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BRUNO ADRIANI

PROBLEMS OF THE SCULPTOR

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TO SADIE ADRIANI

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PREFACE

This book is not a historical survey nor a technical manual.
It indicates some essential problems with which the sculptor is confronted.
Its leading idea is, that creative imagination, certain mental tendencies, and craftsmanship are co-ordinated in the complex mental and manual activity of the sculptor.
The stress is laid upon the mental elements of this process, as manual work reflects a specific spiritual attitude.
The treatise is not meant as a code of rules.
It develops arguments for an individual conviction and is an attempt to excite public interest in sculpture, fighting against a mortal enemy of the artist: indifference.
The reader may come to different conclusions.
He may choose the objects of his preference in other periods and styles—for instance, in Negro or in Mexican or in modern art.
Egyptian and Greek works are not the last words in sculpture.
If this book induces someone to concentrate more ardently upon the creative work of the artist, the ambition of the author is satisfied.

INTRODUCTION

The work of great artists is built not only upon talent and diligence but also upon the spiritual foundation of principles governing the fulfilment of certain basic laws of art. Representative artists aspire, consciously or unconsciously, to an absolute solution of their problems.
This "idea of perfection" (1) comprises all aspects and phases of their activity. It dominates their observation of the exterior world, their inner vision, and the development and execution of their artistic plans.
To understand their aspirations and their achievements, we have to comprehend the essential questions connected with artistic creation.
As every artist creates an original world, he alone is the responsible master of his realm. We cannot dare to restrict unlimited possibilities by dogmatic rules.
Our convictions have only a personal character confined within our own horizon.
The way we consider ideal cannot be taken by artists we do not understand.

PART 1

BASIC IDEAS

a. ART AND SCIENCE

Writers of our time have expressed the opinion that an intimate connection exists between the work of the artist and that of the scientist. (2)
They analyze, for instance, the artistic and the scientific conception of space and time to prove the identity of both conceptions.
It is obvious that the artist participates in the spiritual trend of his time.
But his role is different from that of the scientist.
The scholar, in a theoretical ideal sense, searches for truth without emotion. (3)
He tries to form an image of the world through systematic knowledge and through distillation of abstract notions.
Art, on the contrary, is not art at all, if emotion is not its prime mover—as Cezanne once said to his friend Gasquet.
The artist conceives the world as a unity of visible phenomena. He elevates the *sensuous* perception into consciousness. (4)
The normal observer of nature obtains only a superficial and indistinct perception that quickly fades and evaporates.
The artist has the faculty of acquiring a clear and original visual conception of the world, and of developing a distinct representation of things perceived through his senses.

The French philosopher Henri Bergson believes that the aptitude to see with exactness, not only if it is necessary or useful for the sake of practical purposes, has to be considered as the very core of the artist's talent. The artist "lifts the veil" which covers the true image of things. Art reveals nature, elimintlting everything that masks authentic reality. (5)

This idea explains a part of artistic creative work, namely, the original active perception.

But it does not exhaust the many-sided process. The mere insight of the artist is not fulfilment of his work.

Creative Imagination

In modern literature about art we often find the expression "abstract art."

It really is one of the catchwords of our time.

Abstract art generally is understood as art without objective subject-matter, as a new conception of art.

"Abstraction" is identified with "creative imagination."

Charles Baudelaire, in an essay written in 1859, characterized the nature of creative imagination in the following words:

> "... *it dissolves fhe whole universe and creates a new world with the material thus acquired, according to rules to be found in the deepest depth of the artist's soul."*

Older psychologists used the term "abstraction" for the first phase of this process.

Modern psychologists changed the terminology.
They define the two mental operations of creative imagination as "dissociation[11] and "association." (6)
"Dissociation" is identical with "abstraction."
It breaks up and dissolves states of consciousness.
"Association" is a synthesis that creates new combinations, new forms.
Marcel Proust in his novel "A la Recherche du Temps Perdu" illuminates the same idea in a metaphor as suggestive as that formulated by Baudelaire:

> *"The genius of fhe artist acfs like those extremely high temperatures which have the power to dissociate the combination of atoms and to combine them according to an entirely opposite order answering another type."* *(7)*

The ideas of Baudelaire and Proust are complementary.
Baudelaire stresses the importance of the conscious creative will and Proust the vital role of unconsciousness in creative activity.
"Dissociation" or "abstraction" is an organic part of every artistic creation.
But it is only a part, even in art without subject-matter, in non-objective art.
The combination into new form may be so unconventional, so remote from nature, that it appears to be specific abstract art.
Nevertheless, the work would be chaotic if the artist had not reunited the abstracted elements in an original synthesis.
It is impossible to separate the different parts of the mental process

called "creative imagination[11] as distinctly as we can perceive the functioning of a machine or the visible procedure of an architect who first digs out a hole for the groundwork and then erects the framework of a building.

Human creative activity is complex and fluctuating.

The power behind it cannot be observed and understood clearly through our intelligence. Yet it is not imaginary but cryptic.

Neither the psychologist investigating its nature, nor the artist himself can discern the limits of dissociation and association. Metaphorical transpositions like those of Baudelaire and Proust are more enlightening than subtle psychological analysis.

With this mental reservation we can distinguish a series of interrelated processes—first, many directions of dissociation, namely, the elimination of unnecessary details, the selection of essential forms, the distortion of natural images—then the constructive action of association uniting the dissociated elements into a higher order of harmony, of contrast, of mutual relation, of original proportion, and architectural monumentally; or into free combinations that appear as products of fantasy and invention.

Finally, the artist has to shape his vision into concrete material so that it has real existence as a lasting piece of art, no longer dependent on the will and existence of its creator.

It is not possible to test his work as objectively as one can the result of scientific research.

Nevertheless it fulfills a task likewise important for our understanding of the universe.

Its inherent truth is conditioned by the degree of genuineness and purity it exhibits as a mirror of the artist's personality.
Its formal and spiritual importance depends upon the quality of its original conception—upon its power of disclosing the unity of the world.
The artist forms the world "after his own image."
This is the meaning of the claim that art has to be true. It is an artistic and ethical postulate—profounder and more exacting than the equivocal phrase that art should represent beauty.

b. THE THIRD DIMENSION SPACE

1. Space in Art

The essence of creation is the same in the different fields of art.
To construct a formal unity, the musician uses a system of sounds. The poet, a system of sounds with intellectual meaning. The painter, a system of colours and planes.
The sculptor conceives the visible world and the world of his imagination in spatial, three-dimensional volumes.
He expresses the relation between the two dimensions of the plane and the third dimension—the direction into the depth.
This is the distinguishing mark of his genius, in contrast to other kinds of art.
Modern artists and writers asserted that the classic theory of the "three-dimensional space of the Renaissance—the space of Euclidean geometry" is incompatible with the conception of modern art.

They apply to their analysis of works of art a new theory of physicists —the concept of the unity space-time.
Time is considered to be the fourth dimension of space. (8)
But it is hazardous to use this concept of physicists as a means toward the comprehension of artistic creation. (9)
The actual *existence* of a sculpture is conditioned by its relation to the surrounding space, just as human life is dependent on breathing air. But "space[11] in this sense must not be understood as a physical, geometrical, or philosophical concept.
Terminology in the literature of art often neglects the difference that exists between the language of science and that of art.
In the language of science a clear definition of abstract ideas should be free from emotional values.
In the language of art, as for example in the lyric language, the same word expresses sensuous tones—the logical content is overlaid and suffused. (10)
When we use the word "space" in connection with artistic problems, neither the geometrical concept of three-dimensional space nor the physicist's theory of four-dimensional unity space-time is applicable. They derive from abstract thinking and are not accessible to our senses.
Space in art is not a mathematical but a cosmic unity, that can be perceived through our sensibility.
It is the sensory scene of our human experiences, "the sphere of our activity" and of our relations to our environment. (11)
Likewise the sense of the expression "three-dimensionality" in the language of the sculptor is not identical with the conception of geometry.

It means a mode of visual and spiritual representation developed by *analogy* with mathematical concepts.

Painting and graphic arts are confined to the two-dimensional surface of the artist's material—wall, canvas, paper.
After the introduction of linear perspective the painter, like an architect, systematically constructs a three-dimensional space.
But he remains restricted to one plane and, therefore, to representation of a fictitious space.
Restoring harmony between style and this restriction to two dimensions, painters in subsequent periods again abandon the partly intellectual ambition to construct a three-dimensional space.
The art of our time has disclosed new possibilities and achievements of a purely two-dimensional conception.
The substance representing the material of the sculptor—a block of stone or of wood—has three dimensions, in the sense that we reduce various directions to three dimensions, in order to obtain a simplified system of perception.

A certain parallelism between sculpture and architecture is evident. This parallelism is limited.
Architecture has a "unique privilege" as far as it alone can create an organic *interior* space. (12). Only the architect is capable of expressing spiritual values through the proportions of a spatial unit that is closed on all sides.
In Romanesque and in Gothic cathedrals we can compare the different languages of horizontal and of vertical extension—of vast un-

broken halls and of halls divided through a specific order of columns. But the *exterior* form of architecture corresponds to that of sculpture. When we ascend the Acropolis, the Parthenon on its height appears as monumental sculpture.
Like a building, the sculpture penetrates the external space, developing its forms in all directions.
The sculpture intensifies the life of the sensory space, inducing its existence into our senses and into our consciousness.

The fantastic demons, horses, birds, and dragons that crown galleries and buttresses of Gothic cathedrals, widen the sky into boundless mysterious depth.
These sculptures thus play a functional role.
And that is an essential part of their magic expressiveness.
While scientists distill abstract notions of "space," the artist endeavors to perceive a concrete space through intuition and to make it perceptible in a formal creation.′
Both have the same aim.
Their effort originates in the human desire to acquire an unbounded vision of the cosmos and to overcome the lack of balance that depresses mankind in undeveloped phases of existence.
An instinctive impulse incites us to determine our situation in the universe.
The mathematician Henri Poincare, in his book "Science et Methode," develops the idea that we take our own body as an instrument of measurement, in order to construct space—not the geometrical space neither a space of pure representation, but a space belonging to an

"instinctive geometry."
The human race has developed a system of unconscious associations and has transmitted this system to following generations.
The gestures we make and the co-ordinated "parries" we execute, to correspond to external thrusts and assaults, provide us with the sensation of sensory space.
This system supplies the means necessary to fix our position in space.
Poincare concludes that every human being has to construct first this restricted space, for his personal needs, and then is capable of amplifying—by an act of imagination—the restricted space to the "great space where he can lodge the universe."
In order to comprehend this act of imagination, he tries to imagine the feeling of a giant who could reach the planets with a few steps. (13)

Extending the theory of Poincare, we can establish an *analogy* between our instinctive procedure of constructing sensory space, and the mental activity of the sculptor determining through an organic system of axes the skeleton of his work. *
This metaphor elucidates the vital role of movement in sculpture.
It reveals the roots of one of the most striking tendencies of the sculptor—his effort to secure spatial orientation and precise balance.
Through the organism of his forms he creates a "restricted space" as a symbol of the universe.
The space of his sculpture is his original world.
And each new work opens a new and wider world.
Not consciously, not through methodical acts of intellect and will, can

he achieve the immaterial construction of space—instinctive tendencies dominate in this creative process.
The "ideal" beholder, also instinctively, transposes the system of coordinated axes created by the sculptor, into his own organism.
He participates in the artist's power to organize sensory space.
In rare moments of highest creative tension the sculptor is filled with ecstasy—with the cosmic sensation of space and eternity.
In these moments he feels that the artistic problem of space is inseparably linked with the metaphysical problem of his existence. *

Henri Focillon, in his book about Romanesque sculptors (14), distinguishes two different conceptions of space in its relation to sculpture—"espace-limite," which presses upon the forms of a sculpture, limiting the expansion of salients and reliefs, as in Romanesque sculpture—and "espace-milieu," which is open to expansion of volumes; favoring dispersion, the play of free space between volumes, and abrupt gaps, as in Baroque art.
The relation between space and sculpture is caused not by the exterior space itself but by a new element in space; namely, the work created by the artist.
Therefore, we may vary the idea of Focillon and state that primarily the style of the sculpture determines the actual significance of this distinction.
A composition of volumes and planes contains its own spatial values; they condition the relation between sculpture and external space.
The *specific space* limited by the formative parts of the sculpture can be *closed* or open toward the external space.

