

PROLEGOMENA TO A PSYCHOLOGY OF ARCHITECTURE

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The observations that follow concern a question that seems to me an altogether remarkable one: How is it possible that architectural forms are able to express an emotion or a mood?

The fact is indisputable. Not only does the judgment of the layman most decidedly confirm that every building produces a specific impression within a whole range of moods, from the serious and the somber to the cheerful and the friendly, but even the art historian does not hesitate to characterize periods and nations by their architecture. The capacity for expression is thus conceded. But how? On what principles does the historian make judgments?

I am surprised that our scholarly literature has made almost no attempt to answer such questions. Much care and loving attention have been devoted to the analogous problem in music, but architecture has received no similar treatment from either psychology or art theory. In saying this, I make no claim to fill in this gap myself, but rather hope to derive from it an excuse for my efforts.

One may expect no more than a *sketch*. What I present here should be seen simply as prolegomena to a psychology of architecture that has yet to be written. I am therefore obliged to enlist the protection of my title for what is often a merely suggestive treatment of the theme.

[1.] *Besien* (110) *Colini* p. 6 ([illegible] 8, 452). "An eminent philosopher said: From the face physiognomy and bodily symmetry that I observe in this young man, I predict that he will accomplish what he says."

—Only well-built people have a sense of rhythm.

—Ability to dance.

—*Dürer*: "For each mother likes her child well. This is the reason that many painters make what resembles themselves." in *Thuring* p. 363.¹

1. PSYCHOLOGICAL BASIS

The psychology of architecture has the task of describing and explaining the emotional effects that this art is able to evoke with the means proper to it.

We designate the effect that we receive the *impression*.
And we understand this impression to be the *expression* of the object.

Thus we may also formulate the question as follows:

How can tectonic forms be expressive?

(By "tectonic forms" we mean both the decorative and the applied arts, for they are subject to the same conditions of expression.)

One can try to answer this question from a subjective or an objective viewpoint.

Both have been done.

I will first mention the widely held thesis that the emotional tone of a form is explained by the *kinesthetic response of the eye* when its focus follows the lines. We experience a wavy line and a zigzag line quite differently.

What is the difference?

In the former case, it is said, it is easier for the moving eye to trace the form: "Owing to its physiological structure, when the eye moves freely, it follows a straight line in the vertical and horizontal directions, but it travels in an arc when moving in any oblique direction" (Wundt, *Vorlesungen*, 2: 80).²

Therefore, we take pleasure in the wavy line and have an aversion to the zigzag. The beauty of a form is directly proportional to its suitability for our eye. We can say the same thing by asserting that the purpose of a column capital is to lead the eye gently from the vertical to the horizontal or that the outline of a mountain is beautiful because the eye is able to glide over it smoothly and without stumbling.

[2] Haugger, *Method of Expression*.

[3] Change "emotional tone" to "expression."

[4] Delete separation.

Reasonable enough when put this way, but the theory lacks the one essential requirement—confirmation by experience. We have only to ask ourselves: How much of the form's actual impression can be explained by the kinesthetic response? Is the greater or lesser ease with which the eye performs its movement to be regarded as the crucial factor in a multitude of effects? The most superficial psychological analysis will show how

little such a theory squares with reality. Indeed, we cannot even grant this factor a secondary role. In pointing out the uniform pleasure to be derived from both a wavy line and a rectilinear incander, Lotze has quite correctly observed that we invariably disregard physical effort in forming our aesthetic judgments and that the sense of pleasure is therefore not based on the ease with which we obtain the perception (*Geschichte der Aesthetik in Deutschland*, 310–11).³

The evident error in this theory, therefore, appears to be the belief that, because it is the eye that perceives physical forms, their visual properties are the determining factors. Yet the eye appears to respond with pleasure or displeasure only to the intensity of light; it is indifferent to forms or at least is unable to determine their expressive nature.

We must therefore look for another principle. The comparison with music will give us one, for in music we have the same relationship. The ear is the perceiving organ, but we could never grasp the emotional content of sounds by analyzing the auditory process. To understand the theory of musical expression, it is necessary to observe *our own production of sounds*, the meaning and use of *our own voice*.

If we did not have the ability to express our own emotions in sounds, we could never understand the meaning of sounds produced by others. We understand only what we ourselves can do.

So here, too, we must say: *Physical forms possess a character only because we ourselves possess a body*. If we were purely visual beings, we would always be denied an aesthetic judgment of the physical world. But as human beings with a body that teaches us the nature of gravity, contraction, strength, and so on, we gather the experience that enables us to identify with the conditions of other forms. Why is no one surprised that the stone falls toward the earth? Why does that seem so very natural to us? We cannot account for it rationally; the explanation lies in our personal experience alone. We have carried loads and experienced pressure and counterpressure, we have collapsed to the ground when we no longer had the strength to resist the downward pull of our own bodies, and that is why we can appreciate the noble serenity of a column and understand the tendency of all matter to spread out formlessly on the ground.

One might say that all this has nothing to do with apprehending *linear and planimetric* relationships; however, this objection merely reveals insufficient observation. On paying attention, we find that we read a mechanical significance into such relationships as well and that there is no

oblique line that we do not see as rising and no irregular triangle that we do not perceive as unbalanced. It hardly needs to be added that we do not experience architectural creations in merely geometric terms but rather as *massive forms*. Yet an extreme school of formalist aesthetics time and again assumes the former.

Let us go further: Musical sounds would have no meaning if we did not consider them the expression of some sentient being. This relationship, which was a natural one in the original musical form, that of song, has been obscured by instrumental music but by no means effaced by it. We always attribute the sounds we hear to a subject whose expression they are.

The same is true in the physical world. Forms become meaningful to us only because we recognize in them the expression of a sentient soul. Instinctively we animate each object. This is a primeval instinct of man. It is the source of the mythological imagination; and even today, is not a long educational process necessary to rid ourselves of the impression that an unbalanced figure must itself feel uneasy? Indeed, will this instinct ever die out? I believe not. It would be the death of art.

We read our own image into all phenomena. We expect everything to possess what we know to be the conditions of our own well-being. Not that we expect to find the appearance of a human being in the forms of inorganic nature: we interpret the physical world through the categories (if I may use this term) that we share with it. We also define the expressive capability of these other forms accordingly. *They can communicate to us only what we ourselves use their qualities to express.*

At this point, some might become dubious and question what similarities or expressive feelings we could possibly share with an inanimate stone. Briefly, there are degrees of heaviness, balance, hardness, etc., all of which have expressive value for us. Since only the human form, of course, can express all that lies in humanity, architecture will be unable to express particular emotions that are manifested through specific faculties. Not should it try to do so. Its subject remains the *great vital feelings, the moods* that presuppose a constant and stable body condition.

I could conclude this section now and simply point out that language also provides a wealth of examples of how we habitually apprehend everything in the physical world in the form of animate beings. We need only recall architectural terminology. Wherever a finite entity presents itself, we give it a head and foot, look for a front and back, and so on.

[5.] Add: "but we hear" (after "musical sound").

[8.] Change "form" to "body."

[7.] (1) 113, 120 (1) 102, (1) 111, 112 (1) 113. Cf. the Mycenaean earlier version.

[6.] See fig. 10b (1) 111, 112 (1) 113. See (1) 111, 112 (1) 113.

The vertical line of the Gothic arch does not seem to flow down, although we do think down it.

However, there still remains the question of how we come to imagine these other forms as living. There is little prospect of a satisfactory answer. But I will not pass over this question since others have already approached it from other perspectives.

The anthropomorphic apprehension of three-dimensional forms is not an entirely new idea. In recent aesthetics this same process has come to be known as *symbolizing*.

Joh. Volkelt has written the history of the term "symbol,"¹ and his book has the essential merit of a more exact formulation of what Herder² and Lotze³ suggested earlier.

According to Volkelt, the symbolization of spatial forms takes place in the following way (*Symbolbegriff*, 51-70):⁴

1. The spatial form is interpreted in terms of movement and the effect of forces, in an activity that cannot in itself be called symbolic. In visually tracing the outline of things seen, we make the lines flow and run.
2. To interpret the spatial form aesthetically we have to respond to this movement vicariously through our senses, share in it with our bodily organization.
3. The extension and movement of our body is associated with a feeling of pleasure or displeasure, which we interpret as the experience characteristic of the form itself.
4. In order to be called aesthetic, however, this feeling of pleasure or displeasure must mean something to the mind, that is, the bodily movement and physical feeling must express a mood.
5. The fact that our whole personality participates in aesthetic enjoyment shows that all such pleasure must contain something of what is universal in human nature, something of the ideas that make us human.

¹[Johannes] Volkelt, *Der Symbolbegriff in der neuesten Aesthetik* (Jena: Hermann Drob, 1876).

²Aside from Kalligone, the essay "Plastik" contains important observations. [Gottfried] Herder, *Kalligone: Ihre Ausgewandern und Schöner*, 3 vols. (Leipzig: J. F. Hartknoch, 1800); and idem, *Plastik: Einige Bildbeschreibungen über Form und Gestalt der Pyramiden Bildenden Thiere* (Riga: J. F. Hartknoch, 1778).

³[Hermann] Lotze, *Geschichte der Aesthetik in Deutschland* (Munich: Cotta, 1858); idem, *Mikrokosmos* [3 vols. (Leipzig: S. Hirzel, 1856-1864)], 2: 190ff.

So much for Volkelt's analysis.

