

adequate for the present time, this is only his personal belief, and he should therefore allow others the same right that he has arrogated to himself. There may be only one path to an ideal, but who wants to subscribe to one particular ideal and not acknowledge another equally sublime? [...]

Although many of the points raised here are not contested by H. H. in his essay, and although he no doubt largely shares our point of view, nevertheless this seems to be the right place to make some suggestions that might serve to prevent the revival of past artistic systems (which is spreading more and more) and clear the way for true art. All systems are based on the records and facts of past ages. For that reason, a living art has no system as such. We should thus strive to attain a living art that faithfully reflects and is nourished by the character of our own time. Admittedly, architecture is also better fitted than any other art to express the character of the present time, which might be described as lacking in independence. To attain this independence and to transform and shape the age is now the supreme duty of an artist, nay of a man. Success depends on circumstances, and it would be futile to imagine that a few individuals could bring about a salutary reform. Not until the artist encounters true artistic sense, pure taste among the people, and a warm and encouraging response to what he has to offer can a single person – however right and however sincere he might be – achieve anything of importance. Nevertheless, while the time of fulfillment has not arrived, he ought to give his loyal support to preparatory work. He must, however, look upon history as history and not as a source for precepts! The idea thus embodied may find some fortuitous historical counterpart; but it still belongs to its own time, whose freeborn child it is. It makes no difference whether columns, arches, or architraves carry the load. Every means of spanning space can, in its proper place, be the best and the most beautiful. When art is no longer directed solely by arbitrary human laws, when its principles and its essence are in harmony with the artist's spirit and with that of his age, then art will have found not only a solid basis but also a freedom that ensures its fullest blossoming.

164 KARL FRIEDRICH SCHINKEL

from Notes for a textbook on architecture (c.1830)

After peace was reestablished in Europe following the exile of Napoleon, Schinkel returned to architectural practice with a high position in Prussian state service and began his illustrious career. His principal theoretical concern remained always style, or more specifically, how to create a new style in keeping with the ambitious ideals of an expanding Prussian statehood. The Romanticism of his early period, which initially inclined toward the Gothic style, gave way in the late 1810s to a stripped-down classicism, as seen in his Berlin Guardhouse

Karl Friedrich Schinkel, from *Notes for a textbook on architecture (c.1830)*, trans. Harry Francis Mallgrave from *Das architektonische Lehrbuch*, ed. Goerd Peschken. Berlin: Deutscher Kunstverlag, 1979, pp. 114–15.

(1816–18) and Berlin Playhouse (1818–21). The 1820s also saw further experimentation with elements of the Italian vernacular and most importantly with his efforts to design buildings with no stylistic reminiscences whatsoever. At the same time Schinkel was much concerned with composing a textbook for architectural students, and throughout the 1820s it took the form of a comparative morphology of structural solutions and building forms. The following passage, probably penned around 1830, gives voice to this concern with construction during this phase of his development, but also in his desire to expand his conception of architecture beyond it.

Every work of art, of whatever kind, must always bring a new and living element into the world of art. Without this genuine element, the artist cannot have true and necessary tension, nor does the work of art offer the public an advantage, to the world in general a gift. This is the moral value of a work of art from which the individual soul of the artist speaks, and to be sure in such a distinctly characteristic manner that no other kind of expression can display it. [...]

In architecture the artist needs above all a general education. It is not that he should carry around in his head an excess of idle knowledge and on its basis take every occasion to instruct with a professorial language, or excel with a positive knowledge of the existing, or discuss what exists in terms of philosophical concepts, abstractions, and syntheses. But rather, his spirit must be so imbued with the essence of the classical period that his activity, which can only be directed to the new conditions within the new circumstances, may freely proceed in the spirit of those classical times and, with an unimpeded cadence, bring forth the correct, the beautiful, and the characteristic from among the new and transformed conditions.

In order to catch a foothold in the broad field of architecture of our time – where the confusion or the total lack of principles had increased with regard to style, as useful criticism becomes very difficult because of the endless number of buildings that have arisen in the various epochs of the world – I will speak the following basic principle:

Architecture is construction.

In architecture everything must be true, and any masking or concealing of the construction is an error. The real task here is to make every part of the construction beautiful within its character.

In the word "beautiful" resides the whole story, the whole nature, and the whole feeling for conditions. In itself it expresses, in short, everything of trivial purposiveness [Zweckmäsigkeit], which at the same time it may never lack, even when it can be invested with greater or lesser insight.

The second basic principle for architecture with style leads me to the following consideration:

Every perfect construction in a specific material has its own very distinct character, and cannot be rationally carried out in the same way in another material. This individual separation of one material from the other forbids any complete mixing of different materials during construction, wherever one material, the internally complete and perfect, shames the other. Even the simplicity of the viewer's conception would get lost.

In architecture with style, therefore, every construction produced in a specific material must be complete in itself and whole. It may exist beside or above something else, but may not mix with it; it remains self-sufficient in itself and displays its full character.

165 KARL FRIEDRICH SCHINKEL

from Notes for a textbook on architecture (c.1835)

One of the more interesting phases of Schinkel's architectural experimentation of the 1820s and early 1830s were several designs for buildings and residences with no allusions to a historical style. Projects such as his design for a market for Unter den Linden (1827) are entirely utilitarian in character. Certainly the most significant of his experiments in this regard was his design for the new building of the Berlin Bauakademie (1831–6), which in its supreme constructional logic defies any stylistic designation. But Schinkel was at the same time always rethinking his position, and sometime toward the middle of the 1830s he had come to reject what he termed his "error of pure radical abstraction." This passage is really one of the most remarkable in all architectural literature because of its insights and candidness. It vividly underscores the difficulty of inventing a new style and how essential Schinkel felt art was to the creative process.

After I began my architectural studies and had made some progress in the different branches, I soon felt a stirring within my soul, which became all the more important the more I sought to clarify it.

I noticed that all architectural forms were based on three basic ideas: (1) on forms of construction; (2) on forms possessing traditional or historical importance; (3) on forms meaningful in themselves and taking their model from nature. I noticed further that an enormous treasury of forms had already been invented or deposited in the world over many centuries of development and through the executed works of very different peoples. But I saw at the same time that our use of this accumulated treasury of often very heterogeneous objects was arbitrary, because each individual form carries its own particular charm through a dark presentiment of a necessary motif – be it historical or constructive – that intensifies and continues to seduce us as we employ it. We believe that by invoking such a motif we invest our work with a special charm, even though the most pleasing effect produced by its primitive appearance in old works is often completely contradicted by its use in our present works. It became especially clear to me that this willfulness of use is the reason for the lack of character and style that seems to plague so many of our new buildings.

It became my life's goal to clarify this matter. But the more I considered the problem, the more I saw the difficulties opposing my efforts. Very soon I fell into the error of pure radical abstraction, by which I conceived a specific architectural work entirely from utilitarian purpose and construction. In these cases there emerged something dry and rigid, something that lacked freedom and altogether excluded two essential elements: the historic and the poetic.

I investigated further but soon found myself trapped in a great labyrinth where I had to ponder how far the rational principle should be applied in defining the trivial concept of the object, and how far, on the other hand, those higher influences of the historical and artistic-poetic purposes should be allowed in order to raise it to a work of art. In this regard it was

Karl Friedrich Schinkel, from Notes for a textbook on architecture (c.1835), trans. Harry Francis Mallgrave from *Das architektonische Lehrbuch*, ed. Goerd Peschken. Berlin: Deutscher Kunstverlag, 1979, pp. 149–50.

not difficult to recognize that the governing relation of such different principles had to be different in each concrete case, and it was equally clear to me that in this regard we can speak of architecture only where the true artistic element assumes its place in this art, and that in all other cases it is and remains an objective handiwork. Therefore here, as everywhere else in the fine arts, an effective theory is difficult and reduces itself in the end to the cultivation of feeling. From what was said above it should also be evident that feeling in architecture certainly embraces a very wide circle, and, if from its productions a favorable result should be expected, it should be cultivated from the most varied and different sources. It seems to me therefore important to set down beside one another the different realms in which the feeling of the architect should be cultivated in order to understand the extent of art.