The closed space of the sculpture corresponds to "espace-limite" and the open space to "espace-milieu."
If this specific space can be perceived as a unity, the sculpture possesses unity. It is a question of individual inclination whether we prefer the type of Romanesque sculpture with its closed space or the type of Baroque sculpture with its open space.

2. The Volume of the Sculpture

The mere quantity of the volumes of a sculpture does not have importance as an element of artistic expression.
Neither is mere three-dimensionality an artistic value.
Stones, tools, and simple cubes have three dimensions.
Many formations of nature show regularity of proportions which seems to follow a definite law of harmony and rhythm.
The formation of the crystal is not accidental.
Its clear cubes are convincing examples of three-dimensional form.
They could be the elements of a work of art, if a sculptor would develop them into a combination according to an organized plan.
The sculptor in his contact with the world of phenomena is impressed sensuously and spiritually by the general evidence of the three-dimensionality of natural objects.
His creative energy attracts them like a magnet.
Even things that appear banal to us are worthy of his minute and intense observation.
He transmutes them until they are organic parts of his universal visual conception.
The formative energy of nature, demonstrated by a crystal, inflames

his imagination with particular vigour.
The form of the cube, with all its variations, is convincing and tangible as a precise three-dimensional structure.
Paul Cezanne liked to say that nature has to be treated by means of the cylinder, the sphere, and the cone—the whole brought together by perspective so that each side of an object or of a plane is directed toward a central point.
This idea sometimes has been interpreted as an argument for so-called abstraction in art.
But Cezanne himself would hardly have agreed with this interpretation, as he explained his idea in the words: "Parallel lines at the horizon suggest extension—a section of nature, or if you prefer: of the spectacle that God spreads before our eyes." (15)
Evidently in this statement the "cylinder," the "sphere," and the "cone" are to be considered only as basic forms of an artistic conception, essentially different from geometrical figures.
Art deals with precision of intuitive perception and creative representation—not with exact numbers.

Therefore, for the sculptor the *cube* is not a unit of measurement, but a most typical basic form of visual conception—the original source of sculptural representation.
This basic form is not a definite solution.
Neither is it a scheme of stylization which the sculptor chooses freely or by chance—as one of several possibilities of simplification.
It is organically connected with the central problem of his production: the volume of cubic form is representative of the material substance

—the block of stone or of wood—which the sculptor has to transform into organized form.
Through this medium he experiences all aspects of the world, anticipating his creative activity.

A work, composed of unelaborated cubes only, can be full of intense formal and spiritual expression.
In the Egyptian Museum of Cairo several unfinished Egyptian statues are conserved.
They show no detailed execution.
Cubic blocks are piled one above another with distinct plain surfaces.
They fascinate us by grandeur of proportions and expressiveness of forms.
Equally pure and effective is the basic cubic form of unfinished Greek figures, as, for instance, the archaic "Kouros of Naxos" in the National Museum of Athens.
Finished Egyptian and archaic Greek statues still show this restricted style.
The head as well as its single parts, such as nose and eyelids, and likewise the knees and the clenched fists are variations of cubic form.
The mane of the archaic horses in the Acropolis Museum in Athens is not an imitative reproduction of a real mane, but is a purely sculptural block.

3. The Planes of the Sculpture

The sculptor divides nature into a system of surfaces of cubes.
He searches for the relation between the cubic volumes, developed

in his imagination, and transposes this relation into the construction of a new form.
He uses the material that he perceived or imagined, to build up a framework of *planes* connected through formal relations.
In his language a plane is not a perfectly level and measurable surface in the abstract geometrical sense.
The planes are the essential boundaries that confine the organism of the sculpture like the sides of an imaginary cube.
They confine the sculpture to a spatial unity isolated from the external space.
Within the space enclosed by these main planes, the sculptor organizes his work through individual planes embracing the different parts of the sculpture.
The planes border the front-side of a relief; encircle the sculpture in the round—a single figure as well as a group of several figures.
They bind the various features of the capital of a Romanesque column.
They close the row of columns of a Greek temple.
Contemplation of the Parthenon procures sensuous experience of this imaginary plane: when we look at a row of columns from an oblique facial angle, the exterior surfaces of these columns coalesce and form a closed wall.

4. The Specific Space of the Sculpture

Through combination of his planes and volumes the sculptor creates a synthesis: three-dimensional form.
Contrasting different axes, he has unlimited possibilities of showing all planes in various systems of mutual relation, according to the ac-

tual viewpoint of the beholder.

These different unities of planes have one common trait: leading our eye on lateral planes back into the third dimension, they create in our mind the sensation of a three-dimensional organism and of movement.

In a fascinating chapter about the principles of monumental sculpture, Henri Focillon demonstrates that plastic movement is not identical with natural movement. (12) (16)

Through the varied directions of the axes the sculptor produces artistic equivalents to natural motion.

The sculpture can display motifs of movement, although the different figures of the composition do not show motion in the ordinary sense.

The organic connection between representation of three-dimensional form, and motifs of movement determines the expressiveness and vital force of the sculpture, especially of the sculpture in the round.

For every part the sculptor has to establish a visible formal relation to the whole.

Only this relation gives artistic significance to the individual elements.

A cavity, carved into the stone, can fulfil a functional role of disproportionately high importance, even if its actual depth is only a fraction of an inch.

We perceive the lateral planes in reduced extension, but they have to be visible despite this reduction.

Suppose the sculptor dissolves a plane in order to form the fold of

a garment or the hollow space between several members of a body —his visual imagination instinctively constructs a combination of slanting planes forming the inner side of a cone.
The result is an integral perceptibility of all planes.
If he composes these planes in a straight direction, they produce amorphous holes with dark shadows—not articulating but breaking the plane.
We can test the destructive effect of this disintegration of unity when a sculptor imitates a natural cavity, for instance, the real form of an open mouth. The head loses the shape of a cube or a sphere and appears as an empty shell.
This impression is striking where the eyes of an antique statue had been made separately and had fallen out.
The aspect of a sculpture—especially a relief—that does not show expressive lateral planes, is not essentially different from that of a painting—the third dimension is not realized.
Therefore the composition of combined planes has to perform this function: to build up the specific space of the sculpture, enclosing all its forms and securing their coherence.

c. THE "IDEA" OP THE SCULPTOR

The creative conception of the sculptor embraces all extensions, boundaries, and nervous energies of cubic forms.
He first experiences them in the clearest basic type.
Then in his imagination he constructs a composition of volumes and surfaces, establishing their mutual relation along different axes, that serve as the skeleton of the sculpture.

This complex imaginary representation is his original vision, the plastic "idea."

In conformity with the *order* of his idea, the sculptor varies and enlivens the basic form, rounds the angles, articulates the planes, and invents individual values for each part.

All elements are amalgamated into a unique configuration, invested with unique formal significance dependent on the relation they have to one another.

Christoph W. Gluck had this relativity of formal expression in mind when he answered the question of a singer: why a certain aria in his "Iphigenie" caused the sensation of chill when he sang it as a part of the opera, although it did not produce the same impression of a terrible menace when he sang it separately.

Gluck answered that in this aria his whole magic consisted in the contrast he made between the aria and the tender preceding song, and in the selection of the accompanying instruments. (17)

Evidently the *idea* of the sculptor does not belong to the same category as philosophical and literary ideas.

It is the result of a mental activity that develops and unites amorphous components, perceived or imagined, into a microcosm of organized new form.

The genuine sculptor does not need other expedients than three-dimensional values; for instance, neither pictorial nor linear means. He does not know "lines," but "volumes" and "planes."

He will not choose themes that are interesting only in a literary or psychological sense.

Misunderstanding about the limits of the different spheres of art is so general that even an artist and theorist as outstanding as Leonardo da Vinci declares:

> *"Sculpture is ot inferior characfer in comparison with painting."* *(18)*

He argues that the sculptor is not capable of reproducing the variety of things through different colours; that the perspective of a sculptor is not true; that sculpture cannot represent the fog and the cloudy sky nor the perspective formed by the atmosphere.
Leonardo concludes with the assertion:

> *"Sculpture is more durable and that is all."*

The same lack of distinction between the fundamental qualities which differentiate sculpture from painting, is revealed a few hundred years later by Denis Diderot, one of the initiators of modern criticism of art.
In his essay about sculpture he writes:

> *"It seems that difficulties tor the painter are greater than for the sculptor if the subject-matter is complicated — clair-obscur, arrangement, place of representation, sky, trees, water, and so on."*

Such an impure conception of sculpture persisted up to the present, not only in books about art but also in the mind of artists.
A new generation of sculptors, however, did find the way back to the great tradition of Egyptian and Greek art.
They have to fight against convention and against confusion of ideas.

The Academy of Fine Art in Paris in 1937 gave the following subject to competitors for the "Grand Prize of Rome for Sculpture":

> *"Three Muses fled to Apollo and are complaining about the barbarism of mankind."*

The subject is purely literary and has no relation to the possibilities of sculpture.
We must regret that young artists should be submitted to this kind of test.

d. FORM AND SUBJECT-MATTER PROPORTION

Paul Valery, analyzing the genesis of his poetic production, told us that the germ of several of his poems consisted in "a stimulation of his formal sensibility/' antecedent to any subject-matter and to any expressible idea. The origin of other poems was a simple indication of a certain rhythm that gradually received "meaning." (20)
By analogy we understand why a non-objective organization of volumes can already be capable of impressing our sensibility, if the spatial unity possesses an original order of style.

A product of technique, like a sculpture, is constructed according to definite formal rules. Often it is built rigidly on the basis of cubic form.
But the order of its construction is controlled by practical purposes and is subject to the laws of mechanics, mathematics, and physics. Even if its appearance is satisfactory from an aesthetic point of

view, the beauty there is an empty beauty.

The representation of the artist is free from materialistic restrictions.

It includes the spiritual elements of human nature — passion, religious emotion.

Themes nourished by stirring experiences of the artist — for instance, the themes of elevation, resignation, struggle, and destruction—can be expressed without a distinct subject-matter by mere dynamics of formal values.

But there is no reason why a composition with a clearly indicated subject should not be equally "pure," provided that creation transforms the casual appearance of reality.

The theorist who rejects uncompromisingly any subject-matter ignores the relation between form and content exactly as does the mere imitator of nature. Both divorce the "motif[1] from its indissoluble connection with a manifold mental process — creative imagination.

> *"Pure art contains simultaneously the external world and the artist himself."* (21)

Every aspect of the world can be the medium of creation.

The contents of the artist's whole existence furnish the motifs of his work.

They are stored in his mental "workroom.[11] Sometimes they remain ready in his subconsciousness for a long time.

They can be called upon and realized when he finds the adequate sculptural idea.

The essential question is not, what aspect of the world reveals the

energetic forces of the universe.
It is only important that it inspires the artist to represent its order and his own personality through creation of a new form.

Creative imagination excludes mere copying of nature.
In imitation the first element of imagination, namely, dissociation of the raw material of nature, is missing.
Therefore, there cannot be any synthesis into a new combination of forms.
Greek archaic sculptors in representing horses enhanced the strength of chest and neck, contrasted them with the grace of their legs.
They transformed the proportions of nature and neglected anatomical details as muscles and joints.
They stylized the mane into pure sculptural form.
Their art is not "primitive," lacking technique and refinement.
They did not want to imitate nature.
They created symbols of the Greek spirit.
The head of a Greek youth—the "Blond Ephebe"—like the archaic horses conserved in the Acropolis Museum in Athens, shows the same character.
Hair, eyelids, all parts of the head prove the entire freedom of the artist.
He has given more than the portrait of an ephemeral individual—he has created a work that represents for eternity our idea of Greek mind and soul.
Naive beholders of an archaic horse are shocked.
The proportions appear to be too different from that of the horses they know.

