessarily upon its local forms; we grasp the thing by its handle, we put the foot to the sidewalk, we move the pen according to the form of the letter. In this second case the optical impression does produce a bodily movement, but the corresponding movement sensation is felt as a state of one's own personality, as indication of the subjective reaction. We perceive the thing and we perceive ourselves as performing the action; yes, we may say that the idea which brings about the action is more than the optical impression; it is the optical impression plus the idea of the change to be reached by the movement, an

idea which results from associative processes in the brain. We may say in general: whenever the given optical impression connects itself with the idea of a future effect or change, the resulting motor impulse is felt and interpreted as our own activity, directed towards the future end.

But a third case is possible. The optical impression, as it is at present and for itself alone, may absorb our mind; then the motor impulse to the organism will discharge itself and lead to localized tensions and movement sensations. Here the impulse is not, as in our first case, checked by motions in the interest of other objects, for the presupposition was that one object alone filled our mind. On the other hand, the impulse cannot now lead to a practical action, as in our second case, for we saw that every practical action involves the idea of an end to be reached; thus leading beyond the present impression which, according to the presupposition, fills the whole mind. The suppression and inhibition of the idea of practical future end thus creates a suppression of the real external movement, an effect which is

produced in the organism by an innervation of the antagonistic muscles. That which the motor impulse produces is thus not an actual movement, but a system of tensions and contractions which gives us subjective feelings of strain, of effort, of tension, of direction, of movement-intention. But further, we assumed that nothing beyond the idea of the optical impression was to be in our mind; thus we are not thinking of ourselves as objects, as empirical personalities; every thought concerning ourselves and our actions would lead us away and would link the visual impression with something else. The result must be that the feelings of strain and impulse which go on in ourselves are not projected into our body, but into the visual impression; just as the optical sensations were all the time joining themselves with the movement sensations of the eye muscles, so in this case, optical sensations and eye muscle sensations are fusing with sensations of bodily tension, and while the muscle sensations of the eyes give the local values and distance relations to the light-impressions and thus build up ideas of geometrical forms, these sensations of impulse and strain

give to the optical forms an element of force and energy. We ourselves are contracting our muscles, but we feel as if the lines were pulling and piercing, bending and lifting, pressing down and pushing up; in short, as soon as the visual impression is really isolated, and all other ideas really excluded, then the motor impulses do not awake actions which are taken as actions of ourselves, but feelings of energy which are taken as energies of the visual forms and lines. We saw that this isolation of the impression characterizes the æsthetic attitude; we understand now on a psychological basis why it is just in the æsthetic apperception that the lines mean energies, while in every practical relation or scientific apperception, the lines mean distances only.

But we can go further. If the energies which we feel in the lines are external projections of our own energies, we understand the psychological reasons why certain combinations of lines please us and others do not. As long as the lines are geometrical figures only, any combination of lines has its right to existence; as soon as they represent energies we say that the æsthetic

demand prescribes how the lines "ought" to be. They ought to be such that they correspond to the natural energies of our own organism and represent the harmony of our own muscular functions, because every interference with the natural innervations of our system would turn our attention to our own body and would destroy thus the isolation; the movement-impulses would appear then again as states of ourselves. For instance, we are symmetrical beings; our natural movement tendencies are equally distributed to the right and to the left; the result is that we demand from the play of lines that they balance each other. On the other hand, our organism is not symmetrical as to the upper and lower half; we feel in our muscular energies that our lower part has to give us stability, while the upper half has the free mobility of action; the result is that we do not want a vertical symmetry in the energies of our optical forms; they, too, must show the stability in the lower, the freedom and ease in the upper part. In every case the interest, and thus the beauty, must grow with the complexity of energies involved; the bilateral balance

of rigid geometrical symmetry is thus less interesting than the balance of unequal combinations of lines where, for instance, the length of the lines on one side is balanced by the strangeness of the curves, or by the outward bending of the line, or by the heaviness of the line combination on the other. The richer and the more manifold the motor impulses which reflect in our consciousness, the higher is the æsthetical value of the form, but even the simple symmetrical design is completely beautiful because it corresponds, by the energies which its lines express, completely to the energies of our own personality.