First of all, we should consider what our age demands in its architectural undertakings. This task entails simultaneously a critique of what is clear or unclear with regard to the spirit of the time; how these undertakings are impeded by false views and judgments, ignorance, lack of imagination, and a distrust of the contemporary technical possibilities in possible new inventions and for the removal of hindrances; how freedom in these undertakings is curtailed, in conventional arrangements again and again driven off until the creative urge is completely extinguished. Second, it is necessary to review the past in order to see what has already been discovered for similar purposes, and which of those things already perfected might be of use and welcome to us. Third, what modifications need to be made to those things found useful. Fourth, how and in what way we must employ the imagination in these modifications to produce something totally new; and how we must treat these new inventions in order to bring them into a harmonious accord with the old, and raise not only the expression of style in works but also allow the feeling for something totally new to emerge with the style feelings of the viewer. Here will arise a happy creation of our age in which there is both the recognition of stylistic suitability and the primitive effect. In some cases we can even create the sense of the naive and endow the work with a double charm.

166 RUDOLF WIEGMANN

from "Thoughts on the Development of a National Architectural Style for the Present" (1841)

The question of a style for the present, which both Schinkel and Hübsch had posed in the 1820s, mushroomed into a full-scale debate in the 1840s. The profession, in fact, in itself was in the midst of sweeping changes across the German-speaking lands. Professional education for architects had become a reality in Germany and Austria, and schools were now operating with a high degree of competence and efficiency. In 1837 in Vienna, Ludwig Förster founded the first German-speaking professional journal for architecture, the *Allgemeine Bauzeitung*,

Rudolf Wiegmann, from "Gedanken über Entwicklung eines zeitgemäßen nationalen Baustils" [Thoughts on the development of a national architectural style for the present], trans. Harry Francis Mallgrave from *Allgemeine Bauzeitung*, Vol. 6 (1841), pp. 208, 213.

This characterizing element will be the creation of form or *ornament* in architecture. Its purpose does not reside in the structural functioning of a building, but rather in articulating symbolically the function of the core-form, in precisely displaying all its relations, and thus in endowing the work with that independent life and that ethical sanction through which it can alone be raised into a work of art.

221 GOTTFRIED SEMPER

from *The Four Elements of Architecture* (1851)

The earlier selections from the Semper essay on polychromy (see chapters 134 and 138 above) represented the architect at the very beginning of his career. By 1851 Semper's situation had transformed itself in every way. In 1834, in part due to his essay on polychromy, he was appointed a professor of architecture at the Dresden Academy of Fine Art. Shortly thereafter he launched a very successful architectural career, beginning with his much-applauded design for the Dresden Royal Theater (1835–41). His happy situation, however, changed dramatically with the political events of 1848–9, as the various Germanic states struggled with the issue of unification and a constitutional form of government. In May 1849 Semper, who supported national unity, was caught up in the so-called Dresden Uprising, which resulted in his political exile from Germany.

Of necessity he turned to theory. In 1851 he published the first synopsis of his ideas, which he entitled *The Four Elements of Architecture*. Much of the text deals with his earlier ideas on polychromy and constitutes his response to the earlier criticisms of the art historian Franz Kugler. But in the fifth chapter of the book Semper lays out two parts of his later theory, which views the history of architecture as a process of symbolic and formal development. The first is the notion that architecture derives its essential forms from four primordial or original motives found in the technical arts of ceramics, roofing (carpentry), mounding (terracing and masonry), and weaving (walling). The second notion is his so-called *Bekleidung* or "dressing" thesis. This archaeological and spatial theme suggests that the textile motive for the wall underwent an intricate process of formal development, as the conceptual rudiments of weaving evolved into textile wall hangings and later into solid wall dressings (paneling and paint) that emulated in style their original textile origin. This line of reasoning would become the start of a very elaborate theory that Semper would ultimately devise and publish in his two volumes entitled *Style*.

The first sign of human settlement and rest after the hunt, the battle, and wandering in the desert is today, as when the first men lost paradise, the setting up of the fireplace and the lighting of the reviving, warming, and food-preparing flame. Around the hearth the first groups assembled; around it the first alliances formed; around it the first rude religious concepts were put into the customs of a cult. Throughout all phases of society the hearth formed that sacred focus around which the whole took order and shape.

Gottfried Semper, from *Die Vier Elemente der Baukunst* (1851), trans. Wolfgang Herrmann and Harry Francis Mallgrave, in *Gottfried Semper: The Four Elements of Architecture and Other Writings*. Cambridge: Cambridge University Press, 1989, pp. 102–6. © 1989 by Cambridge University Press. Reprinted with permission of Cambridge University Press.

It is the first and most important, the *moral element* of architecture. Around it were grouped the three other elements: the *roof*, the *enclosure*, and the *mound*.¹ the protecting negations or defenders of the hearth's flame against the three hostile elements of nature.

According to how different human societies developed under the varied influences of climate, natural surroundings, social relations, and different racial dispositions, the combinations in which the four elements of architecture were arranged also had to change, with some elements becoming more developed while others receded into the background. At the same time the different technical skills of man became organized according to these elements: *ceramics* and afterwards metal works around the *hearth*, *water* and *masonry works* around the *mound*, *carpentry* around the *roof* and its accessories.

But what primitive technique evolved from the *enclosure*? None other than the art of the *wall fitter* (*Wandbereiter*), that is, the weaver of mats and carpets. This statement may appear strange and requires an explanation.

It was mentioned previously that there are writers who devote much time to searching for the origin of art and who believe they can deduce from it all the different ways of building. The nomadic tent plays a rather important role in their arguments. Yet while with great acumen they detect in the catenary curve of the tent the norm of the Tartar-Chinese way of building (although the same shapes occur in the caps and shoes of these people), they overlook the more general and less dubious influence that the carpet in its capacity as a *wall*, as a vertical means of protection, had on the evolution of certain architectural forms. Thus I seem to stand without the support of a single authority when I assert that the carpet wall plays a most important role in the general history of art.

It is well known that even now tribes in an early stage of their development apply their budding artistic instinct to the braiding and weaving of mats and covers (even when they still go around completely naked). The wildest tribes are familiar with the hedge-fence – the crudest wickerwork and the most primitive pen or spatial enclosure made from tree branches. Only the potter's art can with some justification perhaps claim to be as ancient as the craft of carpet weaving.

The weaving of branches led easily to weaving bast into mats and covers and then to weaving with plant fiber and so forth. The oldest ornaments either derived from entwining or knotting materials or were easily produced on the potter's wheel with the finger on the soft clay. The use of wickerwork for setting apart one's property, the use of mats and carpets for floor coverings and protection against heat and cold and for subdividing the spaces within a dwelling in most cases preceded by far the masonry wall, and particularly in areas favored by climate. The masonry wall was an intrusion into the domain of the wall fitter by the mason's art, which had evolved from building terraces according to very different conditions of style.

