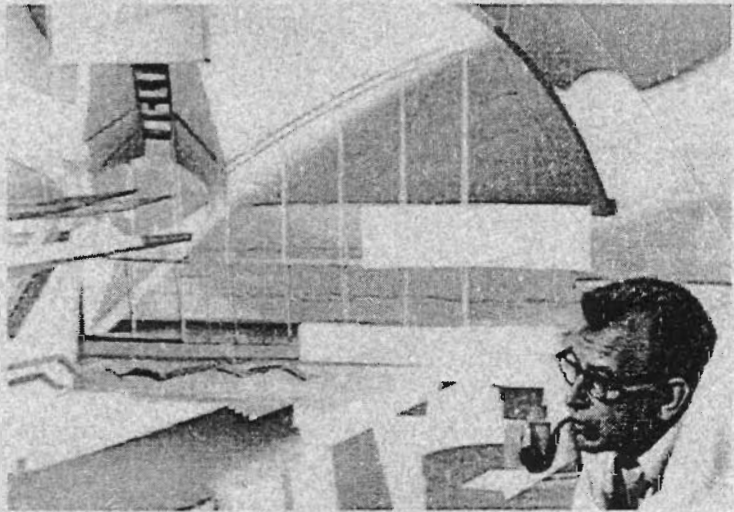


(RE)VIEWING THE TECTONIC

ARCHITECTURE / TECHNOLOGY / PRODUCTION

Conference to focus on the important connections between architecture, technology and production in the region and their significance in architectural education and the history of modernism.



ACSA EAST CENTRAL REGIONAL CONFERENCE FALL 2000
THE UNIVERSITY OF MICHIGAN A. ALFRED TAUBMAN COLLEGE OF ARCHITECTURE + URBAN PLANNING
NOVEMBER 3-5, 2000

(RE)VIEWING THE TECTONIC

ARCHITECTURE / TECHNOLOGY / PRODUCTION

SESSION C 2:00 PM – 3:30 PM

(C)

#7: TECTONIC THEORY

CHAIR: WILL GLOVER, UNIVERSITY OF MICHIGAN

- > A. Luescher, Bowling Green University, "The Struggle for the Window"
- > K. Gutschow, Carnegie Mellon University, "Reconstructing Architecture's History"
- > M. Breitschmid, Switzerland, "Richard Streiter's Critique (of Karl Boetticher)"

#8: INVISIBLE TECHNOLOGY AND THE UN-HEROIC VERNACULAR

CHAIR: ROBERT LEVIT, UNIVERSITY OF MICHIGAN

- > F. Weiner/M. O'Brien, Virginia Polytechnic Institute & State University, "Sweet Tectonic"
- > T. Stauffer, Kent State University, "The Un-heroic House Addition, Shaker Heights"
- > N. Crowe, University of Notre Dame, "Tectonics Embedded or Tectonics Subsumed?
The Poetics of Order"

#9: LATE MODERN ARCHITECTURE 2: CASE STUDIES

CHAIR: FERNANDO LARA, UNIVERSITY OF MICHIGAN

- > R. Self, University of Houston, "A Library and Two Museums: Recent Buildings in Phoenix, Basel, and Houston"
- > K. Mitnick, University of Michigan, "Tectonic Form and Symbolism in
20th Century Architecture"
- > D. Salomon, UCLA, "Architectural Divisions"
- > K. E. Green, Clemson University, "The Fantasy of Precision:
Ponti, Nervi and the Pirelli"

Restructuring Architecture's History: Historicism in Karl Bötticher's Theory of Tectonics

KAI K GUTSCHOW
Carnegie Mellon University

As this panel and conference attest, interest in the German archaeologist Karl Bötticher (1806-1889) and his theory of tectonics has recently made a surprising comeback.¹ Bötticher was all but forgotten for most of the last century because of his unfashionable historicist leanings. His detailed formal analysis of Greek architecture and his plea that we learn from the Ancients, as Stüler clearly did in the National Gallery in Berlin shown here, seemed anathema to everyone that worked towards a modern architecture.

It was, somewhat paradoxically, in a reaction against the superficial historicist pastiche of post-modern works such as Venturi's Venice pavilion shown here, that Bötticher's ideas were first re-examined in depth. Architects, critics and historians such as Kenneth Frampton revived Bötticher's ideas on tectonics because Bötticher privileged a clear expression of structure and construction over more arbitrary forms and symbols. As Bötticher described it, the Greeks had perfected a rational system of design--tectonics--analogous to nature's own creative ways. Tectonics insured that every architectural detail was designed to be a true expression of its own inner structural, functional and material "essence," as well as an integral component of an overall design. Bötticher's theory of tectonics can thus be said to have resuscitated his intellectual legacy.