Now we understand all those secondary features which the æsthetic discussion introduced; for instance, the importance of the frame and its influences on the whole composition. The optical impressions of the framing lines work as stimuli for motor impulses to push us towards the centre; they indicate the regions beyond which we must not move, and this motor influence, exerted from all sides at the same time, must concentrate our whole motor energy to the centre, so that every movement-impulse gets a reinforcement from its

nearness to the centre; thus the nearer to the centre in the framed picture, the stronger the strain and force. In the unframed design, on the other hand, no central point keeps our activity back; we can freely move in every direction and the greater the distance we have to move from the middle, that is, the greater the effort to turn to it, the more energy seems expressed by the line. Thus in the design — and the so-called modern Preraphaelite pictures and "Nouveau Art" have a tendency to imitate this design-like character and to suggest a neglect of the frame — the strain is the stronger the farther away from the centre; in the framed picture the stronger the nearer to the centre. There is no form and no combination of lines whose formal beauty cannot be understood psychologically by their correspondence with the natural motor energies of our body. But we must never forget that all this is true merely for the one case in which the optical impression is the only idea which fills our mind in complete isolation; as soon as we connect the impression with ideas which lead beyond it, the motor reaction becomes interpreted as our activity

and not as energy of the lines, and the demand for a correspondence between objective and subjective energies does not exist any longer. If we see on a paper before us a combination of lines which means to us a geographical map or the map of a city or a microscopical view of a tissue, we do not feel the slightest discomfort from the combination of lines, even if they have no relation whatever to the energies of our bodies, simply because in such a case the lines do not come in question for their own account; they are not isolated but connected with other experiences which demand our practical actions, and our reactions, beyond those of the eye muscles, are interpreted as our own activities and not as energies of the line. The forms of the city map satisfy us perfectly, while, if taken as design, they would tumble over, interfere with each other, fall in pieces, lack every harmony. To take an æsthetical attitude towards the forms; or to interpret them as energies which must correspond to the relations of our own bodily movements, as if we lived in these lines; or, finally, to isolate these optical impressions in our own consciousness

from all other ideas, so that they as impressions control our motor discharges — are thus merely three different expressions for the same thing.

The question of the outlines of figures and of the division of space is only one side of the form problem; we saw the other side in the question of light and color. There, too, the æsthetician gave his normative prescriptions, but the psychologist must attempt his explanatory account which has not, like the æsthetical rules, to refer to physical light intensities and color qualities, but to light sensations and color sensations. It is true the knowledge of the psychologist in this respect is to-day much less satisfactory than in the question of forms. The interest of the psychologist concerning light and color must turn naturally at first towards the problems of the sensory process itself — of what the relations are between the outer stimuli and the qualities of the visual impressions; of what goes on in the eye and in the brain; of how the extension or the duration, the foregoing or the surrounding light, the combination of lights and the intensity of lights, and hundred other

factors change the resulting sensations. These are the questions which must be settled at first if the light impressions are to be understood at all. And as these problems are extremely difficult and demand the most complicated experimental research of generations, the phenomena of mixture, after-image, contrast, color-blindness, adaptation for different intensities, influence of time and space, of exposure, and, above all, the theories concerning the retinal processes have, on the whole, absorbed the interest, while those questions which start from the complicated light sensation, for instance, as to the subjective effects of the colors on our whole mental and physical organization, have found very little consideration.

And yet it is clear that merely this second group of problems has immediate bearing on our æsthetical question. The other group of optical inquiries explains the appearance of the visual perceptions, but not their æsthetical value. Of course, indirectly they have reference to our artistic phenomena too, as we demand an explanation why, for instance, certain colors reinforce each other in our mind: why the