Essentially, I am in full agreement. The objections that could be voiced against point 1 and against the separation of points 3 and 4 may be suppressed here. I would rather direct my full attention to the heart of the matter, to the second proposition—the vicarious response to the other form. How is it possible for us to “penetrate the object with our bodily feeling”?⁹ Volkelt's terminology remains intentionally obscure on this point, and he later finds (with Friedrich Vischer) that the only solution lies in a pantheistic apprehension of the world. He does not try to approach this mysterious process too closely: “With my vital feeling I obscurely transfer myself into the object,” he says (p. 61).¹⁰ Elsewhere he speaks of “self-projection,” and so on. Granted, we cannot uncover the whole course of this psychological act, but I still ask: Is this vicarious response a *sensory* one or does it take place merely in the mind? In other words, do we experience other physical forms with our body? Or is our sympathy toward external conditions only the work of our imagination?

Volkelt vacillates on this issue. On one occasion he says that we must respond to the object *sensuously* with our physical organization (p. 57); on another, it is simply the imagination that carries out the movement (pp. 61–62).

Lotze and Rob. Vischer,¹¹ who first raised the importance of the bodily experience, were evidently only thinking of processes that take place in the imagination. In this sense Rob. [err] Vischer writes, “We have the wonderful ability to project and incorporate our own physical form into an objective form.” Similarly, Lotze says, “No form is so unyielding that our imagination cannot project its life into it.”¹²

If I understand him correctly, Volkelt here has gone further than his predecessors but without focusing any more sharply on the problem.

The justice of the question cannot be doubted, for the bodily emotions we experience in considering an architectural work cannot be denied. I can well imagine that someone might assert that the impression of a mood conveyed by architecture is based in our own involuntary effort to imitate other forms through our organization—in other words, that we judge the vital feeling of architectural forms according to the physical state that they induce in us. Powerful columns energetically stimulate us;

⁹Rob. Vischer, [Über] *das optische Formgefühl* (Leipzig: Hermann Credner, 1873).

[9.] See page 160.

[10.] What is imagination? What do we know of any incorporated mental activity?

[11.] Change “is based in” to “is based on.”

our respiration harmonizes with the expansive or narrow nature of the space. In the former case we are stimulated as if we ourselves were the supporting columns; in the latter case we breathe as deeply and fully as if our chest were as wide as the hall. Asymmetry is often experienced as physical pain, as if a limb were missing or injured. Likewise, we know the disagreeable condition that is induced by looking at something unbalanced, and so on. Everyone will find something similar in one's own experience. And when Goethe once remarked that we ought to sense the effect of a beautiful room, even if we were led through it blindfolded, he was expressing the very same idea: that the architectural impression, far from being some kind of “reckoning by the eye,” is essentially based on a direct bodily feeling.

Instead of an inexplicable “self-projection,” we might perhaps imagine that the optic nerve impulse directly stimulates the motor nerves, which cause specific muscles to contract. As an illustrative analogy we could cite the fact that a musical tone will make all related tones resonate.

What might an advocate of such a view then say?

He might well refer to human expressive communication or to the recently championed theory that the comprehension of human expression is mediated by a sympathetic response [Nickerleben].

In which case the following principles might be formulated:

1. Every mood has its definite expression that regularly accompanies it. Expression is not, so to speak, a banner that is hung out in order to show what is going on inside; it is not something that could just as well be absent. Expression is, rather, the physical manifestation of the mental process. It does not exist only in the tension of facial muscles or in the movements of the extremities but extends to the whole organism.
2. As soon as one imitates the expression of an emotion, one will immediately begin to experience the emotion. To suppress the expression is to suppress the emotion. Conversely, the emotion grows the more one gives in to it by expressing it. The timid person becomes more timid when he shows his agitation in his gestures.
3. We can often observe someone unconsciously imitating a stranger's expression and thus transferring emotions. We know how readily children abandon themselves to every strong impression, how they cannot see anyone cry, for example, without

bursting into tears themselves, and so on. Only in moments of vigorous self-assertion are they immune to this sympathetic response, which presupposes a certain absence of will. Later, education and rational deliberation prevent one from "giving in" to every impression. In certain moments, however, one "forgets oneself" and behaves in a way that would make sense only if one were the other person.

Examples of such self-projection are the following:

Someone with a hoarse voice tries to speak. We clear our own throats. Why? For a moment we believe ourselves to be hoarse and want to rid ourselves of the hoarseness (or at least to reassure ourselves of the clarity of our own voice).

Again, it often happens that during a painful operation we closely imitate the features of the sufferer and perhaps even experience a sharp pain in the affected area.

These are unusual cases, and we cannot deny that in everyday life we have lost almost every trace of the vicarious bodily response and accept the forms of expression used by our fellow beings as we do small coins whose value we know from experience. Nevertheless, a stimulus remains even if the impressed expression—if I may use this term—does not come to the surface (manifest itself in the face and posture). For the *internal* organs, above all, are sympathetically affected, and according to my observations it is *respiration* that is most susceptible to change. The rhythm of breathing that we perceive in others is what is most easily transferred to us. We may remain impassive when viewing the physical pain of another person, but we are horrified to see someone suffocating, for we vicariously feel the agony. This fact is important, for breathing is the most direct organ of expression.

This is how someone advocating the vicarious bodily response might begin his argument, perhaps also hoping to find support in the fact that the intellect unconsciously experiences conformity to rule; or conversely, that a violation of normality strikes the "eye" or the "feelings" (as we are in the habit of saying) before the intellect determines *where* the error is located.

Perhaps someone might interject that this vicarious response is irrelevant to aesthetic perception, for the imitation of human physiognomic expression takes place only in *will-less* moments—that is, when one *forgets oneself* and becomes engrossed in the object. This objection can be refuted

by the simple observation that aesthetic perception demands just this willlessness, this loss of self-awareness. Whoever is incapable of forgetting himself for a while will never enjoy a work of art, much less create one.*

That the *sublime* arouses no such imitative response will be conceded even by advocates of this thesis. The cheerful strength of a light-filled portico fills us with a sense of well-being; the sublime, on the contrary, produces symptoms of fear. We feel the impossibility of relating to vastness, our limbs weaken, and so on. Yet the sublime is a special case; it by no means refutes the main point.

Nor can anyone challenge our right to liken the apprehension of human expression to the apprehension of architectural forms. Where are the limits, where does this vicarious response cease? It will occur whenever we find vital conditions similar to our own, that is, wherever we encounter bodies.

To pursue such an investigation further would lead us back into the mysterious history of psychological evolution. And even if we could eventually confirm a universally shared experience—even if we were able to prove that our body undergoes precisely the changes corresponding to the expression that the object communicates to us—what would be gained by that?

Who can say which takes priority? Is the bodily response a condition for the impression of a mood, or are the sensory feelings simply the result of a lively imagination? Or, finally, is there not a third possibility—that psychological and physical activities run parallel?

Since we have pressed the question to this point, it is time to break off the discussion; the problems that we now confront mark the limits of all science.

Let us withdraw. In what follows we will pay no heed to these difficulties but will use the time-honored expressions that come most easily to mind.

The bases that has been established is this:

Our own bodily organization is the form through which we apprehend

[2] This sentence to be placed elsewhere (to help in a graph is better).

[3] Change "has" to "which."

*This psychological fact is the foundation of the relationship between the moral and aesthetic states of mind. The "compassion" that the former presumes is psychologically the same process as sympathy. Thus, as is known, great artists are always also "good people": that is, they are eminently susceptible to the emotion of compassion.

everything physical. I shall now show that the basic elements of architecture—material and form, gravity and force—are defined by our experiences of ourselves; that the laws of formal aesthetics are none other than the sole conditions under which our organic well-being appears possible; and, finally, that the expression intrinsic to horizontal and vertical articulation is presented according to human (organic) principles.

Such is the content of the following sections.

I am far from asserting that the architectural impression can be fully analyzed in this way as certainly many other factors are involved: color, historical or functional associations, the nature of the material, etc. Nevertheless, I do not believe I am in error in finding the essence of that impression in the features presented here.

Permit me, then, disregarding those other factors, to draw attention to what may be called *analogies of linear sensation*.

For Wundt (*Grundzüge der physiologischen Psychologie*, 1: 486ff.)⁸ the term analogies of sensation meant the relationship that we are in the habit of assuming between the sensations of the different senses: for example, between low notes and dark colors. Considered purely as sensations, they would have nothing in common, yet they seem to be related by the equal gravity of their emotional tone.

Such analogies also appear with lines. It would be welcome for once to hear something coherent on this wholly neglected subject.* I shall make a few observations drawn from extensive experiments.

The nervous jumps of the zigzag immediately bring to mind a humming red, whereas a soft blue is associated with a gentle wavy line. Indeed, a paler shade suggests a long, drawn-out wave, a stronger shade a more animated one. Our language regularly uses the word "faint" both for color tones lacking brilliance and for physical fatigue.

Likewise, we speak of warm and cold lines: the warm lines of a woodcut, for example, and the cold lines of a steel engraving. These in turn are oppositions that correspond to the pressure sensations of hard and soft.

Most pronounced is the analogy with musical sounds, in which

⁸Of course linguistic research would have to support the experimental psychology in this.

[14.] Colors: dull colors. See the muted colors of Roman Baroque and the strong Venetian coloring and their correspondingly different architecture. Gothic: harsh colors. Rococo: light, muted, *à la mode*.

[15.] This is nonsense.