Wickerwork, the original space divider, retained the full importance of its earlier meaning, actually or ideally, when later the light mat walls were transformed into clay tile, brick, or stone walls. Wickerwork was the *essence of the wall*.²

Hanging carpets remained the true walls, the visible boundaries of space. The often solid walls behind them were necessary for reasons that had nothing to do with the creation of space; they were needed for security, for supporting a load, for their permanence, and so on. Wherever the need for these secondary functions did not arise, the carpets remained the original means of separating space. Even where building solid walls became necessary, the

latter were only the inner, invisible structure hidden behind the true and legitimate representatives of the wall, the colorful woven carpets.

The wall retained this meaning when materials other than the original were used, either for reason of greater durability, better preservation of the inner wall, economy, the display of greater magnificence, or for any other reason. The inventive mind of man produced many such substitutes, and all branches of the technical arts were successively enlisted.

The most widely used and perhaps the oldest substitute was offered by the mason's art, the stucco covering or bitumen plaster in other countries. The woodworkers made panels (*πίνακες*) with which to fit the walls, especially the lower parts. Workers handling fire supplied glazed terra cotta³ and metal plates. As the last substitute perhaps can be counted the panels of standstone, granite, alabaster, and marble that we find in widespread use in Assyria, Persia, Egypt, and even in Greece.

For a long time the character of the copy followed that of the prototype. The artists who created the painted and sculptured decorations on wood, stucco, fired clay, metal, or stone traditionally though not consciously imitated the colorful embroideries and trellis works of the age-old carpet walls.

The whole system of Oriental polychromy – closely connected and to a certain extent one with the ancient arts of paneling and dressing – and therefore also the art of painting and bas-relief arose from the looms and vats of the industrious Assyrians,⁴ or from the inventions of prehistoric people who preceded them. In any case, the Assyrians should be considered the most faithful guardians of this primordial motive.

In the oldest annals of mankind Assyrian carpets were famed for their splendid colors and the skill with which fantastic pictures were woven into them. Written descriptions of mystical animals, dragons, lions, tigers, and so forth agree fully with the images we see today on the walls of Nineveh. If such a comparison were still possible, we would recognize a perfect accord not only in the objects depicted but also in the manner of treatment.

Assyrian sculpture clearly kept within limits imposed by its origin, even though the new material permitted a new means of raising the figures from the background. A struggle toward naturalism is evident, whose limits were set not by hierarchical power, but (apart from the despotic rules of a ceremonial court) by the accidental features of a technique foreign to sculpture yet still responsive to the echoes from the past. The postures of the figures are stiff but not so rigid as to have become mere characters; they only look as though they were chained. Within a composition they are already, or rather, are still pictorial adaptations of a celebrated historical act or a court ceremony, not like the Egyptian images, which are simply a means to record a fact and are really a painted chronicle. Even in their arrangement, for instance, in their adherence to equal head heights, the Assyrian figures are more distinguished than Egyptian images. Sharp, threadlike contours, the hard shapes of the muscles, a predilection for ornamental accessories and embroidery are indicative of their origin; there is exaggeration, but not a lifeless style. The faces do not show the slightest trace of an artistic effort to render the inner state of the soul; they are, even with their constant smiles, without any individual expression. In this respect they are less advanced than Egyptian sculpture and resemble more the early works of the Greeks.

In actual wall murals the same technique is evident. According to Layard, the wall paintings at Nimrud are surrounded and interwoven with strong black contours; the ground is blue or yellow. The friezelike borders of the pictures that contain inscriptions also indicate

their technical affinity with carpets. The character of the cuneiform corresponds fully with this technique. Would it be possible to invent for needlework a more convenient way of writing?

Alongside these substitutes for the earlier carpets, the latter were still widely used as door curtains, window curtains, and so forth, as can be seen by the richly decorated rings with which they were secured. The simple inlaying of the wooden floors is a sign that they, too, were covered with carpets. Carpets were also the models for the art of mosaic, which remained for the longest time true to its origin.

The interior walls above the gypsum panels were lined with a lightly burned, glazed, or, as one might say, lacquered brick. They were glazed only on one side and covered with painted ornaments that were totally inconsistent with the shape of the stone, but that crossed over it in every direction. Other evidence shows that the stones were in a horizontal position when they were glazed. They were, therefore, first arranged horizontally, then ornamented and glazed, and finally attached to the sun-dried brick wall in proper order as a dressing (*Bekleidung*). This also proves that the glaze was a general covering and its idea was independent of the material to which it was applied. A late-Roman or Medieval use of colored stones for patterning a wall had not been conceived in these earliest periods of art.

NOTES

- 1 At first glance the mound or the terrace appears as secondary and as necessary only in the lowlands, where solid dwellings had already been erected; yet the mound joined at once with the hearth and was soon needed to raise it off the ground. Allied with the building of a pit, it may have also served as support for the earliest roofs. Moreover, it is probable that man, not as an individual but certainly as a social being, arose from the plains as the last mud-creation, so to speak. The legends from times immemorial of all nations, which often conceal an idea of natural philosophy, agree on this point.
- 2 The German word *Wand* [wall], *paries*, acknowledges its origin. The terms *Wand* and *Gewand* [dress] derive from a single root. They indicate the woven material that formed the wall.
- 3 It is highly probable that the wish to give tiles a colored glazing first led to the discovery of burnt bricks. The glazed tiles from Nineveh that I had the opportunity to examine closely in Paris are in an almost unburnt state. Their glaze must have been extraordinarily fusible. Terra cotta dressings are the forerunners to brick walls, and stone plaques the forerunners to ashlar.
- 4 It is remarkable that most of the colors on the Assyrian alabaster panels of Khorsabad and Nimrud have disappeared, while it is evident that they must have existed to complete the remnants still surviving. In contrast to Egyptian and Greek paintings, the surviving traces are not thickly applied but appear as if stained into the surface; it is probable that the colors were composed mainly of vegetable matter.

222 GOTTFRIED SEMPER

from *Science, Industry, and Art* (1852)

In December 1850, while living in exile in London, Semper was introduced to Henry Cole. The meeting was significant because Cole, as we have seen, was in the process of planning the Great London Exhibition of 1851. Cole became aware of Semper's status as a political refugee and his desperate financial plight, and he put the architect's name on a list of designers who might assist the foreign nations in displaying their wares at the exhibition. In the spring of 1851 Semper thus prepared the displays of Turkey, Canada, Sweden, and Denmark, and in the process had ample opportunity to examine the enormous range of goods shown at the exhibition. The result was this critique of the event, which he wrote in the fall of 1851, around the time of the exhibition's closing. While many critics of the exhibition were quick to point out the artistic failings of the event, Semper's essay differs from most others in that he attributes these failings not so much to poor taste or to the problem of historicism, but rather to the changed technical conditions – new materials and techniques – of the industrial age. These conditions, in his view, had fundamentally altered the ground of art and were in fact in the process of destroying art in the traditional sense. This process of disintegration was not necessarily a good or bad thing; it was simply an inevitability that would eventually create a new, nonhistorical art. Semper here also presents a new definition of style – not a historical language of forms but a qualitative standard of design.

How long did the inventor of oil painting toil with an old process that no longer satisfied certain purposes before he discovered his new process? Bernard Palissy searched half his life for an opaque enamel for his faience before he finally found what he sought. These men knew how to use the invention because they needed it, and because they needed it they searched and found it. In this way, gradual progress in science went hand in hand with the mastery and the awareness of how and to what end the invention could be applied.

Necessity was the mother of science. Developing empirically and with youthful spontaneity, science soon drew confident deductions on the unknown from the narrow field of acquired knowledge, doubting nothing and creating its world from hypotheses. Later it felt confined by its dependence on application and became an object in itself. It entered the field of doubt and analysis. A craze for classification and nomenclature superceded the ingenious or fanciful systems.