They have to forget actual animals before they can understand the greatness of these sculptures.
They may be able to recognize the abyss between two modes of spiritual attitude by comparing the Greek archaic bronze of a horse in the Metropolitan Museum in New York with the Hellenistic bronze of a race horse in the National Museum in Athens.
The Hellenistic bronze no longer possesses the simplicity and dignity of a symbol.
The distinctive physical marks of the animal are accentuated with unsurpassable exactness.
The tongue is formed as a separate item. It hangs movable in the open mouth.
The spatial values are dissolved.
This sculpture is actually a document of natural history.
An even farther degeneration of creative conception into reproduction of natural forms is typical of many works of our time.
Statues of famous persons, instead of revealing the distinguishing traits of genius and character in monumental representation, display trifling details of clothes with all their wrinkles and buttons. In memorials of historical events uniforms and weapons are copied with minute details.
The appeal to intellect and sentimentality prevails.
Besides, some admiration is aroused by delicately chiselled surfaces; by sophisticated execution of flesh, hair and other physical features.
The interest caused by such works belongs to the plane of personal documentation, of politics, history, and natural history, but not of creative art.

Aberrations of this kind are unthinkable if the imagination comprehends form and content simultaneously.

An organic representation determines all proportions.
They cannot be fixed by a general "canon."
They are as variable as the spiritual values they represent.
If we recreate the complex conception of a work of art, of its forms and proportions, instead of restricting ourselves to mere passive contemplation, we find access to its soul—to that of Greek art, which places the human body in the center of creation, symbolizing through clearest harmony of form and rhythm the victory of human spirit over material substance—or to the transcendental world of Gothic art, which in its vertical halls annihilates human existence before God.
For centuries Gothic art has been condemned as barbaric and crude, lacking harmony and proportions. (22) But Gothic art is not a negation of proportions; Gothic art in reality discloses new original proportions, and thus expresses the faith and the spiritual character of an entire period.
These two examples demonstrate that the possibilities of artistic formal expression lie between opposite poles: sensuousness and earthly splendour on one side — asceticism and religious fervour on the other side.
But it is a general law of art that form created by an artist has artistic importance only if it incorporates spiritual values; and that a spatial unit has existence in the sense of art only if it encloses spiritual values.
The unfinished antique sculptures make it evident that form may be simplified to plain basic elements.

If the proportions are original and convincing and if the balance between this mode of restrained expression and intrinsic spiritual values is secured—the order of unadorned planes and undissolved volumes already has the grandeur of monumentally.
The actual size of the work is not important.

e. LIGHT AND SHADE
THE "MODELÉ"

A sculptor who searches for the achievement of pure sculpture will not share the opinion of Leonardo da Vinci that his means are limited because his work is "subjected only to a certain kind of illumination."
He does not strive after effects of light as a value in itself.
A statue by Giovanni L. Bernini with its open space typical of Baroque style attacks the problems proper to a painter. Contrasts of light and shade are a most essential part of its effectiveness.
Likewise a sculpture of Jean-Baptiste Carpeaux shows disintegration of volumes, suitable for an impressionistic painting, and dissolution of planes through distribution of innumerable particular forms all over the work.
The result is a splendid network of light and shade.

Auguste Rodin has emphatically pleaded for a conception of plastic art that vies with painting for radiance of colour.
A critical examination of his arguments may throw light on a principle of general importance, since Rodin, with his fascinating talent and his brilliant faculty of verbal expression, is the representative

of a widespread artistic attitude.
He has influenced several generations of artists and still impresses sculptors and public opinion.
His credo is that the refined science of modelling—"la science du modele"—is a condition of perfection, and that "colour is the flower of beautiful modelling."
In his studio he kept a small copy of a Hellenistic Venus, in order to "stimulate his own inspiration"—he enjoys with "devotional ardour" the almost imperceptible salients and the slight re-entering parts of its surfaces, the "voluptuous incurvations" and undulations of forms and transitions.
He praises the "reproduction of material reality" and the illusion of real life:

> *"This is real flesh.*
> *"You could believe that it is petrified under kisses and caresses.*
> *"I could almost think that, if I touched this torso, I would find it breathing."* (23)

Here the sculptor evidently feels as might a naturalistic painter.
His ideal is a "prodigious symphony in white and black," produced by strong lights on the breast of the figure and by energetic shades in the folds of flesh; by "vaporous, trembling half-clarities" on the frailest parts of the body; and by transitions effaced delicately until they "seem to dissolve in the air."
Rodin expresses his enthusiasm in a literary style that characterizes precisely the style of his sculptures, and in general a most popular type of sculpture.

In pure sculptures we do not find effaced planes or veiled transitions. The problem of the "science of modelling[11] does not exist because they are not moulded but carved in stone or in wood.
Light and shade do not possess autonomy.
We face a tendency contrary to the desire for evoking the illusion of the sensual life of reality.
Each form is limited within the *closed* space of the sculpture.
The individual planes extend with clarity and are co-ordinated in sober moderation.
The work displays in unbroken form the spatial conception.
The organization of light and shade follows, as an accurate but unpretentious helper, the law of three-dimensionality.
The symphonic play of shade is only the natural consequence of an organic articulation, not an aim in itself.
The sculptor draws it into his artistic calculation in so far as it mirrors all essential relations and all particular gradations of plastic form.
This unbreakable, immovable form is the dominating value of pure sculpture.
Simplification is not identical with dryness or with cold intellectualism; neither does it mean a deviation from "truth" as Rodin believes.
The University Museum in Philadelphia, Pennsylvania, possesses a head carved in alabaster, one of a collection of Sabaean Funerary Sculptures from South Arabia, created about 150 B.C. to 200 A.D. (24)
The planes of the sculpture are nearly geometrical.
The face has only two main planes: one elevated plane comprising forehead and ridge of the nasal bone, and one lower plane comprising the eyes, cheeks, mouth, and chin.

The nose is represented by a cube; the wings of the nose are formed simply by parallel lateral planes.
Thus the head is reduced to the utmost elementary form.
The destination of this sculpture was, to be buried with the man whom it represented—not portrayed—as a symbol of his personality.
It is overwhelming through its monumental simplicity and solemn dignity.
The austere simplification proves the endeavor of the artist to discover aboriginal forms and proportions, as the adequate expression of symbolic values.

Light and shade change and with them changes the aspect of a sculpture.
In bright diffused light that spreads from all sides over its surfaces many values of depth wane; the lasting form of three-dimensionality remains latent.
When sidelight falls upon a relief, its cavities sink into deep shade and the plastic movement is revealed.
Only if we share the life of a sculpture, can we exhaust its potentialities.
In a museum too often it is relegated to the vague existence of a shadow.

PART 2

THE PROCESS OF THE WORK

a. DEVELOPMENT OF VISUAL CONCEPTION

The creation of a sculpture takes the artist far beyond the state of mystic ecstasy.

It requires enduring active tension of the mind.

The plastic vision itself is only a possibility. To transform it into actual individual form, the sculptor must develop his "idea" at the same time that he finds an organic correspondence with a concrete material. (12)

Some artists have the happy mental constitution whereby they can proceed with their work steadily, and one task is followed harmoniously by the next.

They experience as well all that suffering which is inseparable from higher spiritual activity.

But daily routine resolves many depressions, produces tangible results and the illusion of creative achievement.

For other artists, not so happily disposed, life is not regulated so methodically.

Their ideas remain in a kind of fermentation that for a long time restrains them from manual work.

In their mind a world of forms evolves.

They have to organize this chaotic exuberance of visions.

It is a fluctuating movement which follows diverse variations of inner representation before the artist's energy is concentrated on a determined line.

1. Study of Nature
Drawing

Through observation of nature the artist acquires insight into the life of forms and their interrelation.

Studying systematically the exterior world and fixing his impressions he collects an inner treasury of images.

The usual method is to make, in front of the object, either a careful drawing or at least a summarizing sketch.

A strong visual experience often serves as the germ formulating a plastic idea that later will be realized in a sculpture.

The memory of the artist not only registers facts and impressions.

It is fertile. (25)

Besides, memory is the most trustworthy judge of the force of an emotion and of the preciseness of perception.

Therefore, a freer method of studying nature is restricted to persistent observation.

The artist contemplates an object from all sides.

He tries to comprehend the formation of its organism, its contours; and, if it is a living thing, the typical rhythm of its movements, the continual change in the relations of its forms, if any displacement happens.

Through this kind of observation he acquires the faculty of seeing the object with his inner eye. For instance, the human body, or an animal, in all possible positions—the front, both sides, the rear—and in all directions of movement.

The object *lives* in his imagination.

He considers as *perceived* only images that reappear spontaneously in his mind.

He fixes these recollected representations in a drawing from memory.
This method seems most appropriate to the preparatory work of the sculptor as his vision has to comprehend all aspects of an object.
When a sculptor makes a drawing, he instinctively reveals his general tendency to construct form through a system of cubic limitations.
In his design he presents not a linear nor a pictorial but a plastic value extracted from a multitude of forms and movements.
His drawings represent a distinct particular species of graphic art.
In conformity with the character of the line the possibilities of the graphic arts are specifically connected with two-dimensional composition of planes and lines.
For the sculptor the quality of the line in itself is of secondary importance.
He is not interested in the charm of sensuous beauty typical, say of an engraving produced with the dry-point.
It is true that many drawings created by great sculptors contain specific graphic values and are finished works of art. But their distinctive mark is the expression of planes which carry on into depth.
They encircle the form.
As the spatial representation itself is not clarified and developed, these drawings interpret space in a language that is not yet intelligible to the layman.
The formal character of a drawing generally corresponds only to the degree of ripeness which the three-dimensional vision has reached.
Many sculptors design the fully developed project by an exact plan destined to support their memory.
This drawing indicates the architectural structure, especially all relations that are essential for the direction into the third dimension.

It does not display effects of light and colour.
The transitions from form to form are marked out distinctly, in order to delimit the plastic organization.

2. Model and Imagination

The solidification of mineral elements into the symmetrical crystal follows determinable laws of energy.
The coagulation of various motifs of form and movement into the sculptural structure is performed through an analogous operation of the mind.
The *idea* of the sculptor is the leading impulse in this process.
Therefore, sculpturing after a model is a deviation from the organic course. A model is inserted between vision and realization.
If the artist places a natural form before his eyes, his attention is likely absorbed by this immediate sensuous impression.
Imitation supplants imagination.
The sculptor grasps the different aspects of the model posing on the turn-table.
He conceives a series of silhouettes and reliefs, resembling the transient pictures of a film.
The statement of Auguste Rodin: "Design from all sides in sculpturing is the incantation enabling the sculptor to infuse the stone with life. His drawing is a mystic conjuration of lines, capturing life," contains an involuntary criticism of such a procedure. (26)
A sum of several individual linear systems and of a series of reliefs cannot produce plastic existence in the sense of sculpture.
"Conjuration of plastic life" requires the simultaneous representation

of all sides of an object.
Only imagination has the power to achieve such a synthesis through creation of a work that is liberated from the flowing sequence of time, and "stands" as a symbol of space and timelessness.

This crystallization does not evolve with the regularity with which the particles of quartz grow together.
The sculptor cannot expect that a subconscious development of his vision will lead to full realization. He must exhaust his mental faculties and his energy; he has a long and enervating struggle, embittered by vicissitudes and reverses.
Natural forms have to be sublimated and transformed so that they perform a plastic function, representing essential volumes.
The sides of individual parts, forming cavities — for instance as the folds of a garment—are sloped into conic combinations so that they are "visible."
Differences in depth suggest space.
Therefore, the sculptor eliminates details that would only reproduce trifling features of a perceived object: hairs of fur, teeth and claws, or buttons and wrinkles.
Motifs of movement have to be transposed into the order of sculptural movement.

Poets can suggest floating transitions and modifications of living form.
But the sculptor has an inborn tendency to seize the static form.
Secret forces are at work in his subconsciousness.

A subterranean connection with deeper layers of the personality guarantees the singularity of great masterpieces.
But the sculptor masters chaos.
Through precision of form and through monumentality he raises subconscious and unconscious elements into lucid consciousness.
He establishes a balance between movement and static values.
The tension between these opposite tendencies—the hidden dynamics instead of lively exterior motion — is one of the fundamental conditions of monumental plastic style.
The imagination of the sculptor conceives the main masses as one coherent unity.
Therefore, the equivalent masses of the materialized work appear likewise bound together in unity, even when we perceive them from a far distance where the richness of special forms is not visible.