[16.] Change: *berühmt* to *geschätzt*.

the experience of creating sound with our own voice probably plays a part. Thus everyone perceives a line with short, small waves as a vibrato in a high register, and wide, shallower oscillations as a muffled reverberating hum. A zigzag "rattles and clatters like gunfire" (Jak. Burkhardt); a spiky line is like a strident whistle; the straight line is completely still.

Therefore, we have good reason in architecture to speak of the quiet simplicity of antiquity and the unpleasant din of, for example, English Gothic. Or perhaps we feel in the softly descending silhouette of a mountain the fading of a sound into silence.

II. THE THEME OF ARCHITECTURE

Matter is heavy; it presses down and wants to spread out formlessly on the ground. We know the force of gravity from our own body. What holds us upright and prevents a formless collapse? It is the opposing force that we may call will, life, or whatever, I call it force of form [*Formkraft*]. The opposition between matter and force of form, which sets the entire organic world in motion, is the principal theme of architecture. Aesthetic perception even transposes that most intimate experience of our own body onto inanimate nature. We assume that in everything there is a will that struggles to become form and has to overcome the resistance of a formless matter.

With this realization we have taken the decisive step—both to enrich formal aesthetics with vital principles and to supply the architectural impression with a richer content than was assigned to it in, for example, [Arthur] Schopenhauer's much-admired theory. Fortunately, no one ever allows philosophy to disturb enjoyment, and even Schopenhauer himself had far too much artistic sensitivity to believe in his own principle that gravity and rigidity were the only themes of architecture.

Because he analyzed neither the impression nor the psychological effect of architecture but only its material nature, he was forced to conclude that:

1. Art presents the ideas of nature
2. The principal ideas of architectural matter are gravity and rigidity
3. Therefore, the task of art is to present these antithetical ideas clearly

The load wants to fall to the ground; the supports, thanks to their rigidity, oppose this will.

Apart from the inadequacy of this antithesis, it is difficult to understand how Schopenhauer could have failed to see that the rigidity of the stone in a Greek column is nullified by our aesthetic perception and transformed into a living, upward striving.

Enough, I reiterate: just as the manifestations of gravity are deduced from our own physical experience without which they would be unthinkable, so is that which counteracts gravity understood according to a human, that is, an organic analogy. Thus I maintain that all the decrees of formal aesthetics concerning *beautiful form* are nothing other than the *basic conditions of organic life*. The force of form is not only the opposite of gravity (a vertically acting force) but it is also that which creates life—a *vis plastica*, if I may use a term frowned upon by natural science. I shall define the individual laws in the next section. Here my aim is simply to explicate the basic idea, namely, the relation of matter to form.

After all that has been said, there can be no doubt that form is not wrapped around matter as something extraneous but works its way out of matter as an immanent will. Matter and form are inseparable. In all matter there lives a will that aspires toward form, but it cannot always fulfill itself. Nor must we imagine that matter is the enemy; rather, form without matter is inconceivable. Everywhere the image of our own physical existence presents itself as a type by which we judge every other phenomenon. Matter is the evil principle only insofar as we experience it as life-negating gravity. The effects of gravity are always associated with a decrease of vital energy. The blood runs more slowly; the breath becomes irregular and wheezing; the body has no support and collapses. These are moments of imbalance when gravity seems to overcome us. Language has expressions for them: *heavyhearted*, *depressed moods*, and the like. I shall not inquire further as to what physical disturbances are present here; suffice it to say that this is the state of *formlessness*.

Everything living tries to escape from this and to achieve the natural posture of regularity and balance. The relation of form to matter is conveyed in this effort of organic will to penetrate the body.

Matter itself, to a certain extent, longs for form. Thus we can describe this process in the same words that Aristotle used in defining the relation of his forms to matter, or in Goethe's magnificent expression: the image must work itself out [*das Bild muß sich auswirken*]. The perfect form, for its part, presents itself as an entelechy, that is, as the actualization of the potential inherent in this matter.

[17.] From pure form to absolute formlessness is a long way.

In essence, all these comparisons are based on the profoundly human experience of giving form to the unformed. The idea that architecture is frozen music simply describes the common effect that both arts have on us. The rhythmic waves press in on us, take hold of us, and draw us into the beautiful motion; everything formless dissolves and for a few moments we enjoy the good fortune of being freed from gravity and the downward pull of matter.

We sense a similar formative force in every architectural creation, only it comes from within rather than without, like a creative will that fashions its own body. The goal is not the denial of matter but simply the organic structuring of it—a condition that we perceive to be self-willed and not arising from an external force. *Self-determination* is the precondition of all beauty. The most profound essence of the architectural impression is this: that matter has been overcome and that in its vast masses an intelligible will has fulfilled itself.

The realization of the potential, the fulfillment of the will, the liberation from material gravity—all these mean the same thing.

The greater the resistance to be overcome, the greater the pleasure.

Yet it is not only important that a will is fulfilled but also *what kind* of will is fulfilled. A cube satisfies the former condition completely, but the content that emerges is extremely limited.

Within formally correct, that is, viable architecture an evolution is possible, which we are not totally unjustified in comparing with the evolution of organic life-forms. Progress in both realms takes place similarly: an evolution from dull, poorly articulated forms to the most finely developed system of differentiated parts.

Architecture reaches its culmination at that moment when the individual organs detach themselves from the undifferentiated mass and each member appears to function in accordance with its own purpose without affecting or being hampered by the body as a whole.

Nature pursues the same goal in its organic creations. The least-developed creatures form a whole without articulation; the necessary functions are performed either by "pseudo-organs" that momentarily step forth from the mass and disappear again within it or by a single organ that serves all devices but with great difficulty. The most highly developed creations, on the contrary, display a system of differentiated parts that are able to work independently of each other. Practice is needed to develop this independence completely. The raw recruit cannot march without engaging

[18] Change "Matter" to "Surface."

his whole body; the piano student is unable to raise one finger alone.

The uncomfortable feeling such conditions produce—when the will cannot fully assert itself or when it remains, as it were, bogged down in matter—is the same feeling that an insufficiently articulated building conveys to us (the Romanesque style is filled with examples of this kind).

Given that the independence of the parts indicates a greater perfection of the organism, the creature becomes all the more meaningful to us the more the parts are dissimilar from one another (within, of course, the limits set by the general laws of form; see the next section). The parts of the Gothic style always repeat the same pattern: tower = pinnacle, pediment = hood. This endless multiplication of the same or analogous parts must be inferior to antiquity, where nothing is repeated: *one* order, *one* entablature, *one* pediment.

However, I shall break off these reflections. They can be fruitful only when the architectural organism is already known in all its parts. I have sought to show only that we instinctively measure the perfection of an architectural creation by the same criterion that we apply to living creations.

Let us now turn to the general laws of form.

III. FORM AND ITS MOMENTS

In order to lay a firm foundation, I shall accept the criteria of form that Friedrich Vischer presented in the self-critique of his work on aesthetics (*Kritische Gänge V*).¹⁰

He distinguished between two external and four internal moments.

The first two are:

1. Limitation in space
2. Measure in relation to the intensity of our visual perception.
(not essential to us here)

It is a *conditio sine qua non* of individuality that an object demarcate itself from its surroundings. The kind of demarcation will be discussed shortly.

The internal moments are:

1. Regularity
2. Symmetry
3. Proportion
4. Harmony

[71.] Delete reference to the Romanesque style.

[21.] Here, Vischer contrasted this situation. Perhaps rightly.

[22.]

[23.]

By way of developing these concepts, let me begin by taking as a motto, so to speak, the previously stated basic principle: The moments of form are none other than the conditions of organic existence and as such have no expressive significance. They present only the schema of the living reality.

Regularity is defined as "a uniform repetition of distinct yet similar parts." Vischer cites as examples: an order of columns, a run of a decorative pattern, the straight line, the circle, the square, and so on.

I believe it is necessary first to point out one inaccuracy here. The regularity of a sequence must be clearly distinguished from the lawfulness of a line such as we see in a straight line, in a figure such as a square or a circle, or—in accordance with linguistic usage—even in a 90° angle in contrast to one of 80°.

It makes no sense to lump these things under one definition.

The distinction between regularity and that which I have for the present referred to as lawfulness is based on a very profound difference. In the latter case we perceive a purely intellectual relationship, in the former case a physical one. The lawfulness that is expressed in a 90° angle or in a square has no relation to our own organism. Such lawfulness does not strike us as a pleasing vital form and represents no universal, organic prerequisite of life but is only a case preferred by our intellect. The regularity of a sequence, on the contrary, is something of value to us, for our organism's structure demands regularity in its functions. We breathe regularly, we walk regularly, every continuing activity takes place in a periodic sequence. To take another example, a pyramid with sides rising at an angle of exactly 45° offers us a merely intellectual pleasure. Our organism is indifferent to it, for it reckons simply with the relations of force and gravity and makes its judgment on that basis.

It is imperative to make the fundamental distinction between these two factors as clear as possible.

They can scarcely ever be observed in total isolation, for every intellectual relation also has some physical significance and vice versa. Nevertheless, it is generally not difficult to recognize each component in a combination of parts.

For the character—that is, for the expression—of a work of art, the intellectual factor is almost totally devoid of significance. An easily discernible order will enhance the charm of its serenity, while a compli-

[23.] It should thus, for instance, be verified whether the consideration that the rule is forced on the living form-instant is not also crucial here.

cated and intellectually confusing order will lend it an apparently sullen and refractory character in that we are put off by the failure of our effort to understand it. Finally, where the intention is too easily recognized, it usually results in a monotonous or boring impression.