In the end genius reconquered the vast amount of material collected by research and purely objective investigation was forced to submit to hypothetical inference and to become the latter's servant in the procurement of further factual evidence derived from analogies.

Philosophy, history, politics, and a few higher branches of the natural sciences were raised to this comparative viewpoint by the great men of the past two centuries, while in the other sciences, because of the abundance and complexity of their material, inferences

Gottfried Semper, from *Wissenschaft, Industrie und Kunst: Vorschläge zur Anregung nationalen Kunstgefühles* [Science, industry, and art: proposals for the development of national taste in art] (1852), pp. 133–6, 142–4. © 1989 by Cambridge University Press. Reprinted with permission of Cambridge University Press.

only timidly begin to join with research. Searching every day more judiciously, research makes astonishing discoveries. Chemistry, in joining with physics and calculus, dares to defend the boldest hypotheses of the Greeks and the long-pitied broodings of the alchemists. Science at the same time inclines decidedly toward the practical and at present stands exalted as its guardian. Every day it enriches our life with newly discovered materials and miraculous natural forces, with new methods of technology, with new tools and machines.

It is already evident that inventions are no longer, as before, a means for averting privation and for enjoyment. On the contrary, privation and enjoyment create the market for the inventions. The order of things has been reversed.

What is the inevitable result of this? The present has no time to become familiar with the half-imposed benefits and to master them. The situation resembles that of the Chinese, who should eat with a knife and fork. Speculation interposes itself there and lays out the benefits attractively before us; where there is none, speculation creates a thousand small and large advantages. Old, outdated comforts are called back into use when speculation cannot think of anything new. It effortlessly accomplishes the most difficult and troublesome things with means borrowed from science. The hardest porphyry and granite are cut like chalk and polished like wax. Ivory is softened and pressed into forms. Rubber and gutta-percha are vulcanized and utilized in a thousand imitations of wood, metal, and stone carvings, exceeding by far the natural limitations of the material they purport to represent. Metal is no longer cast or wrought, but treated with the newest unknown forces of nature in a galvano-plastic way. The talbotype succeeds the daguerreotype and makes the latter already a thing forgotten. Machines sew, knit, embroider, paint, carve, and encroach deeply into the field of human art, putting to shame every human skill.

Are these not great and glorious achievements? By no means do I deplore the general conditions of which these are only the less important symptoms. On the contrary, I am confident that sooner or later everything will develop favorably for the well-being and honor of society. For now I refrain from proceeding to those larger and more difficult questions suggested by them. In the following pages I only wish to point out the confusion they now cause in those fields in which the talents of man take an active part in the recognition and presentation of beauty.

II

If single incidents carried the force of conviction, then the recognized triumphs at the Exhibition of the half-barbaric nations, especially the Indians with their magnificent industries of art, would be sufficient to show us that we with our science have until now accomplished very little in these areas.

The same, shameful truth confronts us when we compare our products with those of our ancestors. Notwithstanding our many technical advances, we remain far behind them in formal beauty, and even in a feeling for the suitable and the appropriate. Our best things are more or less faithful reminiscences. Others show a praiseworthy effort to borrow forms directly from nature, yet how seldom we have been successful in this! Most of our attempts are a confused muddle of forms or childish triflings. At best, objects whose seriousness of

purpose does not permit the superfluous, such as wagons, weapons, musical instruments, and similar things, we sometimes make appear healthier by the refined presentation of their strictly prescribed forms.

Although facts, as we said, are no argument and can even be disputed, it is easy to prove that present conditions are dangerous for the industrial arts, decidedly fatal for the traditional higher arts.

The *abundance of means* is the first great danger with which art has to struggle. This expression is illogical, I admit (there is no abundance of means but only an inability to master them); however, it is justified in that it correctly describes the inverted state of our conditions.

Practice wearies itself in vain in trying to master its material, especially intellectually. It receives it from science ready to process as it chooses, but before its style could have evolved through many centuries of popular usage. The founders of a flourishing art once had their material kneaded beforehand, as it were, by the beelike instinct of the people; they invested the indigenous motive with a higher meaning and treated it artistically, stamping their creations with a rigorous necessity and spiritual freedom. These works became universally understood expressions of a true idea that will survive historically as long as any trace or knowledge of them remains.

What a glorious discovery is the gaslight! How its brilliance enhances our festivities, not to mention its enormous importance to everyday life! Yet in imitating candles or oil lamps in our salons, we hide the apertures of the gas pipes; in illumination, on the other hand, we pierce the pipes with innumerable small openings, so that all sorts of stars, firewheels, pyramids, escutcheons, inscriptions, and so on seem to float before the walls of our houses, as if supported by invisible hands.

This floating stillness of the most lively of all elements is effective to be sure (the sun, moon, and stars provide the most dazzling examples of it), but who can deny that this innovation has detracted from the popular custom of illuminating houses as a sign the occupants participate in the public joy? Formerly, oil lamps were placed on the cornice ledges and window sills, thereby lending a radiant prominence to the familiar masses and individual parts of the houses. Now our eyes are blinded by the blaze of those apparitions of fire and the facades behind are rendered invisible.

Whoever has witnessed the illuminations in London and remembers similar festivities in the old style in Rome will admit that the art of lighting has suffered a rude setback by these improvements.

This example demonstrates the two main dangers, the Scylla and Charybdis, between which we must steer to gain innovations for art.

The invention was excellent but it was sacrificed in the first case to traditional form, and in the second case its basic motive was completely obscured by its false application. Yet every means was available to make it more lustrous and to enrich it at the same time with a new idea (that of a fixed display of fireworks).

A clever helmsman, therefore, must be he who avoids these dangers, and his course is even more difficult because he finds himself in unknown waters without a chart or compass. For among the multitude of artistic and technical writings, there is sorely needed a practical guide to invention that maps out the cliffs and sandbars to be avoided and points out the right course to be taken. Were the theory of taste (aesthetics) a complete science, were its

incompleteness not compounded by vague and often erroneous ideas in need of a clearer formulation especially in its application to architecture and tectonics in general, then it would fill just this void. Yet in its present state it is with justification scarcely considered by gifted professionals. Its tottering precepts and basic principles find approval only with so-called experts of art, who measure the value of a work thereby because they have no inner, subjective standards for art. They believe they have grasped beauty's secret with a dozen precepts, while the infinite variation in the world of form assumes characteristic meaning and individual beauty just by the denial of any scheme.

Among the notions that the theory of taste has taken pains to formulate, one of the most important is the idea of style in art. This term, as everyone knows, is one for which many interpretations have been offered, so many that skeptics have wanted to deny it any clear conceptual basis. Yet every artist and true connoisseur feels its whole meaning, however difficult it may be to express in words. Perhaps we can say:

Style means giving emphasis and artistic significance to the basic idea and to all intrinsic and extrinsic coefficients that modify the embodiment of the theme in a work of art.

According to this definition, absence of style signifies the shortcomings of a work caused by the artist's disregard of the underlying theme, and his ineptitude in exploiting aesthetically the means available for perfecting the work.

Just as nature in her variety is yet simple and sparse in her motives, renewing continually the same forms by modifying them a thousandfold according to the graduated scale of development and the different conditions of existence, developing parts in different ways, shortening some and lengthening others – in the same way the technical arts are also based on certain prototypical forms (*Urformen*) conditioned by a primordial idea, which always reappear and yet allow infinite variations conditioned by more closely determining circumstances. [...]