It is almost impossible for the layman to be clearly aware of how concrete and exact these inner images are. (27)
The imagination of the artist with its formative and inventive power is essentially different from that of ordinary people.
Only the artist himself experiences the distinctness of his visions. They live in his mind.
They move and develop—not vague, not pale, like the remnants of an optical impression on the retina of common observers, but as a spiritual "reality/[1] although they may arise freely without a previous objective perception.
All these forms move or stand in "space": Perception and imagination of form and space are inseparable.
The conception of form is connected with a particular material.

The sculptor sees his work in stone, or in wood, or in metal.
His idea is capable of development only if it has already in its immaterial phase the typical differentiating traits — adequate to the structure of a concrete substance.

In the process of artistic creation there are always inexpressible and inobservable elements.
The *method* of the artist does not necessarily reflect the complex mental activity, as it is composed of conscious and unconscious elements.
Therefore, no dogmatic rules can be laid down about the development of the artist's vision.
We can only indicate the ideal way that corresponds to the nature of creative imagination.
The examples of Paul Cezanne and Vincent Van Gogh prove that working before the *object* does not exclude the spontaneous start of an extremely creative process.
With such men an elementary visionary power at once absorbs the visual impression and transposes the perceived form into an image belonging to a unique world.
Perhaps the production of a sculpture demands more urgently independence from actual impressions imposed by a model.
The sculptor, subject to the specific law of his three-dimensional realm, has always to concentrate with equal intensity upon all sides of his work—the balance is disturbed when he sees one side not only in his imagination but also with his eyes.

3. The Eidetic Image

Great writers and artists have described visual experiences of a peculiar character.

The impression of a perceived object remained or it reappeared after a certain time—as a "really objective image[11] (Goethe), different from transitory images that usually follow our perception of an object.

Often such "real" images appear even without a precedent perception, as if they were created by pure imagination.

They are called "eidetic" images—the Greek word "eidos" meaning: form, appearance, image. (28)

A painter, Anselm Feuerbach, gives the following account:

> *"/ do not dream about it; but it lives permanently inside me.*
>
> *"I see it before my eyes. I see the figure moving. I could depict it.*
>
> *"It really is not a phantom out of my dreams, which deludes me; it stands before me." (29)*

Only a few years ago, in 1920, a psychologist established a scientific basis for these hitherto unobserved or unexplained states of consciousness. (30) Many experiments made by other experts have confirmed this discovery. (31)

Images of this kind resemble externalized projections of an object upon a screen.

The eidetic subject really sees them on the screen.

Experiments proved that they become larger if the subject withdraws from the screen, in the same way as projections enlarge when

the camera is removed to a farther distance from the screen.
The French "Journal de Psychologic" (Nov.-Dec. 1930) reports the especially astonishing result of another experiment.
The subject was capable of giving a more exact description of his eidetic image when he contemplated it through a magnifying glass.
Even three-dimensional sensations and images, for instance, an imaginary relief, can be produced by tactile "eidetism."
In all these instances the eidetic subject sees and feels images which he perceived or which arise freely before his inner eye, as if they were externalized and had an actual existence.
But he does not believe in the actual existence of an exterior object.
Therefore, the image is not a hallucination.

> *"In fhe eidetic experience fhe subjective I is active in the specific space of the image and participates 'in the playing.'*
> *"Adults, while developing an inner representation, confront the mental reproduction passively, as reflecting beholders." (32)*

This peculiar vision is an earlier form of consciousness.
The disposition normally vanishes, after the change in a child's brain, before the age of twelve.
An "intellectual/' rationalistic education suppresses it entirely.
It is not surprising that many artists maintain this mental constitution in later years, as their production is based on unity of perception, imagination, and representation.
Psychologists have expressed the hope that this discovery may open a new avenue to explorations in the psychology of art.

This expectation seems especially well-founded in regard to the mental activity of the sculptor. His work requires abnormal concentration upon lasting imagined images.
We have the right to suppose that eidetic vision has been an inestimable element of the imaginative genius of many sculptors whose power of visual and creative conception we admire.
A systematic study of this problem is reserved for future research.

4. Imagination and Material

The sculptor has many kinds of material available, of very different substance and appearance.
He is moved when he touches a piece of hard granite. For example, Egyptian Assouan granite, with its rose-coloured and black granules.
His sensibility is excited by the incomparable quality of Pentelic marble, with its luminous yellow texture; almost transparent, mixed with millions of glittering, golden particles; precious like a gem.
To distinguish the character of Pentelic or Parian marble from that of grey and lifeless Carrara marble, he does not need to compare a statue from Olympic with a Roman copy of a Greek sculpture.
A small fragment is sufficient not only to give evidence of a different grain and colour, but to serve as a sensuous stimulus for his own activity.
Likewise he reacts to the physical quality of wood and bronze.

Each material requires a special *technical* method and a special style of *formal* treatment exploiting the specific possibilities of its structure.
Therefore, the mateiral dictates the style.

Denis Diderot in an essay on sculpture writes:

> *"As we know, marble is only a copy of* terra coffa." *(33)*

This idea, proving lack of sensuous and tactile experience, corresponds to a generally accepted practice of the last centuries.
Famous sculptors have not been prevented by artistic scruples from ordering marble reproductions of plaster models, bronze copies of marble sculptures, and stone figures after bronzes.
A sculptor who works directly in the material, by so-called "faille directe," acquires the acute sense of its individual *personality* which he respects and develops.

Bronze reveals expressive reflexes and a sharp silhouette.
Because the resistance and endurance of metal is almost unlimited, it is not necessary to hold together large masses of form.
Relatively light volumes, an expanded open architecture, and a composition of vivid movement are in conformity with bronze and other kinds of metal.
All forms have to be rounded, each form merging into the adjoining form. Otherwise the surface appears to be broken.
The silhouette of a piece of marble is rather indistinct.
The reflexes of light are not intense, as the stone gathers and absorbs the light.
The mass of marble is the determining quality.
All elevations and cavities on its surface are effective.
In contrast to bronze, the stone does not permit lightness of structure, or vivacious movement.

Powerful density and simplicity are essential elements of its beauty.
Granite is extraordinarily resistant.
This quality conditions the monumental strength of Egyptian art.
Limestone on the other hand is so soft that it almost can be cut with a simple knife.
It is an ideal material for extended, highly rhythmic compositions of refined figures.
The reliefs that cover the walls of Egyptian tombs in Sakkara, exhibit the soft splendour of its texture through nearly imperceptible modulations of surfaces and through delicacy of contours.
Exposed to a rough climate, sculptures of limestone rapidly decay.
Wood requires alternately roundness and sharp contours.
On account of the different directions of its growth and the inequality of its hardness, wood is a much more capricious material than stone.
The form has to be very thick in comparison with natural forms. Otherwise the sculpture looks frail and unstable.

The sculptor's *idea* is not productive, nor can it be developed, if it does not embrace the characteristic traits of a specific material: either the architectural density and the organization into broad masses, typical of a sculpture in stone—or the slender body and the expressive reflexes and contours of bronze.
These associations between formative ideas and consciousness of a specific substance are not static during the time of the ripening of his plan nor during the course of its execution.
They are obstructed by divergent ideas.
Exterior impressions weaken their intensity.
Daily events distract the artist's mind.

The images of the sculpture disappear and reappear, altered by the continuous stream of life.

But the artist has to repress actual impressions and the memory of occurrences not connected with his work.

Only concentrated mental energy is capable of seizing the fluctuating product of his imagination.

Inreasing knowledge of the material and of its individual peculiarities, artistic meditation, the emanations of fantasy, intuitive manual experiment—all these factors co-operate to carry forward the realization of his plan.

The intrinsic law of his vision develops and changes beneath the threshold of consciousness.

Sometimes the original vision is in danger of evaporating.

Then the sculptor has to forget the whole complex of his inner representations.

Suddenly all forms and their essential relations emerge from indistinctness or oblivion, often with riper density and with perfected proportions, as the result of organic unconscious growth.

The man who sees the finished sculpture that stands—quiet and unpretentious—before his eyes, cannot be cognizant of the agonies that are inseparable from creative work.

Not always does the road between beginning and end round harmoniously in a circle, so that vision and accomplishment join in unity.

b. THE EXECUTION OP THE SCULPTURE

1. Sculpturing in Stone and in Wood

When we look backward into past periods of art and study old methods, this retrospection does not involve acceptance of academic precepts, which could hinder the independence of modern artists.
Conformity of technical procedure establishes, between artists of all times, a deeply rooted congeniality about artistic principles.
The treatment of stone and of wood is subjected to certain adequate conditions which always remain similar; the method of using thetools, in the course of centuries, is not always exactly the same. But these differences are not essential.
Sculptors of the old Egyptian Empire, of archaic Greece, of the Romanesque and Gothic periods maintained with equal conscientiousness the interrelation that exists between: imagination, knowledge of the chosen material, and an honest treatment of this material.
Carving the stone or the wood, they respected structural peculiarities and the tradition of caftsmanship.
In the 19th century the art of sculpture degenerated because the connection between these factors had been cut.
Today we can observe the first beginning of a regeneration: young sculptors again learn to carve directly in stone and in wood.

The block of stone or wood encloses the *specific* space of the sculpture.
The artist transfers, first in his imagination, his vision into the block.
If he is capable of realizing this transposition, the finished work is still bound together within the imagined limits of the block.

The sculptor who intends to carve in the round, attacks the block from the beginning on all sides; and develops his work by an equally progressive, co-ordinating procedure, looking always to the main proportions of his plan.
As the material sometimes has hidden defects that disturb his idea and compel a change, he reserves in this first phase a thin layer in the rear. Thereby he keeps the possibility of receding the whole figure in case of such an accident.
All parts that will serve as salient surfaces are kept intact within the uppermost layers of all sides of the block.
From these salients he orientates each form into the depth, freeing his volumes and establishing his planes.
By successive steps he penetrates into the block, cutting or carving away the superfluous material and developing individual features.
Gradually the imagined forms are revealed.
The artist's possibilities are limited by the limits of the block.
No experiments are permitted, as the mass of the block, once it is destroyed, never can be restored to its original unity.
But for the born sculptor this resistance of his material is not a hindrance.
On the contrary, it creates fertile energy in his mind.
Through an incessant *dialogue* with the material, he acquires an intimate knowledge of its structure, which nourishes his imagination.
Even the discovery of a defect may inspire a new idea.
If a mistake occurs, he must make a spontaneous decision.
He must reconstruct the architecture of his work, as all its relations may have been destroyed.
In critical moments conscious thinking is thrust into the background.

Instinct leads his hand.
He regains creative naivety, as if intellectual reflections and memories of other artistic solutions had never played any role during the preparation of his work.
Sometimes crucial climaxes will exasperate him. He has to risk everything. Has to break the unity of form, and to rebuild it in a deeper layer of the block, in a more soundly matured order.
The vital tension of this process cannot arise if the sculptor previously moulds a plaster model that already fixes the formal relations.
This model hinders his free movement.
It stands as a completed organism before his eyes.
If the artist concentrates his mind upon its proportions and individual forms, comparing them with the still unfinished work that he is going to execute in stone or in wood, the latter necessarily has the aspect of a fragment.
The suggestive plaster model seizes his attention and directs the subsequent work.
If he carves directly in stone or in wood, following his imagination, each stage of the working process creates a united form.
The work is really never unfinished.
In each of the successive phases, the equal advance of elaboration establishes the balance between the essential proportions.
It never requires interpretation through comparison with the model.
The motive power that carries forward the production has its source in the growing sculpture itself.

The work executed after a plaster model is a replica.
It is not possible to repeat a piece of art without diminishing its

originality.

Even the reproduction made by the sculptor himself is relatively banal if it only shows a repetition of exterior appearance.
The artist has to explore a new way on a new spiritual basis if he wants to invent another original solution of the same problem.