The intellectual factor is important only in a formal sense, for it proves the *self-determination* of an object. Where we find strict rules and understandable quantities, there we know that nothing is accidental. This form is willed and the object has determined itself (naturally this can only take place within the limits of physical possibility). It is interesting to see that the earliest art, which set out primarily to counter the accidental forms of nature with intentional forms, supposed this to be possible only through a crude application of law. Only later did it become possible to create a sense of inevitability by using free forms.

Symmetry. Vischer defines this as "a juxtaposition of similar parts around a dissimilar and separate center." One can perhaps accept this definition as long as it is clear that the parts to the right and left of the given center must be the same. Strictly interpreted, the definition also leads one to believe that this notion includes the *establishment* of a center, which is completely wrong. Where a figure lacks a center—as with simple regularity—we do not speak of asymmetry.

The demand for symmetry derives from the structure of our body. Because we are built symmetrically, we expect to find symmetry in every structural body. We do so not—as is often supposed—because we look upon our species as the most beautiful but because this is the only way in which we feel comfortable.

The effect of asymmetry, as has already been noted in passing, makes the relation clear: it gives us physical discomfort. This is because, in our anthropomorphic perception of the object, we identify with it just as if the symmetry of our own body were disturbed or a limb were mutilated.

The origin of the demand for symmetry accounts for its unqualified validity. True, we often hear the view that symmetry must always yield to functionality without diminishing the pleasure: Fechner (*Neuschule der Ästhetik*) cites the example of a cup with only one handle. But just this example best demonstrates our principle. To preserve symmetry, we unconsciously make the handle side the rear of the cup. If the cup has two handles, we turn it around again so that we interpret them as an analogy to our arms.

[24.] Change "an analogy" to "analogies."

[25.] Symmetrical attention on page p. 172, to be added here (doubtful)

[26.] [Lose] II [upwards]. See passage 90. "It is a pity that no word exists that explicitly comprises both the idea of proportion (by which one generally understands only height, width, and depth) and plane form."

[27.] K&H: golden section instead for minimal color surfaces.

All this also shows, however, that expression does not reside in symmetry as such—any more than the similarity between a person's arms expresses emotional content.

Proportion creates more difficulties. It is a concept much in need of elaboration. Vischer's definition—proportion presupposes inequality and establishes an order dominating that inequality—does not say much, as he himself admits. Nothing is gained by adding that it holds true for the vertical direction, for then it would no longer apply to planes (relations of height to width), where we also speak of proportion. And, as with height and width, one also says that beams must be proportional to their load.

Only one thing emerges from all these cases: all concern the relationships of different parts to one another. If these parts are called *force* and *load*, then function alone can decide; the beam must be proportionate to its task. This is understandable, a physical principle.

Height and *width* must stand in some "relation" to one another; the ratios 1:1, 1:2, and the golden section are such relations. I shall deal with these, however, in the section on the expressive value of proportions. As an issue, they are irrelevant in the present context, for they have no bearing on any consistent, necessary, and therefore inexpressive form.

Finally, it is inappropriate to point to any numerical order as the main principle of *vertical* organization, for there is also a *qualitative* element here: the formal treatment of the load-bearing material as carried through from bottom to top. With symmetry, the parts were qualitatively the same. Here the lower parts are heavy and compressed, the upper parts are light and of a finer development. Numerical relations such as the golden section (overrated by [Adolf] Zeising) can make a secondary contribution to this effect, but we demand first and foremost to see this qualitative progression expressed from bottom to top. The laws of this progression resist all mathematical definition. A rusticated ground floor of the same height as a second floor with a smooth wall does not produce a 1:1 ratio; where the material differs, the size of the visual planes is no longer the deciding factor.

Here, too, the principle is borrowed from organic structures. We find this progression from crudity to refinement most completely developed in humans. Wundt (*Grundzüge der physiologischen Psychologie*, 2: 186) points out that a repetition of homologous parts takes place. "The arms and hands repeat the legs and feet, but in a more refined and perfect form."

In the same way, the chest repeats the shape of the abdomen. But whereas all other parts are repeated just twice in the vertical organization of the form, the head is placed on the trunk so that the whole is terminated by the most sophisticated organ, the only one that is not homologous to any other.¹¹ In this principle of vertical development, architecture has ample opportunity to express character; but then its character no longer derives from a formal attribute, such as proportion, but from content. For this reason, I shall return to it later.

The last and most mysterious element of form is *harmony*, "the vital and animated unity of a clearly distinguished multiplicity"; "It arises from the unity of the inner vital force. It unites the parts, for it is the parts" (Vischer).

We find the concept of harmony best defined in mesophology by the notion of the organism.

The individual is a unified community in which all parts work together for a single purpose (unity). This purpose is an inner one (self-determination), and the inner purpose is at the same time an outer measure beyond which the development of living substance does not extend (form = inner purpose).

These statements come from [Rudolf] Virchow. We can incorporate them directly into aesthetics.

Incidentally, Kant had already said the same thing in a different context. Under the rubric "Architecture of Pure Reason," he gives an excellent treatment of what we here refer to as organism and harmony. He calls it system.

His definitions are so relevant in this context that I would like to outline the main points.

By the term "system" Kant means the unity of various parts under one idea. This idea contains the purpose and the form of the whole, which is congruent with the system (that is, form = inner purpose). The unity of purpose insures that no part is missing and no chance addition can occur. The whole is therefore articulated and not amassed; indeed it can grow internally but not externally. Like an animal body, its growth adds no new member but makes each one stronger and more proficient in its purpose without changing the proportions.

With this we have said everything that can reasonably be said, and it is highly significant that architecture has given the name to this concept.

There is no expression in harmony. It denotes only that which oth-

ers have termed the purity of forms. Forms are pure if their variety is not the work of chance but reveals an underlying oneness that is the proof of their necessity.

The impression of an organic quality is due to the fact that, as August Thiersch has shown in his highly instructive treatise on proportion (*Handbuch der Architektonik*, edited by Durm, etc., Darmstadt, 4: 1),¹² the same proportion is repeated in the whole as well as in the parts. Nature follows the same principle in her creations.

Thus we have enumerated the principal laws of form.

Let us now turn to the actual expressive elements and consider them in the following order:

1. Relation of height to width
2. Horizontal development
3. Vertical development
4. Ornament

IV. CHARACTERISTICS OF PROPORTIONS

"The decisive factor in architecture is the dimensions, the relations of height to width" (Hermann Grimm).¹³

They essentially determine the character of a building.

It is therefore very important to define the expressive value of proportions.

First of all, let us exclude what belongs to the intellectual factor. Proportions such as 1:1, 1:2, and 1:3 are satisfying because they demonstrate self-determination. The rule that immediately becomes apparent here allows us to overlook the question of why this is and why it is not otherwise. Form appears as the result of necessity. But this does nothing to create expression.

If you recall what I said earlier on the mechanical significance of all relations of form, you will not object when I equate the relation of height to width—of the vertical to the horizontal—to the relation between

¹³It is impossible here to go into these things in greater detail, for the subject absolutely demands explanatory drawings.

example of how little the eye's movement affects the speed of the lines, we might point out the impression made by two wavy lines of unequal wave-length: short undulations appear quick and lively, long undulations appear calm and often tired. The former suggests lively, rapid breathing; the latter, a dull, slow breathing. The length of the undulation gives the duration; the height of the wave gives the depth. Considering the importance of the rate of respiration for the expression of moods, this is a highly important aspect of historical character. It can even be observed that the older a nation is, the more rapidly its architecture begins to breathe; it becomes excited. How still and restful are the lines of the ancient Doric temple: everything is broad and slow-measured. With the Ionic there is already a quicker movement, a pursuit of slenderness and lightness. As antique culture approached its end, it ever more feverishly demanded faster movement. People who are by nature hot-blooded reach the highest emotional pitch. One need only think of the breathless haste of Arab decorative lines. Unfortunately, I must content myself with suggestions here. A historical psychology—or rather, a psychological history of art—should be able to measure with great accuracy the acceleration of linear movement, and it certainly will find that progress always appears first in decoration.

There are, by the way, other means for bringing about the impression of rapid movement besides two-dimensional proportions. I must, however, stay with my theme here.

Proportions are what every nation presents as its very own. Even if the system of decoration is introduced from abroad, the national character will time and again become apparent in the dimensions of height and width. Who can miss, in Italian Gothic, the national propensity for wide, restful proportions? And conversely, does not the northern penchant for heights and towers continually reappear? One might almost say that the contrast between southern and northern feelings toward life is expressed in the contrast between reclining and standing proportions. The feeling in the south is one of restful being, in the north one of restless pressing forward. One might, for instance, trace the entire evolution of world-views in the history of gable proportions. I do not fear the accusation that all of this is child's play. Some, indeed, have reached the point where the narrow Gothic pointed arches are considered to be merely a result of technical development, and those who seek to read more into them are treated as silly dilettantes. But look for a moment at the context. Look at the slender people who confront us in the paintings of that time! See how

[33.]

[34.] It depends on the progression.
The origin of the Ionic style does not go as far back as those of the Doric.
(Pacheco's, *Ionic capital*—*American Journal of Arch.*, III)
Later only the more popular one.

Baroque: irregular breathing.

everything is taut, how the movement is so delicate and stiff, how each individual finger is pointed and detached? Small wonder that the architecture also rises up sharply and pointedly, leaving behind the dignified calm that was unique to Romanesque buildings. The relation between humbly habit and favored proportions is clearly apparent here. Yet whether the physical history of the human body conditions the architectural forms or is conditioned by them is a question that leads further than we intend to go at this stage.