III

I hear two objections being raised:

"That what has been said of the influence of science and speculation on the practice of art pertains only to a few countries, and the conditions that prevail with the originally hut-dwelling, backwoods Anglo-Saxons are not relevant to old Europe with her still living traditions of art. And supposing those conditions were to become widespread here, then true art would appear even more pure and sublime on *monumental buildings*, as with the Greeks who had almost no civil architecture."

Let us not delude ourselves! Those conditions most certainly are going to have a general validity for us, because they correspond to circumstances that prevail in all countries; and second, we are becoming aware only too painfully that high art especially is being fatally hit.

High art, too, has for some time been going into the marketplace, not to speak there with the people, but to be offered for sale.

Who was not seized with grief and sadness in strolling though the Lombard-Austrian market, which was crammed with lovely naked and veiled slave figures in marble? Did we not clearly see that they felt ashamed of the traits of their once high lineage? And they glanced around so seductively in their humiliation in search of a buyer! There were indeed no fewer than eight or ten chained male and female slaves in the Exhibition.

In contrast, in the great central gallery stout bodies put on a display of gymnastic, bending, equestrian, and all other possible exercises! Among them were some better reminiscences and lyric outpourings. A few were truly new in their self-contained motives, yet for most we ask: What was their actual relevance?

A work of art destined for the marketplace cannot have this relevance, far less than an industrial object can, for the latter's artistic relevance is supported at least by the use for which it is expected to have. The former, however, exists for itself alone, and is always distasteful when it betrays the purpose of pleasing or seducing a buyer.

Busts and portrait statues seem to be the soundest area of our plastic art, but whoever becomes better acquainted with the field also knows how perverted and foul is the situation here. To oblige idling artists we populate public squares with famous men. The arts must be protected! Yet a hero cult similar to the Greek exists neither with those who commission the works nor with the public. The people do not look at them any more as soon as a habit of noticing a place empty is replaced by another habit of seeing a pedestal there. If I am not mistaken, among the numerous statues of famous men of the past, present – and future that decorated the exhibition building, there were many that were made for sheer speculation. Nevertheless, the portrait statue remains perhaps the most important starting point for the improvement of art.

Painting was excluded from the Exhibition, or else the market would have appeared even more mottled. That what was said about sculpture also applies to painting needs no lengthy line of reasoning. Have not the art associations and art-exhibitor groups already set up and arranged for a fixed and permanent cycle of yearly fairs to market their paintings!

"Yet," I hear it said, "our monuments with their frescoes, painted glass, statues, pedimental fields, and friezes will always remain the hoard of true art!"

Yes, that would be true, if they were not borrowed or stolen! They do not belong to us. From the undigested elements out of which they are assembled nothing new has taken shape, nothing we can call our own. They have not become part of our own flesh and blood. Although they are presently being collected with great care, they have not yet been disintegrated sufficiently.

This process of disintegrating existing art types must be completed by industry, by speculation, and by applied science before something good and new can result.

223 JACOB BURCKHARDT

from *The Civilization of the Renaissance in Italy* (1860)

Throughout the first half of the nineteenth century, the battle of the styles across Europe had largely been a campaign between classicists and gothicists – with a third camp also forming in Germany around the *Rundbogen*. Beginning around mid-century a new stylistic force came into view: the culture of the Renaissance. It is true that a few architects (such as Henri Labrouste and Gottfried Semper) had pointed the way in the late 1830s with their use of Renaissance forms, but nevertheless this period was still held in little esteem by both critics and historians. Classicists decried the period as a second-coming of classicism, and therefore as something less original than antique culture. Gothicists disdained its secularization on the one hand, and the abuses of the papacy on the other. The person who would transform this image of the Renaissance in the German-speaking lands was the Swiss historian Jacob Burckhardt, who in 1860 published one of the great historical books of all time.

The Civilization of the Renaissance holds a seminal place within Western historiography as the first comprehensive cultural study of an era. Burckhardt's thesis is that the Renaissance was not simply a period of classical renewal, but was rather a time of profound social and personal transformation, in which "humanist" ideas for the first time gain their ascendancy in Western culture. Everything from the popularity of Roman ruins to witchcraft now fall under the historian's magnifying glass, as Burckhardt literally resurrects the nuances and mindset of an entire culture. This short excerpt speaks to the Renaissance "personality."

In the Middle Ages both sides of human consciousness – that which was turned within as that which was turned without – lay dreaming or half awake beneath a common veil. The veil was woven of faith, illusion, and childish prepossession, through which the world and history were seen clad in strange hues. Man was conscious of himself only as a member of a race, people, party, family, or corporation – only through some general category. In Italy this veil first melted into air; an objective treatment and consideration of the State and of all the things of this world became possible. The subjective side at the same time asserted itself with corresponding emphasis; man became a spiritual individual, and recognized himself as such. In the same way the Greek had once distinguished himself from the barbarian, and the Arab had felt himself an individual at a time when other Asiatics knew themselves only as members of a race. It will not be difficult to show that this result was due above all to the political circumstances of Italy.

In far earlier times we can here and there detect a development of free personality which in Northern Europe either did not occur at all, or could not display itself in the same manner. The band of audacious wrongdoers in the tenth century described to us by Liudprand, some of the contemporaries of Gregory VII (for example, Benzo of Alba), and a few of the opponents of the first Hohenstaufen, show us characters of this kind. But at the close of the thirteenth century Italy began to swarm with individuality; the ban laid upon human personality was dissolved; and a thousand figures meet us each in its own special

Jacob Burckhardt (1818–97), from *Die Kultur der Renaissance in Italien* [The civilization of the Renaissance in Italy] (1860), trans. 1878, first published in 1945 by Ludwig Goldscheider. Oxford: Phaidon Press, 1981 (facsimile edition), pp. 81–2.

shape and dress. Dante's great poem would have been impossible in any other country of Europe, if only for the reason that they all still lay under the spell of race. For Italy the august poet, through the wealth of individuality which he set forth, was the most national herald of his time. But this unfolding of the treasures of human nature in literature and art – this many-sided representation and criticism – will be discussed in separate chapters; here we have to deal only with the psychological fact itself. This fact appears in the most decisive and unmistakable form. The Italians of the fourteenth century knew little of false modesty or of hypocrisy in any shape; not one of them was afraid of singularity, of being and seeming¹ unlike his neighbours.

NOTE

¹ By the year 1390 there was no longer any prevailing fashion of dress for men at Florence, each preferring to clothe himself in his own way.

224 JACOB BURCKHARDT from *The History of the Italian Renaissance* (1867)

After completing his grand cultural study in 1860, Burckhardt resumed his earlier focus on the arts and contemplated writing a companion volume on Renaissance painting, sculpture, and architecture. Only the last project was completed and published. Not a survey – it is a different kind of work in that it dissects Renaissance architecture through its theory, building type, plan, spatial development, compositional elements and detailing, and decoration. This short excerpt on Poliphilus and the "spatial style" is important in two respects. First, it advances Schnaase's spatial analysis of architecture and expands the traditional notion of style as a formal language. Second, its distinction of the "spatial style" from the "organic styles" underscores the importance of new uses and complexity of plan in furthering architectural development. Learning the spatial lessons of Renaissance spatial design would, by implication, assist the nineteenth-century architect in designing for the new and more complex building types.

Meanwhile, neither theorists nor poets talk as clearly as we should like about the great transition which was taking place before their eyes and was partly brought about by them. Sometimes they are unaware of the state of events, sometimes these seem self-evident to them. Only later could the Renaissance be identified, in contrast to all earlier styles, as one of spatial and surface relationships.