Egyptian sculptors, Greek artists of the archaic and of the "classic" period, Romanesque and Gothic sculptors generally developed the form out of the stone or the wood, in a manual process based on inherited craftsmanship.
The Egyptians and the archaic Greeks did not first make a plaster model; they worked at once directly in stone.
In the time of Greek classic art the sculptor, as a rule, first formed a model in plaster and then used a system of measurement to facilitate the transposition of forms from the model.
The complicated compositions decorating the pediments of Greek temples where many single parts had to be executed separately, could not have been completed and united without exact calculation of all measures.
The general artistic standard of this period was so exceptional that only doctrinaire pedantry could dare to deny the perfection of these works.
Nevertheless, scrutinizing the problem of *absolute* solutions, we may emphasize that earlier methods represent the ideal type of creative work.
The Greek classic sculptors never restricted their original production to the composition of the model.
They never admitted a mechanical transposition into a different material. (34)

2. The Technique of Working in Stone and in Wood

Stone

Craftsmanship is conservative because its methods are strictly adjusted to a determined purpose.

The technique of working in stone and in wood has hardly changed in the course of thousands of years.

As the machine is eliminated from artistic work, even the tools used today still have the same shape as in classic times.

The sculptor, in the first stage of working in stone, almost exclusively uses the so-called pointer.

It is a metal chisel with a pointed cutting-edge.

In order to define first the main proportions, the sculptor cuts away large pieces of stone.

Stone generally has a grain of almost equal density.

Therefore, it is possible for the sculptor to cut in all directions.

He applies his blows with an iron mallet.

The force of his blow is concentrated on the point of the chisel.

Directed perpendicularly, it hits one point of the marble with such strength that fine crystals under this point are destroyed to a depth of about % of an inch.

White mealy spots become visible.

If the sculptor directs his blows in an oblique direction, similarly mealy lines appear.

The sculptor during this first phase calculates the approximate depth of the destruction of grain.

He needs a sufficient stratum of mass, allowing him to cut away destroyed crystals.

Otherwise these dull spots would veil the sparkling beauty of marble.
To develop precise forms, he uses the toothed chisel.
The broad edge of this instrument consists of about five or six sharp teeth.
This tool is driven in a slightly oblique direction.
It produces several equal furrows with elevated edges, without destruction of marble crystals.
The final elaboration is executed with a large flat chisel which ends not in a point but in a sharp broad edge.
The sharper this edge is ground, the more clearly the character of the material can be revealed.
All signs of destruction of grain disappear.
The crystalline transparency of the marble, the splendour of its veins again appear. (35)
Some sculptors polish the marble with differently textured stones, beginning with a very rough carborundum stone and concluding with pumice stone.
Others prefer the exclusive use of the flat chisel for polishing.
By this method the forms are rounded in a more personal style. Mechanical treatment is avoided completely.

The work progresses in a logical sequence, which results from the different kinds of stone-cutting.
Already in the first phase the impression of cubic forms dominates.
The technical elaboration of each part is brought more and more into harmony with the individual particularities of the stone.
The sculptor, through daily contact with the block, knows all its qualities and all its faults.

He pays continuous attention to irregularities of the grain, especially to different degrees of hardness, to tendencies toward splintering.
Stratum after stratum has to be cut and to be elaborated until the definite form stands.

Wood

Wood offers two forms of raw material for sculpturing: the round trunk and the plank of sawn timber.
The trunk is suitable for a sculpture in the round—a single plank for a relief.
Wood as a material for carving is particularly incalculable.
The formation of its grain is determined primarily by the directions of its growth.
Wood grows in vertical and in horizontal direction. Horizontally, concentric rings are formed.
But this typical distribution of its fibres is interrupted where branches spring from the trunk. There we observe a knobby irregularity of the grain and inequality of hardness.
As the core of the trunk retains humidity longer, every change of humidity expands the wood irregularly so that it often warps.
The sculptor opens the trunk and detaches the core.
Another method consists in cutting the trunk into several planks; these are glued together to form a block.
If we cut across the grain, traversing the line of the length, the wood opposes strong resistance.
But we can easily cut it with the knife, if we follow the length of the tree; in this direction it splinters.

It is impossible to cut wood, like stone, in all directions.
The sculptor first uses the "gouge"—a chisel with a sharp concave edge.
Usually he has at his disposal a large number of gouges with differently curved edges, between the degree of a very slight curve and the curve of a semi-circle.
The gouge affects the wood strongly. There is no danger of unexpected splintering.
The sculptor with his tool fixes the main proportions, cutting away the superfluous mass.
He strikes the gouge with a hickory mallet.
An iron hammer is too heavy for wood-cutting.
The subsequent phase consists in *carving* instead of *cutting.*
It is executed with a flat chisel.
The edge of this tool is shaped obliquely, to increase its efficiency and the ease of carving.
The sculptor needs a large quantity of these knives, of different sizes.
He cannot use a pointer, as in cutting the block of stone.
A stroke with this instrument would break the wood or penetrate into it, like a nail.
The sculptor carves without using a mallet, only through pressure of his hand.
He follows the direction of the growth of the wood, with sharp energetic movements.
This method produces clear incisions and preserves the characteristic beauty of wood.

The formal elaboration proceeds in the same way as the working in stone.
The sculptor keeps intact within the level of the surface all parts which later shall remain elevated.
Already in this first stage each gnit of forms shows a distinct view of the front and of its sides—or, where a cavity has to be formed, of its sides and bottom.
From the beginning the sculptor reckons with the particularities of his piece of wood.
Each of its parts requires a special kind of carving—appropriate to grain and hardness.
He has to adapt his formal idea to the individual structure of the material.
Intuition inspires solutions corresponding to the character of the wood.
Through the harmony that has to be established between creative imagination, the possibilities offered by the wood, and the correct handling of his tools, the sculptor reaches the height of pure style.

3. The Pointing Machine

The sculptural production of our time lacks the common background that has been esteemed indispensable in periods of outstanding creation.
Modern sculptors, with only a few exceptions, do not possess the mastery of genuine technique based on the sound tradition of craftsmanship.
They do not carve directly in stone or in wood.

The majority of sculptors regard carving as a primitive method, lagging behind the technical progress of the machine-age.

Several years ago the new "Encyclopedic Franc.aise," in the volume dedicated to Art, addressed our sculptors with the stern advice to return to basic principles of sculpture and to learn again the practice of "taille directe."

The author of the article was blamed by the critic of one of the most influential French newspapers, who declared it senseless to formulate unrealizable postulates instead of considering the real situation. (36)

We are accustomed to hear the question: why should the manual work of the craftsman not be neglected, if the hard struggle with the stone can be replaced by a mechanical procedure; if the artist has at his disposal a machine that exactly transposes an original plaster model into every kind of material?

If he uses this machine, the sculptor does not need to "waste" his time with the "inferior" work of chiselling, instead of using it for a much larger number of works.

It is true that carving necessitates an enormous loss of time and that it exhausts mind and body, even if the sculptor is exceptionally skilful.

We know from old documents that in the antique workshops the production of a figure required prolonged working, despite the collaboration of many perfectly trained assistants.

Today young artists are misled by didactic treatises about sculpturing.

Almost all these books devote long chapters, with precise technical indications and illustrations, to the "pointing machine."
Brenda Putnam in "The Sculptor's Way" asserts that the pointing machine "has become a necessary part of the carver's equipment."
Albert Toff in "Modelling and Sculpture" writes:

> *"Many of the early works, it is said, were carved directly out of stone or wood, without models having previously been made for them.*
> *"There are some men who do this today, but there are few"*

This last statement is correct.
The procedure, chosen by almost all sculptors, is the following:
The artist produces a model of plaster.
This model has to be transposed by the pointing machine into the block of stone or wood.
The pointing machine is composed of several compasses, with two main legs.
It is first placed on the plaster model at three points, and then transferred to the block at three corresponding points.
Steel needles register the respective heights of the model; and drill-chisels, rolled into the depth of the block—to 1/32 of an inch—fix the corresponding height of the block, in exact relation to the difference in measurement between model and block.
The machine thus measures hundreds or thousands of points, until all forms are precisely transferred.
The superfluous stone or wood, between the points fixed through the machine, has to be cut away with the toothed chisel. (37)

The artist can freely choose the size of the plaster model and that of the sculpture.
Generally the block is larger than the model.
In transposing the model into wood it is even possible to remove the excess wood mechanically, with turning knives.
Some artists operate the pointing machine themselves or they at least supervise the manipulation of an assistant.
But in most cases a specialist, the "marble pointer," is trusted to execute the whole transposition.

The interest of the layman in this problem is very limited; and likewise undeveloped is his faculty of distinguishing a sculpture cut or carved directly by the artist, from a work produced by means of the pointing machine.
In some monographs on modern sculptors we are told how masterfully they carve statues out of the block, though reproductions show plaster models and finished marble sculptures both covered with points and marks that reveal the use of the pointing machine.
Even the most prominent and honest sculptors of our time do not disdain this mechanical procedure.
The attitude of several generations has been influenced by the fact that an artist so conspicuous as Auguste Rodin always used the pointing machine.
The sculptor Leon Drivier, one of his collaborators, has given an enlightening description of Rodin's methods,in one of several articles, "L'Avenir de la Sculpture," published in a French literary magazine. (38)

Rodin modelled with his "lively thumb" ("son pouce g6nial") small models, "admirably conceived with an eye to enlargement.[11]
To his assistants he delivered these models "covered with scribbles made with his pencil"; then they gave definite form to these "sausages."
The finished model was entrusted to the "marble pointer."
Within this series of articles, Louis Vauxcelles makes a sarcastic comment upon such a procedure:

> *"The sculpfor entrusts his small object to an enlarger, who cuts the diminutive cake into several pieces and then installs them on the perfected pantograph—the machine invented by Achille Collas a century ago.*
> *"The enlargement is effected while our man relaxes on his couch, smoking his pipe and talking to his model."*

Sculptors who use the pointing machine, plead their cause with many reasons, that seem to be plausible.
One argument is that only a technical question is involved and that the public need not be interested in the "kitchen of the artist."
Another sculptor asserts that "the mechanical enlargement scrupulously and exactly fixes an early state of the sculpture, enabling the artist to continue his work on a larger scale." (39)
All these sculptors believe that they can save their face by assuring that they reserve for themselves the final elaboration.
They declare that the pointing process is only a preparatory stage and that they perform the creative carving, if they take up the work

from the marble pointer and give to the surface "the individual texture of light and shade.1' (40)

But these arguments are not valid.
It does not make a decisive difference whether they personally execute the enlargement or whether they secure the services of a marble pointer.
Neither is it essential whether they accept the work finished by the artisan, without additional chiselling, or whether they retouch its surface.
Even the question of relative artistic quality of the plaster model is of secondary interest, as far as the marble transposition is concerned.
In all circumstances a fatal contradiction remains.
No bridge can span the abyss between creative imagination, which developed a statue in plaster according to the specific character of this material, and the elaboration in stone or wood.
As each kind of structure has a unique distinguishing character, imagination and realization cannot be homogeneous.
The final execution is like a translation from one language into another.
Furthermore, the two phases of production—the first: moulding of the plaster model, and the second: carving of stone or wood—derive from opposite formative principles.
The artist, in order to form a model in plaster, constructs a skeleton corresponding to the proportions of his plan.
He develops his idea, starting from the nucleus of the skeleton.
Adding clay or wax, he works from the inner to the outer side.
It is a centrifugal process.