Perhaps the preceding remarks have already served to cast doubt on the notion that one can, in general, speak of one principal ratio, when every building displays a wealth of different proportions. To allay such doubts, I would like by way of experiment to introduce the concept of a *modus primum*. Everyone will agree that in Gothic architecture it is possible to speak of such an all-encompassing proportion; but the concept also has to be justified for every other style. Analogous to the "mediant tone" in music, the term denotes the normal and natural extent in relation to which the other proportions are modulated and experienced as a contraction or an expansion. A combination of influences therefore takes place: deviant proportions are not apprehended in their own right as mutually complementary parts of the whole. Historical studies show that such complex proportions become more prevalent as the art matures. Early art presents nothing but simple, autonomous proportions.*

V. CHARACTERISTICS OF HORIZONTAL ARTICULATION

The principle of horizontal articulation is referred to as *symmetry*. Symmetry is only the requirement that the parts flanking a dissimilar center must be similar to each other. No expression resides in it, as I said; the important thing is that its center stands out as a dominant element and in this way creates dependent parts around it. Since the history of architectural forms is related, in principle, to the evolution of organic creations, permit me once again to quote a tenet from morphology: "Subordination of parts indicates a more perfect creature. The more similar the parts are to one another, the less they are subordinated to one another."¹² Evolu-

*This is not the place to show the principles of these modulations. Let me instead refer back to what was said about the harmony of all-encompassing relations.

tionary progress is therefore an articulation of the mass, which inherently aims to persist in its totality and compactness.

Architectural form thus comes close to human organization and gains the capacity to express anything that can be said through the relation of the human limbs to the human body. Character in this case lies in the greater or lesser independence of these parts. A sense of freedom arises from the development of the limbs that emerge from the mass to take on a life of their own, and the freer the connection with the central body, the happier the effect. Here again we feel that sense of relaxation and lightness that every cheerful mood arouses. "So free and easy!" Vischer once exclaimed.

By contrast, closely attached lateral parts without independent strength indicate unconditional dependence and total subordination to the will of the center, just as an energetic will in man is expressed by the limbs being held close to the body.

It is easy to apply such a principle, and I need not enumerate all possible cases. We understand the principle by virtue of our own bodily organization and expressive movements. In employing its variants, architecture is not, of course, bound to the human analogy; it combines elements in a purely schematic way.

We employ symmetrical articulation, or the odd-number division (three-part, five-part), in anything that stands alone; the dominant center, nonidentical to the parts, stands for an internal coherence analogous to that of every animal organization including our own.

We have a decided dislike for bipartition; it is inorganic to let something split apart in the center.

Some with a refined sensitivity, however, have used bipartition for subordinate forms. In the Greek temple, for example, the front is symmetrically divided into an odd number of parts; we have five or seven intercolumniations (symmetry depends on this and not on the columns, for columns must be in pairs to stand independently, like the two legs of the human body). On the side of the temple, by contrast, we find an even number of intercolumniations; that is, the side is not independent. It has no center; or rather, the center is occupied by a supporting member.

We find the same thing elsewhere in the history of architecture. The designer of the Villa Farnesina, for instance, made the wings of the facade bipartite and thus subtly suggested their dependence on the five-bay central building.

[15.] [The following four paragraphs] belong to the section on form.

[16.] [theoretical demand of these in Alberti (c. 3. 2) or B. (Juchardt), Ben. (Jussier)], 300.

[17.] *Change Elements in Balance.*

Asymmetry appears as a displacement of balance only in mild cases; in more pronounced cases it compels us to understand each part individually and to take the whole more as an accidental assemblage of parts than as an organic combination.

Nowadays we demand absolute symmetry in our monumental buildings: a dignified, measured deportment. The Germans of the Middle Ages and even of the Renaissance appear to have thought differently. They intended each part to make its effect alone and seem to have taken no account of the whole, which, due to its lack of unity, generally gives the impression of a cheerful rather than a dignified or serious work. We permit such freedom only with private or rural buildings.

Yet a peculiar need of our time also compels us toward asymmetry in our domestic and decorative arts. The rest and simplicity of stable equilibrium have become tedious; emphatically, we seek movement and excitement—in short, the conditions of imbalance. We no longer seek pleasure, as Jacob Burckhardt once said, "but relaxation or amusement, and thus we welcome either the most formless or the most colorful things." Anyone who so wishes may look for examples of this principle in modern living rooms. They are there in abundance.

The modern penchant for high mountains, for the most powerful masses without rule or law, may be traced back in part to a similar urge.

Likewise, it is also known that a severe injury to the equilibrium can have a depressing effect. We ourselves feel fear and anxiety when the restful effect of balance cannot be found. I am reminded in this connection of an engraving by Dürer, *Melencolia I*,¹⁸ in which we see a brooding woman staring at a block of stone. What does it mean? The stone block is irregular and irrational; it cannot be defined with compass and with ciphers. But there is more. When one looks at this stone, does it not appear to be falling? Surely! And the longer we look at it the more we are drawn into this restlessness. A cube with its absolute balance may be tedious, but it is satisfied and satisfying; yet here we encounter the anxious unrest of something that cannot achieve a stable form.

The posture of the body affects the circulation of the blood and the rhythm of breathing. Our consideration of conditions of balance thus leads us to what in architecture has been called *serial regularity* or "rhythmy" (Semper).

In the section on proportion we have already dealt with the importance of regularity and tempo for all living things.

That some measure of irregularity is also allowed within the limits of the already formed is shown by the analogy with symmetry and with their common source—the breathing human figure, which is symmetrical in its structure and regular in its functions. The same conditions apply to both. By relaxing the law, the strictly regular norm can assume a free and cheerful character and, beyond that, a state of dissatisfaction and restlessness. We unconditionally demand the rule of symmetry for monumental buildings; a slight irregularity will enhance the gaiety of rural structures. Yet it must be very slight, for we look upon regularity as we look upon time in music: here and there it may be stretched a little, but on the whole it must stand as an absolute basic principle.

It seems risky to speak of a sequential rhythm; but since we have already introduced the notion of a sequence of parts, and with it the element of time, why should these not be a rhythm produced by placing a stronger emphasis on every second or third part? Example: the Michaelskirche in Hildesheim, where a pier occurs after every two columns. Nevertheless, this kind of rhythm is unusual, for we also expect a stronger member to bear a greater load, which is not the case here. There is still another possibility. We can have several contrasting series beside and above one another, with weaker members placed between stronger ones, as in the case of music where light accompanying figures may fit into a slower-moving principal theme. A rhythm arising in this way is an element of considerable importance, and its role in the overall impression is not to be underestimated.

Let us take the case of Greek temple architecture: the columns are all the same, likewise the triglyphs set above them. The rhythm is formed according to whether every second or every third triglyph is centered over a column—in other words, according to whether the space between the columns is divided into two or three parts. The triglyph resting directly over the column will automatically acquire an additional emphasis.

The effect is completely different in the two cases. Where a triglyph falls in the mid-span of the entablature or is centered within the intercolumniation, it produces the impression of strict restraint. In the opposite case, where this point remains undefined, the free arrangement has a light and cheerful effect. This is not a complete explanation; perhaps we would do well to recall the significance of 4/4 and 3/4 time for our own movements; we march more lightly and easily in 3/4 time. The accen-

[38.] (e.g., Baroque)

[39.] It has to be noted that we naturally have a tendency to focus and to search for and mark the center. Can be explained mechanically.

[38.] Disposition of 3 triglyphs at the intercolumniation is also definitely systematic, according to Wolfflin.

[41.] Detail: "Tempio of San Pietro in Montorio (Rome)."

[42.] At the Colosseum (bottom) the top half column below is the height of the arches; that in part the reason for the effect of lightness. The Colosseum can be said to appear rhythmically inverted.

ented beat does not always fall on the same foot but changes; the pace becomes light and gliding.*

I will not cite additional cases. It can be said in general that bipartition corresponds to the ancient and the strict in art. Only later did Graeco-Roman architecture employ the stimulant—if I might call it that—of 3/4 time. I find it first on the round temple at Tivoli.

The greatest lack of restraint appears when the rhythms of different series no longer harmonize. This is seen on many buildings of the Renaissance, for example, on the Tempio of San Pietro in Montorio (Rome) and on the vestibule of Santa Maria (Arezzo), and so on.

VI. CHARACTERISTICS OF VERTICAL ARTICULATION

We have identified the increasing elaboration of the material as the principle of vertical structuring.

This elaboration in persons is seen in the formation of more refined organs, which are able to move more independently of the body as well as articulate themselves in more varied forms. One has only to compare arms and legs in this respect.

In the case of the eye, we further encounter what is, so to speak, a breach of the closed mass.

What corresponds to them in architecture? It articulates its material in the same way and breaches the wall with openings. The openings increase in size; the articulations become more refined and the organs more independent. The supports that first appear as wall piers become independent columns with their own plinths. I need not go into detail, for what matters is the principle—the development of the vertically active force of form.

This force is the same in columns, windows, and cornices. It is always an upward-striving tendency that opposes gravity and usually terminates in a conoidal form. Below, all is massive, unarticulated, unbroken; this is the base and socle; the entire force of gravity makes itself felt

*It might also be that we should abandon the idea of the sequence and explain this effect by recourse to what was said above regarding two- and three-part division. It is impossible for me to decide, for numerous observations and experiments have produced no definite results.

there. A rusticated ground floor permits only very small window openings, and even then it does not seem to preclude the danger that the mass will close in around them and engulf them. This is all very understandable and does not offend our feeling. If, however, the upper windows are missing, then the matter persists in its unarticulated totality and its nature appears blind, trapped in insensibility.⁷

Architecture in this regard approaches human organization in a very significant way in that physiognomic analogies readily present themselves.