Jacob Burckhardt, from *Die Geschichte der Renaissance in Italien* [The history of the Italian Renaissance] (1867), trans. James Palmes, *The Architecture of the Italian Renaissance*, ed. Peter Murray. Chicago: University of Chicago Press, 1985, p. 32.

The spatial style which the new era brought to architecture is in complete contrast to the organic styles; which does not prevent it from exploiting in its own way the forms produced by the latter.

The organic styles have always only one principal type: the Greek one the rectangular peripteral temple, the Gothic the many-aisled cathedral with Western towers. As soon as they are diverted to a different use, particularly one involving complex ground-plans, they are ready to be transformed into spatial styles. The Imperial Roman style is already close to this transition, developing a notable spatial beauty, which survives in differing degrees in the Byzantine, Romanesque, and Italian Gothic styles, but reaches its zenith in the Renaissance.

225 GOTTFRIED SEMPER from *Style in the Technical and Tectonic Arts* (1860)

In the years 1860–3, while now residing and teaching in Switzerland, Semper published the first two volumes of his work entitled *Style*. The lengthy study (the third volume of which was never completed) might be likened to Charles Darwin's near-contemporary book *The Origin of Species* (1859), in that Semper too – although entirely apart from the theoretical model of Darwin – attempted to write a history of architectural development based on a few elementary "motives." The book is also different in its underlying idealism. Semper vehemently rejected the idea that architectural design could be subject to certain laws (historical or evolutionary) and comes down decidedly on the side of the architect and his freedom in inventing new paths of development. The four motives are grouped into the classes of textiles, ceramics, tectonics (carpentry), and stereotomy (masonry).

Excerpts from three parts of the first volume (devoted solely to textiles) reveal three different aspects of his thought. The first passage forms the opening pages of his Prolegomena or philosophical prologue and discloses his broader intention to write an "empirical theory of art," in opposition to the abstract, speculative slant of German aesthetics.

The second passage, in which he overtly opposes the ideas of Bötticher, shows his method of analysis. His point is that the Greeks, in employing their painted surfaces, not only moved beyond the Asiatic principle of decorative incrustation but also idealized their forms in a way that denied their very materiality.

The third passage – containing his famous footnote on the "masking of reality" – carries his "dressing" thesis to its logical conclusion. The motive for monumental architecture is here traced back to the improvised scaffold or stage of the early Greek drama, and monumental motives for architecture, Semper believed, should still reside in this "haze of carnival candles." The "masking of reality" for Semper, at its highest level, is a double masking of the architectural work: a (symbolic) masking of the material and of its thematic content. It is an almost violent response to what he termed the materialists of his day, or to those who were striving to invent a new style solely from architecture's structural and material premises. Semper is essentially taking a last stand in defense of traditional

Gottfried Semper, from *Der Stil in den technischen und tektonischen Künsten* (1860), trans. Michael Robinson and Harry Francis Mallgrave in *Style in the Technical and Tectonic Arts, or Practical Aesthetics*. Los Angeles: Getty Publications Program, 2003, pp. 71–2, 378–9, 249–50. © 2003 by Getty Publications. Reprinted with permission of Getty Publications.

values in design, but his ideas nevertheless would still have a major impact. Like Viollet-le-Duc, his writings form one end of a bridge that, when complete, touches down in the early twentieth century.

The nocturnal sky shows glimmering nebulae among the splendid miracle of stars – either old extinct systems scattered throughout the universe, cosmic dust taking shape around a nucleus, or a condition in between destruction and regeneration.

They are a suitable analogy for similar events on the horizon of art history. They signify a world of art passing into the formless, while suggesting at the same time a new formation in the making.

These phenomena of artistic decline and the mysterious phoenixlike birth of new artistic life arising from the process of its destruction are all the more significant for us, because we are probably in the midst of a similar crisis – as far as we who are living through it (and therefore lacking a clear overview) are able to surmise and judge.

At the least, this view has many adherents, and in truth there is no lack of supporting evidence. The only thing that remains uncertain is whether these signs indicate a general decline arising from more profound social causes, or whether they suggest conditions that are otherwise healthy but that have temporarily caused confusion in those fields and human faculties concerned with discerning and representing beauty. Perhaps sooner or later they will lead to happier things in this sphere as well and work to the general good and honor of humanity.

The first hypothesis is bleak and unproductive because it denies artists who subscribe to it any support for their efforts. If the world of art were collapsing, Atlas himself would be too weak to hold it up; those who find pleasure in building do not want to restrict themselves to tearing down something rotten.

The second hypothesis, by contrast, is practical and productive – whether it is right or wrong.

As long as whoever embraces it guards against the presumption of seeing himself as the founder and savior of a future art, he will view his work more modestly as something in the process of becoming, or rather, as the *becoming of art* in general, and set for himself the following task: *to explore within individual cases the regularity and order that become apparent in artistic phenomena during the creative process of becoming and to deduce from that the general principles, the fundamentals of an empirical theory of art.*

Such an approach will provide no handbook for artistic practice, for it will not show *how to create* a particular art-form but rather how it *comes into being*. The work of art will be seen as a result of *all* the factors involved in its creation. Technique will therefore be a very important issue to consider, but only insofar as it affects the principle of art's creation. Nor will this approach merely produce a history of art. In passing through the field of history, it will not apprehend and explain the works of art of different periods and countries as facts but rather it will *expand upon them*, as it were, by identifying in each the necessarily different values of a function composed of many variables. It will do this primarily with the intention of revealing the inner law governing the world of the art-form, just as it governs the world of nature. For nature in its infinite abundance is nevertheless very sparing with its motifs; it constantly repeats its basic forms, modifying them a thousand times according to the formative stage reached by living beings and the various conditions of their existence. It

shortens some elements and lengthens others, develops some elements fully, then merely alludes to them elsewhere. Nature has its own evolutionary history, within which old motifs are discernible in every new form. In just the same way, art is based on a few standard forms and types that derive from the most ancient traditions; they reappear constantly yet offer infinite variety, and like nature's types they have their own history. Nothing is arbitrary; everything is conditioned by circumstances and relations.

The Hellenic temple was built in accordance with the Egyptian principle but in a more developed way: as perfect isodomic masonry *outfitted* (*ἀσκητόν*) according to the Asiatic principle of incrustation, understood in the higher structural-symbolic sense. Through this combination the incrustation was freed of material service; it appeared only as a carrier of the formal idea, while at the same time emancipating the latter from the building material by hiding the joints in the stone. Thus form is explained only in terms of itself and by the organic idea contained within it, as happens with a living creature. We do not ask what material the creature is made of, even though the quality and quantity of materials are crucial conditions of existence and profoundly affect it.

Therefore the Greek architectural style did not draw a distinction between the "core schema" and "art schema," a distinction that unmistakably contains a slavish tendency to Egyptianization. Professor Bötticher – and let this be said with all regard for his learning, taste, and acumen – was inspired by Hermes Trismegistus, who was also the guiding spirit of Pythagoras when he wrote his exegesis on Hellenic temples.

The figure column (caryatid) was for Greece what the pier statue was for Egypt – namely, the expressive limit of the architectural principle of each country. The difference between them cannot be defined more succinctly or more comprehensibly than by comparing these two opposites!

The Hellenic principle obviously had to be based on formal traditions that favored masking the material construction. It could never have arisen without these traditions – for instance, on pure speculation – and these traditions were Asiatic!

It was merely a matter of transforming the forms of the Asiatic construction of the dressing that were based on mechanical necessity into dynamic, even organic, forms, a matter of endowing them with a soul. Anything that had no morphological purpose, anything that was foreign or opposed to the purely formal idea, had to be excluded or removed to a neutral ground. In reviewing what existed previously – and in animating it – the act of creation did not reside in inventing new types, which would have remained incomprehensible to the masses or had a chilling effect.