The development of his spatial conception is just contrary to that of an artist who carves directly in the block, removing the superfluous mass—inspired by a centripetal force.
Besides, this fundamental difference in the ways and directions of the formative work has psychological consequences.
In modelling, the artist can repair without difficulty the result of a mistake.
He can follow a new idea and even change the whole plan, as he always can add or remove some portion of clay.
But if the sculptor cuts away a part of stone, he generally creates an irrevocable situation.
While the artist working in clay has the advantage of remaining the master of the working process until it is finished, despite all vicissitudes—he pays for this easier situation with a dangerous diminution of creative dynamics.
He is never filled with the acute mental tension that produces new energies, nor with the inspiring consciousness of danger and responsibility.
Personal mastery and the courage of decision at every second are replaced by the precision of a machine and by the routine work of the marble pointer, who often has the ambition to be an artist himself. The praise of this artisan, who "interprets the plaster model much as the musician interprets the printed score and can make an artistic creation from a mediocre model,[11] contains an involuntary condemnation of the pointing machine. (41)
The artist who is accustomed to modelling in plaster, can have only an intellectual relation to stone and wood.
He never experiences the sensuous sensation transmitted by actual

material.
Even if he tries to imprint his own individual handwriting on the work made by the marble pointer, his final chiselling is only a kind of *shop-finishing.*
The discrepancy between the initial imaginary representation and the material realization causes an organic defect, that can never be cured by a treatment of the epidermis.
His work is not an original creation but a mechanical copy, after a piece of art conceived in an essentially different style.
Auguste Rodin himself pronounces the sentence of death, in his book, "Les Cathedrales de France" (p. 90):

> *"All restorations are copies.*
> *"Therefore, they are condemned without recourse.*
> *"Copying of works of art is prohibited by the principle of Art itself"*

4. The Bronze

It would seem logical to believe that the rejection of the pointing machine implies and includes a judgment against the sculpture in bronze.
The bronze work is not produced directly by the artist.
He only forms a model of plaster or wax.
After this model a complicated technical process of casting the statue in molten metal has to be carried out.
The molten metal, usually an alloy of 93 0/0 copper and 7 0/0 zinc, has a temperature of about 2200-2550° Fahrenheit.

Under such conditions the artist is not capable of casting the bronze personally in his own studio; only a foundry offers sufficient security, all technical means, and trained workmen.
To produce the model, the artist builds up a framework following the proportions of his plan.
Around this skeleton he adds the forms of the sculpture.
Technically this procedure is exactly the same as the preparation of a model that shall be transposed into marble with the pointing machine.
But there is an essential difference in regard to the question of harmony between initial representation and final execution.

Metal does not require a composition of compact masses.
Therefore, the character of metal and the process of casting correspond to a light and vivacious composition of plaster or wax, expanding the forms freely in all directions.
In the process of casting, the molten metal like a glowing stream abruptly penetrates without hindrance every corner of a closed hollow space (diameter: about %—% of an inch) between a massive core and an exterior layer of "chamotte," a fireproof mixture containing calcined clay.
The exterior layer represents on its inner side the surface of the plaster model.
When the artist forms the model for a cast, the splendour of bronze, of its precise silhouettes and brilliant reflexes inspires him.
His imagination transposes the appearance of the modest plaster model into that of shining metal. It comprises the characteristic

structure of bronze and the act of casting, which dramatically concludes a logical process.
Undeniably the production resembles that of a model destined for the pointing machine, in so far as it involves neither the coercion nor the possibility to develop a concrete spatial conception through the working process itself.
But the cast of bronze does not only represent an exact reproduction of the model. It is *specifically* suitable for this transposition as it reflects truly the particular mode of style appropriate to a composition in plaster or wax—lightness of architecture, capacity for expressive movement and for expansion of forms.
Between the creative imagination of the artist and the finishing execution neither a machine nor an artisan are inserted, which fatally disfigure the original traits of his own work.
So far he is the real author of the cast, even though he is not a sculptor in the original sense of the word—as the Latin word "sculpere" means: carving or cutting with the chisel.

Many bronzes of all periods of art prove that the constructive spatial imagination of a great sculptor can create the "specific space" of the sculpture, projecting its structure into an imaginary block.
There are in our time some small bronzes of Aristide Maillol—from whatever angle we look at them, they keep cubic consistence and density.
But generally bronzes of sculptors who master the art of free carving, display the marks of a special style.
The production of a sculptor represents a unity.

Fervent activity on one field affects the whole structure of his mind. Original carving presupposes exceptional intensity and systematic training of the faculty to base the imaginative and the formative work upon the *closed* representation of a block.

Development of perceived and of imagined forms to monumental simplicity is a natural result of his individual tendency and of his work as a craftsman.

It becomes a general principle of his art—efficient even when he makes a model for a bronze.

We can obtain a drastic illustration of this fact, by comparing the archaic Greek bronze of a horse in the Metropolitan Museum in New York with the Hellenistic bronze of a horse in the National Museum in Athens.

The archaic bronze shows the same grandeur as marble statues of this period.

The Hellenistic bronze evidently is the product of a time when the tradition of an unsophisticated craftsmanship and the simplicity of a pure representation are beginning to degenerate.

The *carver* is not exposed to the danger of departing so far from the way of forming a solid construction of volumes.

While the bronze is cast, on its surface an even thin layer of chemical precipitates develops.

In former periods, especially in the time of Greek sculpture, this layer was removed though chiselling, until the pure metal appeared.

Chiselling is possible only if the structure of the bronze shows clearly cut forms.

TO

If we chisel an epidermis which varies very largely through little cavities and bosses, the peculiar character of the bronze will be destroyed.
As in our time in most instances the surface is dissolved through an "impressionistic" modeling, the sculptor, instead of chiselling, preserves the skin of chemical deposits.

Exposure to humidity and to other changes of atmosphere causes the formation of a fine dark or greenish coating on the epidermis of copper and bronze, the "patina."
An artificial external treatment with acids and fire, intending to add the charm of colour, has not any artistic importance.
Artificial patina seldom reinforces the plastic values; sometimes it veils their efficacy.
If this procedure is not directed by the artist himself as the only competent connoisseur of his work, it may impart to slight cavities a darkness that exaggerates the impression of depth, thus falsifying all relations.
An even patina is preferable to a varied one.
But it is sufficient to mitigate the too conspicuous sparkling of the bronze by exposing it for a prolonged time to heat.
Fire does not impair the clear plastic expression.

PART i

THE RELIEF

Comparing superficially a relief with a sculpture in the round, we may have the impression that the latter is the most typical form of sculpture.

It extends in all directions.

We can turn around it, and our senses can comprehend it from all sides.

Charles Baudelaire declares in an essay on sculpture:

> *"The bas-relief is already a lie*—a more *civilized art.*
> *"Thus far it is more remote from the pure idea of sculpture." (42)*

The accuracy of this discrimination is questionable.

"Idea of sculpture" can only mean: creation through the specific values of three-dimensionality.

If these values are realized purely, no difference of quality exists between different "species" of the "genus" sculpture.

Quality is an individual problem.

Without pretending to give a historical survey, we indicate several characteristic types of sculptural representation.

At a preliminary stage, we find linear designs engraved in metal or in stone.

In the Afrian desert a few years ago a French Alpine expedition discovered archaic—possibly prehistoric—incisions on rocks, rep-

resenting silhouettes of oxen. (43)
A few lines are cut with unsurpassable simplicity and distinctness.
They display mastery of manual technique and of artistic stylization.
A spatial conception is expressed through linear representation.
The lines are driven beneath the surface of stone, but to such a small degree that it does not yet suggest three-dimensional space.
Penetration into the stone has a *sculptural* value if the artist carves these cavities not as the material trace of a line but as an equivalent of the third dimension.

The relief is one form of such a representation.
It does not stand in the open space.
It is not visible from all sides.
It is the front of a block, the three other sides of which are in an artistic sense amorphous.
Therefore, the relief represents only one view, which can be comprehended from a single point of view.
As a consequence of the physiological and psychological conditions of our faculty of seeing, from a long way off a three-dimensional object appears flat.
In close proximity we do not really see a unit of forms, if it has a certain extension.
When we combine acts of touching with a series of different acts of vision, we comprehend a composite plastic representation.
As soon as we move backward to a distance whence we obtain a united view of the entire complex of forms, every individual aspect of the object appears as a *natural* relief, if the conditions of light

and the relative size are appropriate.

The mechanism of our eyes presents the necessary marks in space —"points de repere"—enabling us to estimate distances.

We perceive the sides of an object, which are directed into the depth, in reduced extension.

Our senses produce the real sensation of the third dimension. (44)

An inner relation exists between the psycho-physiological possibilities of sensuous perception, and the law dictating the style of a certain species of art representing perceptible phenomena.

Therefore, the relief as a special form of style is not at all derived from intellectual abstraction.

Its formation is based on a natural sensuous foundation—the general relief-like visibility of objects.

Besides, the sculptor would not be capable of conceiving the organic form of a relief without comprehending the whole three-dimensional organism, one side of which he represents—all sides are present in his imagination.

Each part of the visible form he creates has an immaterial relation to invisible elements.

The imagination of the beholder also has to produce this entirety.

Otherwise the relief remains only a decoration on a two-dimensional surface.

All forms of the relief are organized within its *specific* space, the limits of which bind them together materially and spiritually.

The relief is *closed* by the front plane.

Evidently this plane has an organic origin, if the sculptor carves the stone directly.
As he keeps intact a number of salients in the beginning of his work and from these salients orientates toward depth, they remain united after he forms cavities between them, through cutting away some parts of stone.
They remain united through the formal spatial relation that the artist establishes.
They ore materially nothing but elevated points or small individual surfaces.
They appear as constituent parts of the united front plane, as the Imaginary but closed boundary between work and world.
The domination of an artistic conception over material substance cannot be proved by more convincing evidence.
If on the contrary the artist forms a plaster model, he has to elevate certain quantities of clay to an even level.
The surfaces of these parts do not originate from an organic procedure; they are arranged artificially.
The original and quite natural harmony between imagination and technical realization, which characterizes the work of the carver, is missing.
The inner representation of the artist was not *closed*—consequently the front plane does not close the relief.
Salients emerge from the base arbitrarily: they are isolated, purely external protuberances; differences in depth are nothing but accidental real cavities.
Some modern reliefs lack any unity: innumerable individual salients of irregular height are juxtaposed; without mutual relation; with-

out any order of distinct planes—monuments of artistic anarchy. (45)

Reduction of all surfaces extending toward depth is characteristic of our perception of *natural* reliefs.
The sculptor subjects this mode of visual perception to a formal order determined by an equal scale, graduating systematically the different degrees of depth.
Uncompromising maintenance of an equal scale is the dominant principle—departure from it destroys the specific style of the relief.
This system includes the background.
If the background is treated only as a uniform surface from which the particular forms arise, the completeness of the work is broken by a cliche pattern.
An example is the unfinished part of a Greek frieze from the Nereid Monument, in the British Museum in London.
This sculpture was abandoned by the artist after its first stage. We see that the sculptor conceived the background rather mechanically. Around the juxtaposed three figures the background is cleared of superfluous marble; the figures are left isolated on the ground.
A perfect relief can be compared to a symphony. All forms are interrelated; all variations of form conditioned through this mutual dependence.
Sometimes artistic reasons make it necessary that the background in reality intrudes into the front plane.
In the same degree as the background advances or recedes, other elements connected with it, in our imagination are forced into the reverse direction, into a receding or forward movement.

Thus the varied formation of the background can be the cause that two elements which objectively lie on the same level, for instance in the front plane, seem to belong to two different planes.

If the formal theme of a relief consists in a large composition combining a great number of figures—especially if one figure is superimposed upon another—the task of combining them under an equal scale of reduction is complicated.
The sculptor has to divide all individual forms into different units on several receding planes.
Otherwise they remain mingled in chaotic confusion.
These different planes do not constitute an abstract system of parallel geometrical surfaces.
An invisible network of formal relations is spanned between them.
The axes of the sculpture lead through these planes in all directions, from one figure to another, from height to depth.
This system of receding planes provides each part within the whole work with such a decisive spatial value that all threads would be torn if one element were removed.

"Procession is the soul of the bas-relief." (46)
The relief generally extends in a horizontal direction, following for instance the length of metopes and friezes.
The rhythmic movement of reliefs develops accordingly in a horizontal order.
Egyptian and Greek reliefs almost exclusively show this lateral trend.

All figures participate in this movement.
When a figure comes straight forward from the background, its exceptional frontal appearance causes real surprise.
The sculptor is not obliged to respect this "rule."
Interruption of a uniform rhythm always produces a striking effect.
A single figure receding from the front to the depth or emerging from the background frontally, stresses through contrast the general horizontal movement and the trend into depth, deepening the space of the sculpture.