We are accustomed to finding the freest expression where a part is relieved of mechanical pressure. In animals this is most clearly seen in the tail; in humans in the head. In architecture, which likewise has an upward tendency and looks straight ahead (not to the ground like an animal or upward like a plant), the most expressive parts are also the upper parts.

This is where we automatically look to find the character that defines the rest of the building.

Our imagination is satisfied with the slightest stimulus; it fastens on the individual detail and expects to find no further analogy in the rest of the structure. Even though a house has little in common with a human form, we see the windows as organs that are similar to our eyes. We say they "spiritualize" the building. We therefore attribute to them all the expressive value that resides in the relation of the eye to its surroundings. The portion above the windows becomes a forehead. Cheerfulness demands a smooth brow. A rusticated treatment in this spot looks very gloomy, especially if the arch is not high enough. Thus we cannot help but feel that the Finance Ministry in Munich has a furrowed brow, whereas the Palazzo Strozzi,⁸ with its deeper band of rustication above the windows, does not look disapproving but simply grave and distinguished. If the windows appear directly shaded by a projecting cornice, we gain the impression that the brows are contracted and, so to speak, pulled down over the eyes.

It would not be a thankless task to enumerate the physiognomic

⁷Professor [Heinrich] von Braun directs my attention to an apparently contradictory example, the Doges' Palace in Venice, at the same time remarking that this exception proves the rule. Here, above the porticoes of the lower floors, we have a massive upper wall with only a few windows. Yet this wall is patterned, that is, it is traversed with elements of form and therefore does not appear heavy. Moreover—and this is perhaps even more significant—it does not terminate in a crowning cornice but dissolves into a busy ornament.

possibilities that architecture can embody. What is important, of course, is only the principle; it is certainly not the intention to imitate human facial features. It may also be that the idea of an architectural physiognomy would lose some of its strangeness if one were to reflect that expressive movements of the human facial muscles are always similar to those of the whole body. We shrug our shoulders at the same time as we raise our eyebrows; a stiffening of the whole body accompanies a vertical wrinkling of the brow; the head sinks against the chest when the eyebrows are lowered. This surely suffices to explain the application of the same principle to things other than humans.

So much in brief for this topic, which will be further clarified in the following section.

But before we go on to ornament, we must draw attention to another factor in the characterization of vertical force.

Form is action. Every window must at all times hold its own against the pressure of the material.

Different periods have understood this relation differently.

The round arch is generally recognized as more cheerful than the pointed arch. The former goes about its task quietly, content with its roundness; the latter embodies a will and effort in every line; never resting, it seems to want to split the wall higher and higher.

With its effort to express a concentrated will in every form, Gothic architecture is antipathetic to all matter that is dull and inert. It is impatient with all that is sluggish and unstable; what its will cannot penetrate through and through must disappear. Thus we have a complete dissolution of all mass; the horizontal gives way and the irresistible ascending impulse slices through the air in total weightlessness.

To dissolve a whole building into functioning members is to seek to feel every muscle in one's body. This is the true meaning of the Gothic. I will return to it once again. Wherever this impulse is found in history, it is a symptom of greater agitation.

The serenity of the classical age knows nothing of the kind. Greek architecture favors the action of the material: the entablature presses down with considerable weight, and a moderate excess of vertical force is evident only in the slight rise of the pediment. The Greek architect did not seek to be rid of the material; he delighted in the force encountering its resistance, without viewing it as a hindrance or demanding an unimpeded, purposeless, upward striving.

[8] [Gothic.]

The modern spirit characteristically prefers the architectural form to work its way out of the material with some effort; it does not look for a conclusion so much as for a process of becoming; a gradual victory of form.

The rutilation of the Renaissance expressed this ideal clearly. The Baroque pursued this motif to such an extreme that the form was left to extricate itself from the raw rock.

Antiquity set forth pure and entire perfection, as if it could not be otherwise.

In a theoretical sense, we can illustrate this profound difference between the classical and modern viewpoints with the famous words of Lessing, "Let me err, only let me inquire," and Aristotle (*Nicomachean Ethics*, 1177 a26): εὐλαβῶν δὲ τοῖς εἶδῶσι τῶν ἰσχυρίτων ἡδῖο τὴν διαγωγὴν εἶναι.¹⁷

VII. ORNAMENT

Only with difficulty have I been able to delay the discussion of ornament. It contributes enormously to the characteristics of horizontal development but even more to vertical development. Yet it seems to me that the theme has to be treated as a coherent whole.

What is ornament? The answer to this question has been clouded by those many critics who, like Bötticher in his *Die Tektonik der Hellenen* (*The tectonic of the Hellenes*),¹⁸ inquired into the canonical meaning of each part in an attempt to find a closed system or grappled with the question of the historical origin of every form.

I am in a more fortunate position as I only need to know one thing: what is the effect of ornament?

[Heinrich] Wagner (*Handbuch der Architektur*, 4.1: 31ff.)¹⁹ makes the usual distinction between decorative and constructional ornament. Of the former, however, he can say no more than that it "should rationally animate dead surfaces and rigid articulations," whereas he gives to constructional ornament the task "of elevating and embellishing the stylistically conditioned art-form of the structural parts."

Not much can be done with this explanation.

Even the distinction between decorative and constructional ornament is of dubious value. In applying it, one immediately runs into problems, for the demarcation between the two terms is so tenuous. In any

[45.] [Note in modern hand-writing] Baroque predominance of mass when compared with the Renaissance.

[18.] [But it does occur in the Temple at Ephesus (triglyphs)]. Compare also Mycenaean columns (Bötticher, *ibid.*).

[19.] There were probably 12 triglyphs (Friederichs, *ibid.* 2, 38).

case, it makes an inadvisable starting point, so I shall take ornament as a single whole and suggest the following provisional definition: Ornament is an expression of excessive force of form. The heavy mass sprouts no flowers.

Let us evaluate the definition first with a Doric temple.

The whole lower half of the temple, from the capital downward, displays no decorative forms; neither the stylobate nor the column shaft carries a decoration. In the case of the stylobate, we have the raw mass lying heavily on the ground, scarcely achieving the simplest forms; in that of the shaft, we expect the effort and concentrated strength that the fluting clearly expresses. A sculptured column would altogether lose the character of concentration. We shall speak later of the capital. What happens above the column? The entablature, which is the load to be carried, is a massive horizontal member. If the load were greater, the columns would give way in the middle and the horizontal would dominate. But the reverse is true, for the vertical force is the more powerful one. At first, it penetrates the weight only slightly. The architrave remains an unbroken whole, and the effect of the thrust is seen only in the guttae over the column. With the overcoming of this first resistance, the load becomes lighter and the force breaks through. A tectonically independent life is apparent in the vertical parts of the triglyphs, which resume the fluting motif of the columns, and in the intervening metopes. The latter are the spaces created for developing the most refined figures, and when finally the mutules are filled in along the length of the entablature, they give the impression of the column's thrust gently ebbing away after having extended itself over the whole entablature. Now follows the highest achievement: gravity is subdued. The excess of upward force is seen in the "lifting" of the pediment and celebrates its greatest triumph in its sculptures—which, relieved of pressure, can develop freely.²⁰

²⁰Vischer once asked whether the gable rises or falls. It does both. It is lifted in the center, which is expressed in the ridge tiles. The sides slope downward, for the (sideward facing) acroteria bend back the force that gathers there. (The steeper the gable, the more pronounced these acroteria must be.) The Gothic, on the contrary, displays an excess of vertical force in the *swollen*.

²¹Perhaps it is also possible to establish a correspondence between the figures on the pediment and the number of triglyphs. I have not investigated this issue, but I note, for example, such a correspondence in the Temple of Aegina: eleven triglyphs and eleven figures. On the astonishing correspondence between architecture and composition in the Gigantomachy in Pergamon, see Brunn's essay (Berlin, 1885), p. 50.

In conceding what has been said thus far, one might still find an inconsistency in the capital, which invites interpretation not as an excess of upward force but as a compression of the column. This, however, is incorrect. Bötticher found such an idea clearly presented in the painted rim of leaves that seem to buckle under the pressure; in replying, I beg to champion the firsthand impression. In no way do the leaves indicate a compression: they sprout from the echinus quite unconstrainedly. Indeed, what would be achieved if the weight of the whole entablature could only bend a few leaves? The motif would be absurdly petty. In short, it seems to me that the leaves have nothing to do with the conflict of those powerful masses but are possible only because the load has not extinguished the free life of the column.

It is important to understand that compression can never have an aesthetic effect. Self-determination is the first requirement. Every form must be sufficient reason in itself, and so it is here. The column spreads out because it makes good sense to take the load on broad shoulders, not because it is crushed.* It still retains enough strength to contract once again (directly under the abacus). And it is precisely the extent to which it spreads out that guarantees its self-determination. It is just as wide as the abacus. But the abacus—and here we are astonished at the architectural sensitivity of the Greek architects—this abacus is a proportional representation of the whole entablature. That is, the column knows exactly what it has to support and acts accordingly.