red looks so much more glowing if it is surrounded or crossed by green, why the gray appears so much lighter on a black than on a white background, why the small gray field on the blue ground looks yellowish, and on a yellow ground looks bluish, and so on. The psychologist explains such phenomena easily. He tells us that there are three chemical substances in every nervous end-apparatus of our retina: one which is decomposed by white light and assimilated in the absence of stimulus, *i. e.*, black; one which is decomposed by yellow light and assimilated in blue light; and one which is decomposed by green light and assimilated in red light. These processes of chemical decomposition in the retina produce, then, in the brain, those excitements which are accompanied by the sensations white, yellow and green; and the processes of assimilation produce the sensations of blue, red and black. There are no other light sensations than these six, while these six are not capable of being further dissolved; green is never subjectively yellow and blue, while physically, the painter's brush can mix yellow and blue into green; and white

never contains any color sensations, while physically, the white light may be dissolved by a prism into the spectrum colors. Psychologically, we have thus six colors; orange is merely a combination of red and yellow, violet a combination of red and blue, gray a combination of white and black, brown of yellow and black, pink of red and white, and so on. Now, if in the retina an overdecomposition of a certain chemical substance occurs, the decomposed chemical stuff must produce an increased assimilation of that same substance in the neighborhood; therefore, if the ground is yellow, that yellow-blue substance decomposes and the decomposed substance is carried to the surrounding, so that an overassimilation of the same substance goes on in those fields which are not stimulated by the yellow light; and, as the assimilation produces blue sensations, the gray field appears bluish. On the other hand, if the ground is blue, an overassimilation of that substance goes on, and to get the material for that new assimilation it must be taken from the neighborhood; that is, in all those places where no blue light is working an auxiliary decomposition will result, and

thus the gray object appears yellowish. The same relations obtain between green and red, between white and black. There are plenty of explanatory details of a similar character to be considered, and yet, we insist again, all this is only preparatory to the real central question, why the one combination of lights is satisfactory and the other not. The fact that one color interferes with the other in the retina explains, of course, merely why the color disappears or becomes changed in its color tone; but why the one harmonizes or conflicts in our mind with the other is not explained by such explanation of the processes in the sense organ. Even if we consider the succession of the various impressions — and we must not neglect this aspect, for our eyes are continuously moving over the various color fields — we can understand by means of the retina theory how one color prepares us for a succeeding color, how decomposition in a substance favors a following assimilation; but that also merely explains why we see the red as more intense after passing over the green surface; an explanation of the inner accord or discord is not involved.

To reach an explanation of this mutual relation, we must remember that the æsthetical discussion gave to light more than its lightness and color quality alone: the light was characterized by warmth and coldness, by serenity and depression, by excitement and quietude, and we appreciated the light effects as expressions of such sentiments. Can we doubt that we have here exactly the same situation as in the case of the lines, where the apparently expressed energies showed themselves in psychological analysis as outward projections of our organic motor reactions? If we see a white snow landscape at first through a red and then through a blue glass, and we see at one time the whole nature in glowing excitement, the other time in quiet, cool depression, can we doubt that it is our own tension and our own relaxation which projects itself into nature? Indeed, the impression of lightness or darkness, of pure or mixed, of saturated or unsaturated color, are starting points for centrifugal waves which are carried through the whole body, influence our breathing and our blood circulation, our muscular strain, the pressure of our joints, the tension of our

tendons, the widening of our pupil, the tonus of our whole system. All this again, as with the forms, is kept apart from the impression and either checked by other activities or felt as personal action if the light-impression is not the only object of the mind. If the red and green are railroad signals, the colors connect themselves with ideas of purposes and do not stand isolated for themselves; the organic effects fuse with the practical reaction and the colors remain without a mood just as the lines which fill a city map remain without energy. But where the isolation is completed, our excitement and the depression attach themselves to the impression, and the conditions of our peripheral personality control again the fitness of the light-combination.