In Athens, in the National and in the Acropolis Museum, we experience through contemplation of the sublimest examples the development of style—from the purest form of the relief to a loosened order.
We always come back to the archaic funeral steles of *Aristion* and of a *Running Warrior.*
They fill our heart with the unique enchantment procured through works that represent the fulfilment of a law of style.
They illustrate, better than words, how the relief derives from the front side of a block.
Their front planes have a convincing "existence."
The measurement of all planes leading into depth is strongly reduced on a perfectly equal scale.
These relations are so well balanced that, despite the small material extension of lateral planes, the reliefs do not appear flat.
They display an intense plastic life.
The surfaces are free from picturesque over-elaboration.
The modulation is restricted. The gradual passages from one plane to another are precise.

The rhythm is integrally plastic.
These sculptures incorporate an incomparable lesson for young artists.
After the students have studied the density of their form and the mastery of carving, their opened eyes will hardly endure the appearance of a work produced through the pointing machine, looking as though *cast* in sugar and lacking formal coherence.

The sculptured friezes of the Parthenon, a part of which we can study closely in the Acropolis Museum, are freed from the strict confinement which in archaic reliefs unites all forms.
From this liberation results a richly varied composition, full of rhythmic movement.
The planes directed into the third dimension no longer are reduced in accordance with an equal scale.
On the friezes of young riders for instance, the pure style is interrupted through the fully rounded limbs of riders and horses.
The specific order of the relief is dissolved.

As a relief has only one organized front, in all periods of general florescence of sculpture it is organically connected with architecture.
It performs a *function* as a part of the wall.
This destination raises the problem of establishing a harmony between the functional role and the appropriate style of the relief.
The more clearly the relief is dominated by a restrained and equal scale of lateral reduction—the more it is a congruent element of the wall.

If its salients are of irregular and extravagant height, it interrupts the wall as a superficial, unnecessary adornment.
From this point of view we can say that the reliefs covering the walls of Egyptian mastabas really represent the walls. The measurement of depth is so small that from a certain distance many of these reliefs come near to the aspect of paintings in fresco, as colour weakens their plastic efficiency.
Similarly in Greek art the relief plays a functional role.
The friezes on temples, and the organized front sides of funeral steles are parts of an architectural structure.
Likewise in Romanesque and Gothic cathedrals, walls and the surfaces of capitals of columns are covered with reliefs created in harmony with a larger artistic conception, that assigns to them a functional role and thus determines their style.

Even artists who in prehistoric times covered the walls of caverns or the rocks in the Sahara with engravings and paintings, worked under more favorable conditions than the modern sculptor.
Can he find a building where a relief could be anything else but an inconsistent adornment?
Where are architects who believe that plastic art is as important as architecture and that they should form a unity?
Architects who stand for this conception, as, for instance, Mies van der Rohe, are exceptions.
If the sculptor by chance has a wall at his disposal, generally an insertion of his relief into the wall does not remedy its isolation, because seldom the style of the building and that of the relief belong to an identical order.

As a rule, the sculptor creates a relief under sterile conditions not very different from that of the production of an easel painting. Unfortunately it is an open question whether the future development of architecture will provide new possibilities or whether we have to deplore, at least for an indefinite time, the loss of this original mode of style.

PART 4

THE SCULPTURE IN THE ROUND

The sculpture in the round stands independently in the open space. While we confront it, a natural impulse incites us to turn around the figure and to contemplate it from all sides.
The sum of formal values that generally determine the efficiency of a work of art, is enriched through the sensation of this movement and the unlimited variety of different aspects.
What is the importance of this fact, as far as the development of artistic imagination and realization is concerned?

Auguste Rodin, in his book "L'Art" (p. 64-65), explains the principle guiding his modelling.
In order to build forms which are really rounded, procuring the sensation of depth, he considers the surface of an object as the extreme top of a volume—as the highest point that the volume directs toward him—as the salients of an "inner volume."

> *"Through this procedure the truth of my figures instead of being superficial seems to expand from within to the outside, like lite itself."*

This comparison seems tempting, as it evokes a vital process of organic growth.
But a general law of art cannot be derived from a certain resemblance to the development of animal life—it has to be adjusted to the process of artistic production itself.

Rodin's idea covers in a way the working of the modeller, who starts from the core of his armature and adds clay or wax.
It is incompatible with the activity of the "carver."
His conception of "truth" in sculptural creation must be in harmony with the nature of his work, that proceeds in a direction just contrary to expansion.
Thus the sculptor A. v. Hildebrand bases a treatise about the "Problem of Form in Plastic Arts" (47) upon the technique of the *carver* Michelangelo and upon his own practical experience of carving and cutting the stone.
He starts from the theory that our representation can perceive space only by executing a movement into depth.
He considers the volume to be a series of successive imaginary layers of planes.
The depth of form thus would consist of an indefinite series of superimposed reliefs.
Individual forms of the sculpture are perceived as parts of these respective reliefs.
Logically this sculptor conceives the sculpture in the round by way of the relief.
He penetrates into the block from one side only and removes one layer after another.
His theory leads to the rule that the sculpture in the round has to offer one most important view, that sums up the essential plastic values.
It is a conception of sculpture which certainly is not in conformity with the practice of Egyptian and earlier Greek sculptors.
Already in the first phase of their work they removed successively

whole layers of stone, going around the marble block.
This way they began at once, to shape the fully rounded form.
In all phases of production they separated the mode of the sculpture in the round from that of the relief.
But the endeavor of the sculptor A. v. Hildebrand, to coordinate the artistic representation and the technique of carving, has to be considered as a sound reaction against the disorder exhibited by the average sculpture of the last century. The accumulated parts of many sculptures of this period cannot be disentangled, until we go around them and grasp together the different views.
The clear formulation of this general principle of coordination has lasting value, even if we do not share his personal conception of space and, accordingly, of the sculpture in the round.

The sculptor is on the way to normal conditions of working if he, at least from one side, melts the elements of his conception into a perceptible unity.
He returns to earlier solutions representing an intermediate mode of form between the relief and the wholly developed type of the sculpture in the round.
Such sculptures are fully rounded but constructed on analogy with the relief, as they are destined to be inserted into or leaned against a wall.
A figure erected within a niche has to be rounded.
Otherwise it would appear only as a decoration of the background of the niche. Swallowed up by the emptiness of the hole, it hardly could produce a sculptural effect.

A figure or a group of figures placed in a niche perform the function as a constituent part of the architecture most convincingly if their front plane lies within the plane of the wall. They close the interruption of the wall.
Egyptian sculptures flanking the doors of palaces and temples are not always organic members of an architectural structure. But as they are leaned against the wall or against a column of a building, they are perceived together with the architecture, the proportions of which determine their appearance.
In all these instances subordination under a composite plan limits the independent development of the sculpture and dictates the style. All essential formal relations have to be gathered on the front side in a similar way as on the only side of the relief.
Therefore, the front of these sculptures really presents their most important view.
Their framework consists in a succinct system of main axes parallel to the sides of the block from which they originate, and of planes forming almost right angles with the axis of the trunk.
The result is a nearly geometrical frontal aspect.

Some Greek sculptures that decorate friezes and metopes of temples, and likewise sculptures in niches of Romanesque and of Gothic cathedrals, are partly rounded while the forms within lower layers show reduced lateral planes.
Usually these works are called: high-reliefs.
This designation is not accurate, as the specific style of the relief excludes full roundness of form.

A composition of this kind, which directs all formal relations principally to one sight, is the adequate solution for complicated groups, because it is difficult to combine several figures in a unit completed on all sides.

This type resembles the structure of the relief.

All salients, especially the broad horizontal surfaces of limbs and garments, coalesce into a distinct front plane—closing, like the columns of the Parthenon, the space of the sculpture.

Archaic Greek sculptors created some works without any regard to their direct connection with architecture.

In these sculptures too were accentuated the four principal sides typical of the form of a block and thereby of the style of frontality.

But the formal expression is evolved beyond the efficiency of these four sides.

Even unfinished figures show expressive semi-profiles.

Greek classic sculpture develops this tendency. The rigid rectangular system with its parallel and perpendicular axes is abandoned.

A new sculptural architecture arises — less regular and less dense.

Inclined planes, some flat and some rounded, meet each other; extending in all directions; forming angles of different degrees.

These combinations produce a more lively movement.

A body can be represented in all possible attitudes.

A circular turning, sometimes even a spiral rotation render the rhythm of wrestling and dancing.

The new principle becomes general in subsequent periods.

But in contrast to these strongly agitated works in all great periods of plastic art some artists build sculptures that, although not restricted to a frontal aspect and to the rigidity of a rectangular system, nevertheless display monumental simplicity and dignity.

A less constrained system of different axes varies the movement and creates a greater richness of mutual relations between all forms, reinforcing the direction into depth.

But the sculptor does not reproduce gestures of natural movement. The movement of his sculptures is not explosive but latent.

It is suggested through sculptural equivalents compatible with the prevalent static values of the work.

The order of axes and planes preserves the evidence of its origin — the cubic block.

Each view of these sculptures displays the complete three-dimensional unity.

Each view produces the effect of a relief if we contemplate it from a remote distance. But the innumerable relief-like views are only variants of a dominating "leit-motif."

If we turn around the sculpture, we are not led by a feeling of dissatisaction at one side — we instinctively follow the principle of all-round form.

The originality of such works is not apprehended if we only regard their different sides successively.

We have to feel something that is profounder and vaster than the mere comprehension that *unify* of a sculpture is not identical with restriction to one-sided evolution of forms.

We choose a method of thinking too intellectual and too analytic if we try to reveal the nature of artistic spatial representation by con-

sidering the front side of the block as the boundary of the universal space, and if we orientate ourselves into depth from this plane alone.
The artist conceiving and carving a sculpture embraces its whole roundness through one composite but simultaneous act.
Before he begins to carve with his chisel or with his knife, he does not only perceive the individual form that he actually intends to develop, nor the particular layer of the block to which this form belongs.
His imagination in each phase of creation holds the conception of the entire figure — of its complete round existence.
The space of his sculpture is not constructed through a logical process of abstract thinking.
It originates in a vital feeling—in instinct and intuition.
This space cannot be *cut* in one direction.
It is unlimited and universal.
In harmony with this conception of space the creation of the sculpture is a synthetic process in which all forms coalesce on all sides.

CONCLUSION

If a sculptor possesses skill and a fertile imagination, he can produce a series of works adapted to the market and even satisfying the more pretentious art collector.
But if he aspires to *absolute* solutions, he has to sacrifice ease and the pleasures of life.
It is an inescapable alternative — he has to make his choice.
The temptation is terrible — to be satisfied with cheaper artistic achievements; to exploit a success, copying his own works through

some replica that the public usually favors, because its features are already familiar.
If only a new idea can induce him to produce a new sculpture, he always has to flight afresh for his position.
Carving and cutting require time and strength; they involve accidents and disheartening failures.
The normal conditions of production are disturbed today through the general abuse of the pointing machine.
The genuine sculptor has to compete with mechanical mass production without hope of an external success.
He does not even enjoy the satisfaction of public opinion appreciating his honest craftsmanship.
Almost no one recognizes the marks of real carving.
People who can distinguish them, seldom understand why the carver's procedure is superior.
The small number of sculptures he can create seems to prove a lack of imagination and of zeal.
General indifference and scepticism paralyze the free unfolding of his activity.
As all circumstances of our time are opposed to a harmonious and uncompromising fulfilment, he has to believe that the sculptor who follows his own ideal creates for the future.
His confidence is not based upon self-deceit.
At the end of their career many artists review with disillusioned eyes the work of a lifetime and recognize too late that their success was a failure.

In public expositions and in art galleries, in streets and parks all over the world we find almost the same allegoric statues representing Love, Victory, Death; the same statues of Kings, Statesmen, and Poets. Works that appeal only to intellect and sentimentality, lacking individual character, produced through routine.
We can observe that visitors study sculptures less carefully than paintings and etchings. If they look at them at all, they generally only try to understand the meaning of the subject-matter. They examine the exactness of execution in comparison with natural form; the resemblance of a portrait to the model. They admire minutely chiselled details that are executed by the pointing machine.
Thus the mind of the beholder is diverted from the essential—namely, from the architectural proportions and from the question whether marble and granite were treated adequately by the sculptor, whether he was able to develop their natural beauty.