With Ionic architecture, as we have already noted, a striving toward freer movement asserts itself. There is no longer a desire to carry such a heavy load. The column is unburdened and the lighter impression is principally achieved by having it discharge its excess of force into the volutes (which is not the case with the painted Doric column). In comparisons of the Doric and Ionic orders, I have often heard it said that the Ionic holds its head freely upright, whereas the Doric bends its head down. The ancients themselves seem to have had this impression, at least if one may refer to the telamones of Akragas as Doric and the caryatids of the Erechtheion as Ionic. I believe such a view is justified. Indeed, I have even

[Heinrich von Brunn, "Über die kunsthistorische Stellung der pergamentenen Gigantomachie." *Jahrbuch der königlich Preussischen Kunstsammlungen* 5 (1884): 231–92, esp. p. 278.]

*Of course we are not denying some elastic deflection.

[46.] Olympia. No Doric capital found with pain. (Only one in Bormann, see Bormann, i.e. "p[ro]lychomy") Yet how could leaves be attached to the archaic capital? See also Pachtent, *Jon. Kapitell*, 47.

[49.] cf. Vitruvius's *antiprismatic*.

[53.] Wilson does not believe it.

[54.] cf. Jacob B[erckhardt], *Antiquitäten* 125. "The obelisks, acroteria, and statues, etc., that crown the entablature and enter of the facade and, as it were, separate in the air like an excess of force."

known a person who had seen neither the telamones nor the caryatids characterize the Doric column with its echinus as very similar to someone spreading out his elbows and bending his head and likewise to describe the volutes of the Ionic column as the flowing hair of a fully upright figure.

We can illustrate the relation between the two styles in Goethe's apt phrase (from his essay on architecture of 1788): "It is human nature to continue ever further, even beyond one's goal; and thus it is only natural that the eye has constantly sought to find more slender proportions in the relation of the thickness of a column to its height and that the mind has derived from this a sense of greater elevation and freedom."²⁰

Greater elevation and freedom! That is also the impulse that transformed the Romanesque style into Gothic forms. In these prolegomena, which are intended to be no more than hints, I cannot begin to analyze these decorations; but such an analysis is not difficult with the principles put forth. It becomes clear that all the fireworks of Gothic ornament were possible only because of the enormous excess of force of form over matter. Ornament is the blossoming of a force that has nothing more to achieve. Thus it was a very correct feeling that transformed the capital into a lightly foliated ornament, for the Gothic pillar soared upward without dissipating any of its strength. The Italian Renaissance was equally sensitive when it later felt the need to insert a piece of entablature between the arch and a column so that the arch was not carried directly on the capital. The force of the column is broken like a stream of water that meets a barrier. It shows the profound architectural insight of [Filippo] Brunelleschi that he recognized this necessity. It also demonstrates that our thesis is well founded and correct in its essential points.

For this reason I hope that no one will demand further analyses here, and I would like to conclude this section* with a historical observation.

Mature cultures always demand a great excess of force of form

*Architecture has a secondary source of ornamentation in the so-called suspended ornaments, that is, rings, hangings, bands, and so on. These ornaments cannot actually be called architectonic, for they are a transposition of the way in which the finished human form is adorned. They work in the very same way: namely, through the sense of touch. Circumfered columns, for example, evoke the same feeling as a bare arm wearing a bracelet. After the masterly development of the principle of ornament that Lotze has given in the *Mikrokosmos* (2: 203ff.) [see note p. 153], I need not say anything further here.

over matter. The restful effect of compact masses of masonry becomes unbearable. The demand is for movement and excitement as we have already had occasion to observe. With respect to decoration, the result is an art that in its sensitivity nowhere allows quiet surfaces but demands of each muscle a pulsating life. Thus in the Gothic period, in Arabian architecture, and (under very different architectural conditions) in late Rome we find similar symptoms. People "enliven" every surface with niches, pilasters, and so on, as an outlet for the disquiet they feel in their own bodies, and that precludes them from taking any pleasure in tranquility.

VIII. PRINCIPLES OF HISTORICAL JUDGMENT

We have seen how the general human condition sets the standard for architecture. This principle may be extended still further: any architectural style reflects the attitude and movement of people in the period concerned. How people like to move and carry themselves is expressed above all in their costume, and it is not difficult to show that architecture corresponds to the costume of its period. I would like to emphasize this principle of historical characterization all the more energetically because I am unable here to pursue the idea in any detail.

The Gothic style will serve as an example.

Lübke²¹ saw it as the expression of spiritualism. Semper called it lapidary scholasticism. According to what principles has it been judged? The *tertium comparationis* is not exactly clear, even though there may be a grain of truth in both descriptions. We will find firm ground only by referring these psychological observations to the human figure.

The mental fact in question is the tendency to be precise, sharp, and conscious of the will. Scholasticism clearly reveals this aversion to anything that is imprecise; its concepts are formulated with the greatest precision.

Physically, this aspiration presents itself in precise movements, pointed forms, no relaxation, nothing bloated, and a will that is everywhere most decisively expressed.

Scholasticism and spiritualism can be considered the expression of the Gothic period only if one keeps in mind this intermediate stage, during which a psychological feeling is directly transformed into bodily form. The sophisticated subtlety of the scholastic centuries and the spiri-

tualism that tolerated no matter divested of will can have shaped architectural form only through their bodily expression.

Here we find the Gothic forms presented in principle: the bridge of the nose becomes narrower; the forehead assumes hard vertical folds; the whole body stiffens and pulls itself together; all restful expansiveness disappears. It is well known that many people (especially university lecturers) like the feeling of rolling a sharply angled pencil between their fingers in order to sharpen their thoughts. A round pencil would not serve the same purpose. What does roundness want? Nobody knows. And the same is true with the Romanesque rounded arch; no definite will can be recognized. It ascends, but this upward impulse finds a silent expression only in the pointed arch.

The human foot points forward but does that show in the blunt gaiting in which it terminates? No. The Gothic age was troubled by this lack of the precise expression of a will, and so it devised a shoe with a long pointed toe (the *crakow* appears in the twelfth century; see [Hermann] Weiss, *Kostümkunde*, 4: 8).²²

The width of the sole is a result of the body's weight. But the body has no rights; it is material, and no concessions are to be made to senseless matter. The will must penetrate every part.

This is why Gothic architecture dissolved the will into vertical members, and the sole of the human foot becomes a shoe with three high heels, thereby eliminating the feeling of a broadly planted sole.²³

I shall not pursue how the principle of the gable can be seen in the pointed hats, how stiff, delicate, determined, and precise all of these movements are, or finally (as I have already noted) how the body itself appears to have been stretched out and made excessively slim.* I am satisfied if I have made my point.

It is astonishing to travel through history and observe how architecture everywhere imitates the ideal of man in the form and movement of the body and how great painters even created a suitable architecture for their figures. Do the architectural forms of Rubens not pulsate with the same life that animates his bodies?

I will conclude. It has not been my intention to give a complete

[51.] That the Gothic arguably is called the "style of aspiration" is proved by the dilata of mystics for architecture. Passage in Weismann (Hofheim)—Weismann, *Mel* [1900] p. 401.

*One should certainly not forget that paintings, and even more so sculptures, may not be safe historical sources for this observation.

psychology of architecture, but I hope to have made one idea manifest: an organic understanding of the history of forms will be possible only when we know with what threads our form imagination is bound to human nature.

The historian who has to evaluate a style has no organon for his definition of character but is directed only by an instinctive presentiment.

The ideal of "working exactly" is also present in the historical disciplines. Art history adopts such an ideal above all to avoid any corrupting contact with aesthetics; and often the historian simply strives to describe what happened and when, without comment. Little as I am inclined to underestimate the positive side of this tendency, I firmly believe that this cannot be the highest calling of scholarship. A history that seeks only to ascertain the chronology of what has taken place cannot be sustained; it would be particularly mistaken if it supposed itself thereby to have become "exact." One can work exactly only when it is possible to capture the stream of phenomena in fixed forms. Mechanics, for instance, supplies physics with such fixed forms. The humanities still lack any such foundation; it is only in psychology that it can even be sought. Psychology would also enable art history to trace individual events to general principles or laws. Psychology is certainly far from a state of perfection in which it could present itself as an organon for historical characteristics, but I do not believe this goal is unattainable.

Some may object to the idea of a psychology of art—one that infers from the impressions we receive the popular sentiments that generated these forms and proportions—by arguing that conclusions of this kind are without foundation, for proportions and lines do not always mean the same thing but change with the human sense of form (*Formgefühl*).

This objection cannot be refuted so long as we have no psychological basis; yet as soon as the organization of the human body is shown to be the constant denominator within all change, we are safe from this charge, for the continuity of this organization also insures the continuity of the sense of form.

It is too well known to require comment that styles are not created at will by individuals but grow out of popular sentiments and that individuals can create successfully only by immersing themselves in the universal and by representing perfectly the character of the nation and the time. But even if the sense of form remains qualitatively unchanged, one should not underestimate the fluctuations in its intensity. There have been

few periods in which every form has been purely understood, that is, experienced. These are the only periods that have created styles of their own.

But since the large forms of architecture cannot respond to every minute change in popular sentiment, a gradual alienation sets in, and the style becomes a lifeless schema maintained only by tradition. The individual forms continue to be used but without understanding; they are falsely applied and thus completely deprived of life.

The pulse of the age then has to be felt elsewhere: in the minor or decorative arts, in the lines of ornament, of lettering, and so on.*

Here the sense of form awakes itself in the purest way, and here also the birthplace of a new style has to be sought.