This new style had to avoid all unnecessary references to weight and inertia of masses, and so it banished the arch from the store of art-forms. It used the attributes of mass only to emphasize precisely the activity and life of the organic members. In short, it emancipated form from the material and from naked need.

As part of this trend the Hellenic architectural principle had to vindicate and nurture color as the subtlest and most incorporeal dressing. This was the most perfect means to dispose of reality, for while it dressed the material it was itself immaterial. It also corresponded in other regards to the freer tendencies of Hellenic art.

Polychromy replaced the barbarian dressing with precious metals, and incrustations with the precious stones, paneling, and other ornamental accessories with which Asiatic work was so extravagantly outfitted.

This is already clear from the contrast between barbarian and Hellenic art outlined above. It is fully confirmed by things we can still see on the remains of monuments, and not least by the reports of the ancients themselves.

For now I will merely point out that the outward reason for monumental undertakings has always been, and still is, the wish to commemorate and immortalize some religious or solemn act, an event in world history, or an act of state. There is nothing to keep us from assuming, from casting aside all doubt, that the first beginnings of a monumental art, which everywhere requires an existing, relatively high culture and even luxury, was in an analogous way suggested to its founders by similar *festive celebrations*. The festival apparatus – the improvised scaffold with all its splendor and frills that specifically marks the occasion for celebrating, enhances, decorates, and adorns the glorification of the feast, and is hung with tapestries, dressed with festoons and garlands, and decorated with fluttering bands and trophies – is the *motive* for the *permanent* monument, which is intended to proclaim to future generations the solemn act or event celebrated. [...]

I cite these examples mainly to draw attention to the principle of the *exterior decoration and dressing* of the structural framework – a principle that is necessary for improvised festive buildings and always and everywhere carries within itself the nature of the thing. From this I conclude that the same principle of veiling structural parts, combined with the monumental treatment of the tent covers and carpets that were stretched between the structural parts of the scaffold that is the source of the motif, must appear equally natural when seen in early architectural monuments.¹

NOTE

1 I think that the *dressing* and the *mask* are as old as human civilization and that the joy in both is identical to the joy in those things that led men to be sculptors, painters, architects, poets, musicians, dramatists – in short, artists. Every artistic creation, every artistic pleasure, presumes a certain carnival spirit, or to express it in a modern way, the haze of carnival candles is the true atmosphere of art. The destruction of reality, of the material, is necessary if form is to emerge as a meaningful symbol, as an autonomous human creation. Let us forget the means that must be used to achieve a desired artistic effect, and not blurt them out and thus woefully forget ourselves. The unspoiled feeling led primitive man in this direction in all early artistic endeavors. The truly great masters of art in every field returned to it, except that in times of high artistic achievement these individuals also *masked the material of the mask*. This instinct led Phidias to his conception of the subject matter for the two tympana of the Parthenon. Evidently he considered his task, the representation of the double myth and its actors (the deities), *as the material to be treated* (just like the stone in which he formed them), which he veiled as much as possible, thus freeing it of all material and outward expression of its nonpictorial and religious-symbolic nature. Therefore his gods confront and inspire us, individually and collectively, first and foremost as expressions of true human beauty and grandeur. What was Hecuba to him?

For similar reasons drama could have meaning only in the beginning and at the height of the progressive education of a people. The oldest vase paintings give us an idea of the early material masks of the Hellenes. In a spiritual way, like those stone dramas by Phidias, the ancient mask is taken up again by Aeschylus, Sophocles, and Euripides and at the same time by Aristophanes and the other comic dramatists. Thus the proscenium frames an image of a noble piece of human history that did not simply occur somewhere once but happens everywhere as long as human hearts beat. What was Hecuba to them? The spirit of the mask breathes in Shakespeare's dramas. We meet the humor of masks and the haze of candles, the carnival spirit (which, in truth, is not always joyous), in Mozart's *Don Giovanni*. For even music needs a means to destroy reality. Hecuba means nothing to the musician, either, or should mean nothing.

But masking does not help when the thing *behind* the mask is not right or when the mask is no good. If the material, the indispensable, is to be completely destroyed in the artistic creation in the sense meant here, then the material must first be completely mastered. Only complete technical perfection, only the judicious and proper treatment of the material according to its properties, and above all only the consideration of these properties in the act of shaping form can cause the material to be forgotten, can liberate the artistic creation from it, can elevate even a simple landscape painting to become a high work of art. [...]

226 GOTTFRIED SEMPER

from *Style in the Technical and Tectonic Arts* (1860)

In the second volume of *Style* – containing the sections on ceramics, tectonics (timber construction), and stereotomy (stone construction) – Semper's text often reads like a catalogue of technical concerns, but scattered throughout are passages that would much influence German architectural debates throughout the remainder of the century. His remarks on the architectural exploitation of "space" and "iron" are instructive cases in point. The idea of architectural space for Semper had earlier resided in the walling or textile motive, but in his discussion of stone construction he develops this theme for vaulting techniques, and, in the process of considering Roman innovations, emphasizes the importance of this "mighty spatial art" for architecture.

In Semper's several remarks on the use of iron, he sets up the logical dilemma for all those coming after him, in their attempts to treat iron. On the one hand iron (in this case cast iron) is by nature "infertile soil for art" because of its slight dimensions and tendency toward invisibility. On the other hand, when those thin members might be enhanced by tubular construction, or when trusses are designed more artistically, "it might be possible to pin our hopes for the future of art on it." Over the next 40 years, every major German architect would read these words and struggle with the solution.

Gottfried Semper, from *Der Stil in den technischen und tectonischen Künsten* (1860), trans. Michael Robinson and Harry Francis Mallgrave in *Style in the Technical and Tectonic Arts, or Practical Aesthetics*. Los Angeles: Getty Publications Program, 2003, pp. 753–4, 756–7, 658–60. © 2003 by Getty Publications. Reprinted with permission of Getty Publications.

The Two Main Factors in the History of Stone Construction

All events throughout architectural history can be divided into two major groups defined by the manner and extent to which stone construction embodied an architectural-spatial idea.

The first group is stone architecture that merely *employs* the cutting of stone. Following the oldest tradition shared by all peoples of ancient heritage, the role assigned to stereotomy (and, in the final analysis, stone cutting) was only *subservient* – sometimes for the monumental production of the wall dressing, sometimes for producing a monumental (tectonic) framework in stone. In cultural-historical terms, this represents the earliest starting point for monumental art – even if it was its most perfect conclusion as well. In this sense, it came closest to the idea of perfection, which is the starting point and goal of all art.

The second group consists of architectural works in which the spatial idea is directly expressed through stone construction – works in which the spatial idea is conditioned *a priori* by the influence of stone, from which the architect's mental conception of space essentially emanated.

This happened when joint cutting, the arch, and especially the vaulted ceiling were added to the store of architectural art-forms. This occurred only after a protracted period during which these things failed to be taken into consideration for the expression of the spatial idea or, rather, were excluded from it in principle.

The new architectural principle this step created was to a certain extent in conflict with tradition and with the older types shared by monumental architecture and the other arts – although these types had so powerful an inner truth and were so deeply rooted in general architectural consciousness that they could never quite lose their validity. As these older types entered into new combinations thanks to the new principle, their continuity suffered somewhat and their original meaning became obscured. In compensation for this and the loss of ancient *melodic clarity* and *plasticity*, however, it was only by means of these combinations that architecture obtained the true means for developing that most magnificent *symphony* of mass and space toward which it had probably been striving since the earliest times (consider, for example, the Egyptians and probably also the Assyrians). Architecture had been denied this achievement because the material limits of stone tectonics were too confining before the adoption of the vault. [...]