In the florescence of Egyptian and Greek art and likewise in the Middle Ages a common religious impulse inspired artistic creation.
Architecture and sculpture formed a unity.
But sculpture was not restricted to the practical role as a functional element of architecture.
It represented symbolic values and was created for eternity as a lasting expression of a certain period united through faith and culture.
This is not a hyperbolic assertion.
As sculptures were destined to honor the Divinity, it seemed unimportant whether people could see them or not.
The Parthenon friezes that decorate as horizontal bands the exterior

walls of the ce//a below the ceiling, were invisible.
And likewise sculptures in the height of European cathedrals were not made for human eyes.

In our time the sculptor generally is restricted to individual work. To the execution of portraits, allegoric groups, and historical monuments without relation to deeper currents of a common faith.
His work lacks organic connection with architecture.
Often he may contemplate the happy position of leading Greek or Gothic sculptors who, as masters, directed in their workshops the productions of talented and trained assistants and thus were able to execute extended plans.
He is even compelled to envy those anonymous helpers. They knew that without their collective work the realization of such vast ideas as the decoration of temples and cathedrals never would have been accomplished.
The sculptor of our time has to Find some moral comfort.
Every artist suffers from the discrepancy between vision and achievement.
The large expansion of a work that needs the co-operation of a collective body of workers must be paid for with an increase of dissatisfaction—it involves a compromise with all its advantages, but with its dark sides also.
Our sculptor may always keep in mind that he is alone, but that he is the free creator of his work.
Conscious of his independence, he has no reason to complain about his destiny.

NOTES

(1) Marcel Proust, "Le Cote de Guermantes," Vol. 1, Edition de la Nouvelle Revue Française, Paris, 1930, p. 58:

> "... an *idea for which I would have made the sacrifice of my life . . . at the most central point of which was the idea of perfection."*

Etienne Souriau, Professor of Philosophy at the University of Lyon, France, "Avoir une Ame," Societe d'Edition Les Belles Lettres, Paris, 1938, p. 22-27. E. Souriau develops a similar idea:

> *The complex, profound world is ordered on different specific planes of existence; for instance, the existence of meditation or the existence of realization.*
> *All phenomena can be determined after a specific order—the order of physical reality or of virtuality, etc.*
> *We can not really know an object nor a being as "existent" and "present" until it is presented at a point where it reaches its "acme"—*i7s *highest degree of perfection on a certain plane of its existence,* realized *beyond the vagueness of dreams. This* presentation is *performed through an artistic operation. A presentation of this kind is the "veritable aim of art— or the veritable artistic creation; too often veiled though the abuses of a historical criticism that in art just forgets art."*
> *"How lucky are men who make things physically, installing themselves in the concrete real. How lucky the sculptor who with his mallet and his chisel hits the stone—who forces the stone to be a witness of his dreams for every future beholder."*

Charles Baudelaire, "Curiosites Esthetiques," Louis Conard, Paris, 1923, p. 363:

> *"Everything thaf is not perfection should hide, and everything that is not sublime is useless and culpable."*

(2) SigfriedGiedion,"Space,Time and Architecture," The Harvard UniversityPress,Cambridge,1941.

(3) EmileMeyerson, "Identite et Realite," Bib), de Philosophie Contemporaine, Felix Alcan, Paris, 1907.

Arnaud Dandieu, "Marcel Proust," Firmin-Didot, Paris, 1930, p. 81.

(4) Konrad Fiedler, "Schriften ueber Kunst," R. Piper & Co., Muenchen, 1914. Vol. 2, p. 12,13,40:

> *"The specific task of art consists in elevating the sensuous representation (visual conception) into consciousness."*
> *"Art means developing of representations, while thinking means developing of notions."*

(5) Henri Bergson, "L'Art," published in "Le Rire," Felix Alcan, Paris, p. 153-161.

(6) Charles Baudelaire, "Curiosites Esthetiques," Edition Conard, Paris, p. 274.

Theodule Ribot, "Essai sur l' Imagination Creative," Felix Alcan, Paris, p. 13.

(7) Marcel Proust, "A l'Ombre des JeunesFilles en Fleur," Edition de la N.R.F., Paris, 1928, Vol. 3, p. 129.

(8) Ref.toNote2.

(9) "Anthologie des Philosophes Francois Contemporains," Ed. du Sagittaire, Paris, 1931, p. 201.

Henri Bergson, "Duree etSimultaneite," Paris, 1922.

(10) Pius Servien, "Principes d'Esthetique," Boivin & Co., Paris, 1935, p. 48-91.

(11) Henri Poincare, "Science et Methode," Paris.

"Anthologie des Philosophes Francois Contemporains," p. 51-52.

E. Minkowski, "Le Temps V6cu," D'Artrey, Paris, 1933, p. 72-84.

(12) Henri Focillon, "L'Art des Sculpteurs Romans," Ernest Leroux, Paris, 1931, p. 23-26.

Henri Focillon, "Vie des Formes," Ernest Leroux, Paris, 1935.

(13) Henri Poincare, "Science et Methode":

> *"Maintenant, si je veux passer au grand espace, qui ne serf plus seulement pour moi, mais ou je peux loger l'univers, j'y arriverai par un acte d'imagination. Je m' imaginerai ce qu'eprouverait un geant qui pourrait afteindre les planetes en quelques pas; ou, si l'on aime mieux* ce *que je sentirais moi-meme en presence d'un monde en miniature ou les planetes seraient remplacees par de* per/res *boules, tandis que sur l'une de* ces *petifes boules sagiterait un HHiputien que j'appellerais Moi. Mais cet acte d'imagination me serait impossible, si je n'avais prealablement construit mon espace restraint et mon espace etendu pour mon usage personnel."*

Dagobert D. Runes, "Dictionary of Philosophy," Philosophical Library, New York, 1942, p. 297.

Georges Dwelshauvers, "Traite de Psychologie," Payot, Paris, 1934, p. 370-409.

(14) Ref. toNote 12.

(15) Cezanne, "Correspondence," Grasset, Paris, 1937, p. 257,259.

(16) Auguste Rodin, "L'Art," Edition Definitive, Grasset, Paris, 1932, p. 71-116.

(17) Henri Delacroix, "Psychologic de l'Art," Felix Alcan, Paris, 1927, p. 232.

(18) E. Mac Curdy, "The Notebooks of Leonardo da Vinci," Garden CityPubl. Co., p. 1017,1018.

Marie Herzfeld, "Leonardo da Vinci. Der Denker, Forscher und Poet," Eugen Diedrichs, Leipzig, 1904, p. 134-135.

(19) "Le Temps," Paris, No. 27698, 9th July, 1937.

(20) E. Noulet, "Paul Valery/'Grasset, Paris, 1938, ("Fragments des Memoires d'un Poeme").

(21) Charles Baudelaire, "L'Art Romantique," Louis Conard, Paris, p. 118.

(22) Auguste Rodin, "Les Cathedrales de France," Armand Colin, Paris, 1914, p. 15-17 of the Introduction by Charles Morice.

La Bruyere, "Les Caracteres," Vol. 1: "De l'Esprit":

> "... *the Gothic order which barbarism introduced tor palaces and fernpies."*

(23) Auguste Rodin, "L'Art," p. 57-67.

(24) "Gazette des Beaux Arts," 1934, February;see also the explanation (on label) by the Museum's administration.

(25) Charles Baudelaire, in "LeCygne" ("Les Fleurs du Mai"):

> "Ce Simo/s *menfeur qui par vos pleurs grandit,*
> *A feconde soudain ma memoire fertile."*

(26) Auguste Rodin, "Les Cathedrales de France," p. 154.

(27) The word "image" is used, though modern psychologists deny the adequacy of this term.
See Marcel Jousse, "Le style oral rythmique et mnemo-technique chez les verbo-moteurs," Archives de Philosophic, Gabriel Beauchesne, Paris, 1925: the term "image" designates a complex state of consciousness formed through "motional" activity — the creative revivification of former psychic states.

(28) E. R. Jaensch, "Die Eidetik und die typologische Forschungsmethode," Leipzig, 1925.

G. Dwelshauvers, "Traite de Psychologie/' p. 342-344.
(29) Hans Hennig/"Psychologie der Gegenwart," A. Kroener, Leipzig, 1931. p. 129.
(30) E. R. Jaensch, ref. to Note 27.
(31) Ch. Dwelshauvers, ref. to Note 27.
(32) H. Henni, ref. to Note 28 (p. 131).
(33) Denis Diderot, "Salons," 1759-1781.
(34) Stanley Casson, "The Technique of the Early Greek Sculpture."

Stanley Casson, "Some modern Sculptors/' Oxford University Press, 1928.

Carl Bluemel, "Griechische Bildhauer an der Arbeit/' W. de Gruyter &Co., 1940.
(35) The archaeologist C. Bluemel in his book "Griechische Bildhauer an der Arbeit" gives a complete description of unfinished Greek statues, especially of early statues.
From the typical appearance of their surface he draws the conclusion that they were sculptured almost exclusively with the pointer; that Greek sculptors used the toothed chisel only to contract and to level uneven surfaces; and the flat chisel only to accentuate certain parts—as folds, curls, lips, and eyelids—through a clear cut.
Bluemel believes that they smoothed the surface only with sandpaper and pumice stone and that they preserved on purpose the crystals crushed by the pointer:

> *"The peach-like fluff of the epidermis bestows, after extended cutting with the pointer, upon almost each particle the aspect of life and upon the whole marble a depth like that of velvet.*
> *"This is the peculiarity of Greek sculpture and would be wiped out through treatment with the flat chisel."*

Modern sculptors doubt the entire correctness of this assumption and believe that Greek sculptors eliminated at least a part of the destroyed crystals by means of the flat chisel.

(36) "Encyclopedie Franchise," Societe de Gestion de l'Encyclope*-die Frangaise, Larousse, Paris.
(37) Albert Toff, "Modelling and Sculpture," London,1929.

Malvina Hoffman, "Sculpture Inside and Out," Norton & Co., New York, 1939.

Sargeant Jagger, "Modelling and Sculpture in the Making," 1933.

Brenda Putnam, "The Sculptors Way," Farrar & Rinehart, New York.
(38) "Les Nouvelles Litteraires," Paris, Nov.-Dec., 1936.
(39) Charles Despiau, quoted in "Les Nouvelles Litteraires":

> *"Vous voyei done que ceux qui savent utiliser ce mode de travail sen trouvent a merveille. Au demeurant, qu'importe au public cette cuisine de notre ouvrage? Ce qui se passe a l'atelier, ce sont nos secrets."*

Pierre Poisson, quoted in L.N.L.:

> *"Lagrandissement mecanique est une mise au point scrupuleusement exacte d'un etat anterieur, qui permet de continuer, dans une plus grande dimension, l'oeuvre qu'on veut realiser."*

(40) Malvina Hoffman, ref. to Note 36, p. 158.
(41) Brenda Putnam, ref. to Note 36, p. 305.
(42) Charles Baudelaire, "Curiosites Esthetiques," Louis Conard, Paris, p. 348:

> *"Le bas-relief est deja un mensonge, c'est-a-dire un pas fait vers un art plus civilise, s'eloignant d'autant de l'idee pure de sculpture."*

(43) F. de Chasseloup Laubat, "Art Rupestre au Hoggar," Plon, Paris, 1938, p. 13.

(44) G. Dwelshauvers, "Traite de Psychologic/' p. 371:

> *"C'est jeu de philosophes que de pretendre que les sens ne nous donnent que deux dimensions."*
> *"It is a diversion of philosophers to assert that our senses do not give us more than two dimensions."*

(45) See the bronze-relief, "The Gates to Hell/' by Auguste Rodin, Rodin Museum, Philadelphia, Pennsylvania.

(46) Auguste Rodin, "Les Cathedrales de France," p. 141:

> *"La procession est l'ame du bas-relief."*

(47) Adolf v. Hildebrand, "Das Problem der Form in der bildenden Kunst," J. H. Ed. Heitz, Strassburg, 5th edition, 1905.

All translations are made by the author of this book

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