This fact is of great importance for countering the materialist nonsense that finds it necessary to account for the history of architectural form through the mere compulsion of material, climate, and purpose. I am far from underestimating the significance of these factors, but I must insist that they can never divert a people's true vision of form into other paths. What a nation has to say, it always says; and if we observe its language of form where it speaks most freely and later rediscover the same forms, the same lines, and the same proportions in the high art of architecture, then we may rightly expect to hear no more of that mechanistic view.

And with that, the most dangerous adversary of a psychology of art will have quit the field.

[53.] Döbner, *Die Kunst* (in the *Göttinger Monatshefte*), p. 118: "Just as physics & chemistry are the resources for the study of organic life, so anthropology, law, and political science are aids to the study of history."

*Since we started to print from cast-metal types, this easy flexibility has admittedly disappeared. Today we have become accustomed (in standard [German] type) to put Baroque uppercase letters in front of Gothic lowercase letters. See [Reinhold] Bechstein, *Die Deutsche Druckkunst [und die Verhältnisse zum Kunstwerk] aber und neuer Zeit* (Heidelberg: C. Winter, 1884).

Source Note: Heinrich Wölfflin, *Prolegomena zu einer Psychologie der Architektur*, Inaugural-Dissertation der hohen philosophischen Fakultät der Universität München zur Erlangung der höchsten akademischen Würden (Munich: Kgl. Hof- & Universitäts-Buchdruckerei, 1886).

Translator's Notes

1. Wölfflin's annotations were handwritten on blank sheets of paper bound into his own printed copy of his dissertation. The first of these notes appeared after the title page and before the first page of text. We have presented them, in translation, in the margin of the present text, much as they appear in Wölfflin's own copy. The original German version of the annotations and bibliographic references are given as an Appendix on pages 188–90.

The transcription of these annotations has presented numerous difficulties. The handwriting is small, irregular, in the old Gothic script, and—moreover—it contains a few shorthand signs and abbreviations that were either consistent with the time or personal to Wölfflin. Although we have taken the greatest care in transcribing and translating these notes, we strongly encourage interested scholars to consult the original text in the Special Collections of the Getty Center for the History of Art and the Humanities, Santa Monica.

2. Wilhelm Wundt, *Vorlesungen über die Menschheit- und Tierpsychologie* (Leipzig: L. Voss, 1863), 2: 60: "Wo das Auge frei sich bewegen kann, da verfolgt es, seinem physiologischen Mechanismus gemäß, in vertikaler und horizontaler Richtung genau die gerade Linie, jede schräge Richtung aber legt es in einer Bogenlinie zurück."

3. Hermann Lotze, *Geschichte der Ästhetik in Deutschland* (Munich: Cotta, 1868).

4. Johannes Volkelt, *Der Spindel-Begriff in der neuesten Ästhetik* (Jena: Hermann Dufft, 1876).

5. *Ibid.*: "Wir durchdringen mit unserem Körpergefühl das Objekt."

6. Volkelt (see note 4): "Mit meinem Vitalgefühl lege ich mich dunkel in das Objekt hinein."

7. Robert Vischer, "On the Optical Sense of Form," (translated in this volume; see pp. 89–123): "Wir bestreben das unauflösbare Vermögen unsere eigene Körperform einer objektiven Form zu unterwerfen auf ein unerbittliches."

8. Lotze (see note 3), 584: "Keine Gestalt ist so schön, in die Sinne unsere Phantasie sich nicht mit lebend zu versetzen vermag."

9. Wilhelm Wundt, *Grundsätze der physiologischen Psychologie* (Leipzig: W. Engelmann, 1874), 1: 486f.

10. Friedrich Theodor Vischer, *Kritik meiner Aesthetik, in idem, Kritische Gänge*, vol. 5 (Stuttgart: Cotta, 1866).

11. Wundt (see note 9): "In den Armen und Händen wiederholen sich in fortwährender Form die Beine und Füße. Die Brust wiederholt in gleicher Art die Form des Bauches. Während aber alle anderen Teile nur einmal in der vertikalen Gliederung der Gestalt wiederholt sind, ist auf den Rumpf noch das Haupt gefügt, welches als der entwickelteste und allein in keinem andern homologen Organ vergeblicher Teil das Ganze abschließt."

12. August Thiersch, "Die Proportionen in der Architektur," in Josef Durrm et al., eds., *Handbuch der Architektur*, part 4, Halbband 1, 2nd ed. (Darmstadt: Arnold Bergsträsser, 1888–1923).

13. Hermann Grimm (1826–1901) was a historian of art and literature. He wrote biographies of Michelangelo, Raphael, and Goethe. "Das Entscheidende in der Architektur sind die Maße, die Verhältnisse von Höhe und Breite."

14. "Subordination der Teile deutet auf ein vollkommenes Geschloß, je ähnlicher die Teile einander sind, desto weniger sind sie einander subordiniert."

15. Albrecht Dürer (1471–1528), German painter and engraver. His copper engraving *Melancholia I* dates from 1514.

16. The Strozzi were a noble family in Renaissance Florence. Construction of their palace was started in 1489 by Filippo the Elder and completed in 1553.

17. The German for the Lessing quotation is "Laß dich von mir laß dich forschen"; the passage from Aristotle may be translated as "Those who know will pass their time more pleasantly than those who inquire."

18. Carl Bottricher, *Die Technik der Holzschn.*, 2 vols. (Putzdam: Ferdinand Riegel, 1844–1852).

19. Heinrich Wagner, "Die Anlage des Gebäudes," in Josef Durrm et al. (see note 12), part 4, Halbband 1: "...in unger Höhe mit Flächen und seine Gliederungen beladen sollen."

20. Johann Wolfgang Goethe, "Zur Theorie der bildenden Künste: Baukunst," in *Goethes Werke* (Weimar: Hermann Böhlaus, 1896), 47: 60–64: "Es liegt in der menschlichen Natur immer weiter, je über ihr Ziel fortzuschreiten, und so war es auch natürlich, daß in dem Fortschritt der Strebensuche zur Höhe das Auge immer das Schöneren suchte, und der Geist mehr Höhe und Freiheit dadurch zu empfinden suchte" (p. 62, Wölfflin's emphasis).

21. Wilhelm Lübke (1826–1893) was professor of art history in Zurich, Stuttgart, and Karlsruhe. He was the author of *Grundriß der Kunstgeschichte* (Outline of art history), 1890, among many other period studies.

22. Hermann Weiss, *Kunstgeschichte: Handbuch der Geschichte der Tracht, des Baues und des Gerätes der Häuser der Abstraktion* (Stuttgart: Ebner & Seubert, 1862), 2: part 2, chap. 3, 557ff.

23. Wölfflin's meaning here is obscure.

[46.] Sie konnte aber doch von d. Ephe[n] Anom[al]ie spr[echen] ([illegible]) auch von d. [un]ter[en] K[opf] (Kopfs[ache]) an d[er] [un]ter[en] [un]ter[en]

[47.] und noch d. Ag. [illegible] (Friedrich, Bausteine 2, 30) [Carl Friedrich, Bausteine aus d[er] Anatomie. Die Eigenschaften des Nerven-Muskel in historischer Folge erklärt. Bausteine zur Geschichte der Griechisch-Römischen Kunst (Düsseldorfer: Julius Baedeker, 1898). Carl Friedrich, Die Eigenschaften des Nerven-Muskel in historischer Folge erklärt. Bausteine zur Geschichte der Griechisch-Römischen Plastik. Königl. Museum zu Berlin, neu bearbeitet von Paul Witters (Berlin: W. Spemann, 1897).]

[48.] Ötopus kein der [un]ter[en] Capitell mit Besetzung gebildet
[un]ter[en] bei Bausteine 14; Polychromie bei Bausteine 14
Nur von d[er] Bausteine 14
Epl. auch Puchstein, Jan [un]ter[en] Capitell #1
[August Bausteine, Die Bausteine der klassischen Altertum (Münch: R. Oldenbourg, 1888), 3: 135-40
("Polychromie" entry by R. Bausteine); Otto Puchstein, Das antike Capitell.]

[49.] d. Platte? Deutung

[50.] Weiter geht nicht dann

[51.] d. J. [un]ter[en] B. [un]ter[en] B., Ren [un]ter[en] 23. Die Oberen, Caudal, Saunen im n., welche Ecken
d. Mitte der Fassade bilden d. [un]ter[en] d. [un]ter[en] Kopf d. [un]ter[en] in d[er] Luft anhängen. [Jacob
Burchard, Geschichte der Renaissance in Italien, 123.]

[52.] Das die Gestalt wie Unsch. "Viel d[er] Myrte" gemeint ist, bezieht die Abtragung der Myrte gegen
die Antike (siehe bei Höder [un]ter[en] Höder) - [Wahlelin, Abt. 7: 40]. [Alfred Wolzmann, Höder und
eine Zeit, 2 vols. (Leipzig: E. A. Seemann, 1898-1898); Alfred Wolzmann, Geschichte der Antike (Leipzig:
E. A. Seemann, 1879), 40.]

[53.] [Wahlelin, Einführung in die Geschichte der [un]ter[en] p. 118. Wie Physik d. Cerebrale Abstraktion die Struktur
des organischen Lebens und so die [un]ter[en] [un]ter[en] [un]ter[en] die [un]ter[en] der
Struktur des Verlaufs der Geschichte. [Wahlelin, Einführung in die Geschichte der [un]ter[en] [un]ter[en]
Grundlegung für das Studium der Geschichte und der Geschichte (Leipzig: Duncker & Humblot, 1900).]