The Romans

In contrast to the revolutionary Hellenes, the Romans were in customs, religion, and art the conservative supporters and preservers of everything originally *Greco-Italic*. They were late in borrowing the system of full ashlar construction, and so the magnificent development of the singularly Roman way of building proceeded undisturbed. Isodomon had been the hieratic privilege of the Hellenized temple, but Roman work proper, the idea of world domination expressed in stone, found a more suitable concrete form (indeed the only permissible one) in a kind of hollow construction – the poured wall with an ashlar crust and related masonry processes. It was necessary to transfer the *concameration* – the vaulted cell system that had been

known since ancient times but had been used only for substructures – to aboveground construction. This was a new use for hollow construction and represented a solution to the problem of how to create from the surrounding rooms themselves the supports and abutments necessary to vault even massive central halls while expending a minimum on material and in labor and obtaining the largest possible space.

The Romans were in no way the inventors of this mighty spatial art, which would have related to Greek architecture as a symphony concert does to a hymn accompanied on the lyre, had it been developed to the same level of perfection as was Greek architecture. It had been in preparation for a long time and had its own priests and prophets before the Alexandrian period, among them Hippodamas and other founders of Asian cities, active as early as Athens's golden age. One can discern its dark seeds in tholoi, crypts, nuraghi, and other mysterious works of those early mystic inhabitants of the Mediterranean lands who worshiped the cult of the earth spirit. One can only speculate about the way in which Chaldean-Assyrian architecture related to Alexandrian-Roman buildings in this regard – that is, to what extent earlier tectonics was displaced from its old areas of application by the vault and dome. Any such speculations call to mind the semimythical accounts left by later writers, as well as the authentic representations of extensive domed structures that appear on Assyrian and Lycian relief panels, and above all Parthian and Sassanian ruins, calculated entirely according to the Roman vaulting principle and also closely related in plan to ancient Assyrian layouts. [...]

* * *

Metal Bar Construction (Iron)

In principle, there is no difference in construction between solid wooden planks and bars of iron or any other metal. The only difference lies in the proportions and dimensions of the constructional parts, corresponding to the well-known physical differences between the two materials. It should also be noted that metal does not share all of wood's deficiencies as a tectonic material, or at least does so to a lesser extent. It is not hygroscopic; it does not warp, shrink irregularly, or stretch.

Yet metal bars, unlike wood, have the disadvantage of excessive flexibility and elasticity, and cast iron is very brittle.

This comparison shows that metal-bar construction is infinitely more distant from monumental art than wood construction is. Here, much more strongly than with wood, the proportions appropriate to absolute stability contradict the proportions appropriate to the mechanical activities of the parts.

At the same time, all the formal motives that arise from the deficiencies of wood disappear.

Certainly the use of certain motives unique to metal-bar construction for formal ends can be defended, such as the motives of fitting things together and the ligatures found in the joints. But on the whole this is infertile ground for art. It is not possible to speak of a

monumental metal-bar style or cast-iron style; their ideal is *invisible architecture!* For the thinner the metal tissue, the more perfect it is.

Things are different when metal is used either for tubular construction (a form with which we are familiar from the first volume) or for lattice construction (which in principle is close to the former). Both are equally important to our theory of style (see "Metallurgy").

If metal bars are less suitable as an architectural material, this makes them all the more suited to the tectonic tasks that we have recognized as contrary to the monumental – namely, the most delicate and light utensils and domestic furnishings, where they find their own niche. [...]

Hollow Lattice Construction (Wood and Metal)

A tubular, or rather a hollow-body tectonics predominated in domestic furnishings as well as in architecture from the earliest times. It held its own, at least, alongside actual bar tectonics, from which it differs on one point of great importance to our aesthetic-stylistic considerations. Because of the rigidity of the elements from which it is constructed, and in accordance with basic structural laws and material efficiency, a hollow-metal vertical support no longer needs (and in fact must reject) those diagonal braces and reinforcements without which solid construction (if consistently developed according to its own principles) cannot even exist – in neither real nor aesthetic-formal terms (that is, for the eye). In recent times the principle of hollow construction has been taken up in bridge building and even in civil architecture. Thus far it has been taken up only in a technical sense and spirit, but it might be possible to pin our hopes for the future of art on it. Our building style will once again meet the standards of monumental forms; the latter will no longer be mere lies, and the old Indo-Germanic traditions in art will once again be understood.

Yet this will hardly affect our tubular and truss railway bridges in the near future, although much could be done if all their elements were used correctly to develop the form. So far all they offer are naked constructional schemes that draw rigid, none-too-fortuitous lines across the landscape. The netted walls, which in themselves have great aesthetic potential, lack articulation and alternation. The piers that support them are nothing but raw, unfinished masses. They need to be imbued with life as organisms following the antique idea once again, made to function eurythmically, and their profiles should be regulated to the load (see "Metallurgy").

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from *History of German Aesthetics*
(1868)

A slightly different interpretation to the problem of iron posed by Semper was given by the physician and philosopher Rudolf Hermann Lotze, who received a doctorate in medicine and philosophy at the tender age of 21 and subsequently pursued many paths: focusing his multitude of published writings on pathology, psychology, philosophy, logic, and aesthetics. Lotze, like many of his generation, opposed the idealist schemes of Schelling and Hegel, while at the same time he did not fully accept the psychological realism of his predecessor Johann Friedrich Herbart, whose professorial chair at Göttingen University Lotze himself assumed in 1844. In the chapter on architecture in his *History of German Aesthetics*, he begins by recounting the Germanic debate of recent years, and especially the ideas of Hübsch, Semper, and Bötticher. What he now injects into the debate regarding iron is a psychologist's point of view, that is, the psychological habits of the spectator are just habits and therefore not incompatible with the new forms and proportions of the evolving technologies.

In most vivid contrast to this still continuing religious tendency of our time stands *technical-industrial* development. It poses for architecture sufficient new tasks, yet without having formed a style fully corresponding to it; but what it has nurtured tends to be subject to the hypercriticism of those caught up in old theories. Whoever remembers the early days of the railroad will perhaps recall that many of the provisional terminals built in light wood construction in fact made a harmonious impression with the totality of railroad activity. The characteristic of industrial mechanics consists in achieving the large through the simplest and smallest possible structure. Corresponding to this bold spirit was the airiness of earlier structures, which was greater than in those colossal piles of stone, mostly in a Romanesque style, which have now replaced them. The locomotive with its fantastic construction and mobility – a small vulcanian monster of gigantic power – appears very foreign when placed within these broad masses, the same masses whose forms also stand in opposition to railroad lines and light-spanned bridges, as well as with the noisy bustle of traveling life.

Paxton's glass-and-iron building has invented a new principle for the construction of bright exhibition spaces. Its failing has been exposed with greater acuity than one has devoted to the further development of the valuable seed. People criticize it because the slenderness of the iron columns does not impart the aesthetic impression of strength that a certain visible width of supported mass demands. Only nature has not established a proportion between thickness and height that in itself ensures this impression; in this regard our aesthetic feeling is dependent on experience. A timber support may appear perfectly secure to us, whereas a stone support of the same dimension may be very threatening; it is just our habituation to the wooden column that initially makes us suspicious of the more slender metal one. Furthermore, while it may be true that the ornamentation of the iron

Rudolf Hermann Lotze (1817–81), from *Geschichte der Ästhetik in Deutschland* [History of German aesthetics] (1868), trans. Harry Francis Mallgrave.