It is the natural interdependence of our bodily organs which forbids that, for instance, a glaring saturated color shall stand out in a picture made up of unsaturated lights, as the faint color tones of the chief parts bring the whole organic system by reflex into a tonus which cannot harmonize with the strong tension of the glaring light; their mutual interference would

make us conscious of the body as such, and the result would be that the complete absorption in the color is lost, the isolation thus destroyed and, therefore, the æsthetic attitude made impossible. The organism does not demand mere uniformity and monotony of reactions — variety increases the interest and heightens the beauty of light as much as of shape — but as in the case of forms we must keep our personal balance between right and left or the personal stability of a firm base, so the variations of light-excitement must keep in all their manifoldness a balance about a certain middle value which is represented by a certain tonus of our organism: the more the excitement and strain goes beyond that tonus in one direction, the more it must be accompanied by a counteraction of depression and relaxation. That those movement-impulses starting from the line-impressions and these organic waves starting from the light-impressions stand in close relation is a matter of course; not every tonus can harmonize with every impulse, the mutual interferences would lead again to a destruction of the isolation. Complete beauty thus demands that form

and color shall be adjusted to each other; gay lines demand gay tints, soft curves ask for soft lights and grave forms for grave colors.

The psychologist's interest in the effect of the picture is not confined to the forms and colors. We rejected the popular view that form and color alone make up the subjective side of the picture, while the content is objective; we saw that from an æsthetic point of view both form and content are expressions of objective truth, but that correspondingly, from a psychological point of view, both content and form are mental characteristics of the complex idea. The lines and lights, as form, find their expressiveness through the mental states of movement sensations and tension sensations which are added to the visual sensations; the content finds its presentation, of course, also in lines and lights, nothing besides lines and lights reaches the retina when we see the picture of a flower or a bird, a landscape or an historic scene, and now arises, therefore, the question: what mental states are added to the visual sensations to give them the expression of a special content?

The impressions, we said, are lines and lights only; and yet the subjective results must be more than the mere summation of the single effects resulting from the single lights and lines. As long as they are producing their own effects, we have merely a design expressing the meaning of space and color; the psychical effect of the real picture thus depends upon the special combination of lights and lines. And yet the principle remains the same. The added psychical contents are here not simple automatic reactions, as in the case of form and color, but the *mediate reactions* which are brought about by association. These associations are ours, and ours are the impulses to action which come from them, but both are again projected into the impression when it is really isolated in our mind. The lines and colors of the portrait remain a fine play of the curves and lights and thus of energies and tones; but, besides that, they awake in us by association the idea of a type of character, earlier experiences come to the background of our consciousness, and all together call up a certain attitude of liking or disliking, of respect or contempt, of love or hate. But if these

associative ideas came up as memories of other men or if those impulses to reflected action really led to practical actions, that is, to foreseen changes of the outer world, then, of course, there would be no further isolation, but the fullest possible connection; then we should take the attitude with which we study the photographic illustration of a man's head, perhaps in a political magazine — that is, the logical attitude of information, but not the artistic attitude toward a portrait. All these associations and mediate reactions must thus fuse with the given impression, illuminate and enrich it, make it living, but never lead beyond it. This is possible only when two psycho-physical conditions are fulfilled. Firstly, just as in the case of the motor reactions on lines, so here in the case of the motor reactions on associations, the impulse must not lead to a real action, but must be felt only as an impulse. This psycho-physical effect results from that natural inhibition which comes through the idea of the unreality of the object. Therefore, the beauty is lost when the appearance deceives us so as to give the impression of reality; now the real practical

reactions result, the reacting personality with its own ends and aims of action stands against the object, the isolation is gone. The impulse is then no longer interpretation of the object fusing with its impression, but a factor of one's own activity, while the impression loses its beautiful expressiveness.

Secondly, if the associations which come up — and must come up to give expressive character to the combination of impressions — if these associations are not to lead us away from the given presentation and thus not to destroy the isolation, the associations themselves must be of a peculiar kind. Under the natural conditions of daily life, when we see a thing our associations lead us away; the picture of one person reminds us of others, the landscape reminds us of other places, of earlier experiences, of all kinds of information and knowledge. It is clear that in such a wandering mind, the given presentation connects itself in a hundred directions. And yet we have insisted that the beauty of the content presupposes associations. How can we understand this apparent contradiction? Well, we must demand that

the associations keep us to the given impression. And this is possible only under the one condition, that the impulses of action which are suggested by the association do not antagonize the impulses of action which come from the impression itself. The associations must thus help the impressions, must fill out the impressions, must give detail and background to them and thus reinforce and specialize the impulses which belong to the given reality, but never lead beyond it.

Expressed in the terms of physiology, we might say that the stimulated brain cells must carry their excitement merely to those associative brain cells whose motor discharge is in harmony with the primary impulses of the impression, while all those associations whose motor discharge would be antagonistic are completely inhibited. Psycho-physiologically, the æsthetic effect comes thus into nearest neighborhood to the processes of attention and suggestion. Attention and suggestion also involve that increase of vividness in the idea by which the antagonistic ideas, that is, those which would lead to antagonistic actions, are suppressed and

eliminated. Psychologically, inhibition is thus the central phenomenon of æsthetic processes as far as the content of the picture is in question; associations must enter to make the content manifold and interesting, but the complete inhibition of those associations which would lead to new attitudes and actions is the one central condition by which perfect isolation is secured; and only with this isolation do the reactions become characteristics of the impression instead of states of ourselves.

It is a necessary consequence that this situation forces rules and prescriptions on the work of art. If we saw that the psychological conditions of our muscle and nervous system demand a certain combination of lines or lights, it is clear that the whole disposition of our central nervous system, that is, the whole preparation and education of our brain, forces certain demands on the contents. If we have no associations at our disposal by which we can illustrate the impression, so that we do not understand the work of art; or worse, if we cannot control our associations and are thus led to new contents outside of the presented impression; or if we cannot

suppress the real practical action; — then no æsthetic attitude is possible, for the central isolation is psychologically destroyed. The picture may have, then, moral or logical or technical or practical value, but we no longer enjoy it æsthetically. The content of the picture as æsthetic presentation is thus also fully dependent on our organism, not on the structure and functions of our peripheral organs but on the organization and training of our brain cells and their connections. Therefore the great individual differences which characterize the enjoyment of real pictures — but even in the highest appreciation of the noblest work there is nothing which cannot find its complete causal explanation in psychological terms.

CONCLUSION

ES, every æsthetic demand in regard to space-division and outline, light values and color, content and meaning and expression, can be understood as the result of psychological conditions, and all can be related to the causal working of ganglion cells and nerve fibres, muscles and tendons; laws of nervous irritation and irradiation, nervous excitement and inhibition can explain the totality of facts. But has all this any bearing on the practical art instruction in the class-room? At the first glance we all are inclined to answer in the affirmative; we gain by such a psychological study a concrete positive understanding of the processes on a scientific basis, and the more we know of a situation the better it must be for us.

Of course, no one can deny that a serious study of the explanatory principles of the

processes involved in artistic production and enjoyment is not only indispensable for every student of psychology, but interesting and even fascinating for many students of art. But whether it is of direct service for the teacher of art in his teaching work is another question. And here a sober second thought may, perhaps, come not at all to an affirmative answer. Whoever expects not only the satisfaction of a theoretical interest, but practical help as well, must expect that the causal psychological explanation will give hints either how to influence the child correctly or how to determine the demands of the picture correctly. In both directions the ultimate result would be failure. Even if we presuppose what goes far beyond the legitimate rights of a justified presupposition, namely, that the teacher in question is in full control of all the psychological and physiological facts known to science; and secondly, that the teacher has a full psycho-physiological knowledge of the individual pupil — even then we should be helpless. On the one hand, science gives us essentially generalities, gives us general categories which indicate the directions of explanation, but is

still far removed from the possibility of carrying them over into such details as would be needed for the construction of all the psycho-physical effects in the case of a complex picture. And on the other hand, even if we had all that, we should be as powerless as the astronomer who would try to use his exact astronomical knowledge for the purpose of moving the stars in obedience to his will. The stars are too large and too far, the ganglion cells are too small and too well protected. Even if we knew what motor brain impulses ought to be stimulated, and what ought to be inhibited, to bring the child into the right æsthetic attitude, we cannot indulge in microgymnastics, we cannot pull and push those cells, we cannot start or stop those nervous currents, unless we do it by the old-fashioned way of showing the child beautiful objects — and then all our fair knowledge of those fibrils and ganglion cells becomes superfluous.

But there is still another factor in play that is still more dangerous. The teacher who puts his interest into the psychological understanding of the artistic processes is in danger of losing sight of the really

æsthetic factors. The work of art becomes to him a function of the psycho-physical apparatus, the artistic task becomes a scientific problem, and he thus trains in himself an attitude towards the picture which is certainly antagonistic to the attitude which he wants to bring out in the child. Instead of thinking of the æsthetic aims of the drawing, the ideal ends which it seeks to fulfil, he thinks of the psychological and physical causes of the processes in the child, and that must influence his attitude towards him. The child himself is then treated as a psycho-physical organism in which certain effects are mechanically produced by certain influences, but not as a personality who is to be led to love beauty and to live in ideals. A certain external skilfulness may be secured by such methods, but it is paid for by a lack of sympathy and inspiration; and yet nothing can be more important than just this which is lost, the position of the art teacher as the centre of æsthetic inspiration in the class-room.

I cannot help saying, therefore, to the art teachers that there is great danger in overestimating the practical value of the

theoretically so interesting psychological explanation of art. Their real domain is not the psychology but the æsthetics of drawing; they have not to deal with nerves and muscles, but with noble space-divisions and curves, with light values and colors, with the expression of contents and meanings. They have not to deal with the processes in the eye and brain, but with the outer world of space and light and beings, whose full truth cannot be expressed in any other terms than in the language of beauty. They have to influence the child not by treating him according to psycho-physical prescriptions, but by training him in the real æsthetical attitude, teaching him to express the beauty of space, the beauty of light, the beauty of content, and finally, the beauty of these three factors harmonized in real pictures; and this whole progress ought to be steadily accompanied by the technical training of a careful eye and a skilful hand, and by an æsthetical training in seeing good reproductions, the masterpieces of the world. And behind all this, there must be as background the inspiring influence of the teacher who believes in beauty, whose personality

irradiates beauty in the smallest class-room, whose atmosphere inhibits ugliness and vulgarity in every mind.

Such work, quietly but steadily done in a hundred thousand class-rooms between the Atlantic and the Pacific, is sacred work, and its mission for the noblest development of the country cannot be overestimated. It will bring great art to this land. History has always shown that great art arises when three conditions are fulfilled: the country must be wealthy, must develop characteristic national ideals, and must show a love for beauty in the masses; the first two conditions are becoming daily more fulfilled, the art instruction has to bring the last one. The wave of art is swelling; since the days of the Philadelphia Fair to those of Chicago and St. Louis, and of the libraries of Washington and Boston, great art has been growing. As the great American novel prepares itself through widespread reading of national novels, so great American Fine Art will come through the enthusiastic study by millions of children.

And yet, all this is of little consequence compared with a greater purpose. Great

art may be near or may be far, and among those millions there may be future artists or not — that ought not to count if the mission of the artistic instruction in school is in question. We want to open the eyes and minds of those millions to the sunshine of beauty, to carry happiness and idealism into the hearts of those young people, into the homes of the whole American nation. Their entire school knowledge and surroundings train them for practical needs, for skill and achievement; that must be so, and it is well. Let them fight and run and pull and push, but let them never forget that the fight is not merely for the fighting; we must aim for an end in which we can find satisfaction, repose and happiness. Our youth do not learn that and do not see it in their surroundings; the chase itself becomes a habit, repose appears laziness. The nation which had in pioneer life to open the gigantic resources of a new country, has learned only to work and not to rest from work in a way which can claim the same dignity as the work itself; yes, in a way which gives new value to the work itself. The only ideal rest was that which religion

promised; on earth beauty alone gives that repose without struggle. That is the real mission of art instruction; not quite unlike, indeed, to that of the church, — to bring into every home and into every life the ideal repose, the repose in the ideal; to bring us that rest which is not fatigue from work, or — another desire of the ever dissatisfied mind — the rush of amusement; no, that rest which is complete satisfaction, beyond the struggles of the day, complete harmonization of all our energies, complete fulfilment of our real personality.