In extracting the theory of tectonics from Bötticher's unusually difficult prose and promoting it in the present, scholars have all but ignored the historicism that shaped Bötticher's ideas and caused him to be forgotten for most of the century.² This paper seeks to redress this omission by focusing on method rather than content. It looks beyond the by now well-known structural functionalism of Bötticher's theory of tectonics, and outlines the sophisticated historical method employed in his most famous book, Die Tektonik der Hellenen of 1852. Bötticher's book and his theory, as we shall see, were a deft combination of the two major schools of historicism emerging in Germany at the time--idealism and determinism. I will be returning to these two ideas of history shortly, but first I need to discuss briefly the concept of historicism

The key to understanding Bötticher's methodology is the concept of historicism. Historicism was the dominant mode of cultural thought and practice in Europe during most of the nineteenth century, with Berlin as one of its major intellectual centers.³ The concept is difficult to define since it has undergone many changes in meaning and implementation, with the new definitions obscuring earlier ones. Historicism is often defined as an artistic practice, a borrowing of artistic forms from the past. Although Bötticher certainly admired historical Greek architecture and urged that architects study it and build according to its formal principles, he did *not* simply advocate the blind copying of Greek forms in the present--not for symbolic, structural or idealist reasons. In Die Tektonik he even felt obliged "to dispel the suspicion that a constrained, one-sided preference for the forms of Greek tectonics has guided my analysis of its principles and robbed me of an eye and free awareness of the value of" other styles such as the Gothic.⁴ More explicitly he declared, "all dry copying of an art style and all eclectic use of its forms is barbarism and leads straight to corruption."⁵

Bötticher clearly felt that tradition and a thorough understanding of history were a prerequisite to modern design, since history revealed the fundamental principles behind all architecture, past, present and future. His theory of Greek tectonics demanded a synthetic understanding of history, tradition, and the origins of the architectural ideas, *as well as* the practical, mechanical side of building. "Truth," he declared, "*can only be attained when the complete understanding of practical skills unites with full knowledge of the scholarly records*; either of these activities by itself will not achieve its goal."⁶ History--not just architectural history-- had to be an integral part of practice.

More than merely an artistic practice or an interest in the past, Bötticher's theory of tectonics was determined by a historicist theory of history: the theory that all socio-cultural phenomenon are historically determined and that all truths are relative. In this formulation, the term historicism dates back to late eighteenth-century German Romanticism when Friedrich von Schlegel and others used it to describe an attitude that recognized the specific, individual nature of any given epoch.⁷ It opposed earlier, more universal theories of history that viewed the past in relation to natural law or to arbitrary ideals such as antiquity. Inherent in historicism as a theory of history was the idea that values and things change and develop over time, and that this change need not necessarily be constantly progressive or regressive. It recognized the temporal and geographic individuality of all phenomenon.

Bötticher's theory of history combined two forms of historicism that permeated nineteenth-century Berlin--idealism and determinism. An *idealist* historicism was first formulated in the early nineteenth century by the Prussian historian Leopold von Ranke and the philologist Wilhelm von Humboldt.⁸ Idealists highlighted the individual and the specific over the universal and general. They attempted to reconstruct history "as it actually was," from a critical reading of empirical sources, and then intuited from these the greater principles, ideas or forces that structured the details.⁹

In contrast, the *determinist* concept of historicism, of which Hegel was the most influential advocate, specified *a-priori*, totalizing schemes of development. Determinists saw history as a pre-determined developmental flow from which individual historical events drew their meanings. This type of determinist history served as a tool to interpret the past as easily as one to critique the present or predict the future.

As different as these two approaches appear, they rarely materialized in their pure form. Bötticher, as we shall see, purposefully combined elements of both theories of history in order to create his theory of tectonics. Like Humboldt, he had a profound understanding of the distinctness and individuality of each epoch, distilling the general idea from the empirical facts. But like Hegel, he also saw history as a determined, progressive, dialectical development that featured a constant progression of thesis, antithesis and synthesis.

I'll now go on to look at these two different historical influences on Bötticher, first looking at historicist idealism, then historicist determinism.

IDEALISM

For Bötticher, the primary purpose of studying history was to reveal the fundamental principles of both architecture and historical change. Good history, he argued, was "based on the *genetic* development of results." This was possible, however, only with "a deep understanding of the inner, guiding *principles* which guided the generation of these forms."¹⁰ The historical artifacts he studied were for him documents of an eternal, natural process of change and evolution.

Although architects had always looked to the past for answers to architectural problems, Bötticher's historicist study of the past for lessons to apply in the present was fundamentally new. On the most basic level Bötticher rejected the age-old theories of classical idealism that had dominated architectural theory from Vitruvius to Palladio and on through Winckelmann and Alois Hirt in Germany. While Hirt, for example, had also studied history in order to "develop the principles of architecture," his approach was comparative and moralizing rather than inductive. Hirt was convinced that "in all of history, *only one* system exists which is the ideal of art," and that was the Greek.¹¹ Bötticher rejected the age-old concept of a single absolute classical ideal and favored instead historicizing or relativizing the ideal. For Bötticher, as for his mentor Schinkel, the ideal was a continuously shifting entity, contingent upon and shaped by historical change and the demands of different places, materials, and technologies.¹² In Bötticher's brief history of tectonic development, for example, he described how tectonic expressions changed to fit ever new types of spaces. The goal throughout history had always been to find the most truthful, tectonic expression for the type of space most appropriate to the particular age and culture. There were no absolute ideals and therefore no ideal historical monument to look back on..

These fundamental ideas about the nature of historical change and its relation to the present came not only from within architecture itself, but from philosophy, science, and most importantly the emerging discipline of history. Bötticher and Schinkel were greatly influenced by a group of historians working in Berlin and at the University where Bötticher taught. Foremost among these influences was Wilhelm von Humboldt, a personal friend of Schinkel's who devoted his life to exploring the nature of human knowledge and creativity.¹³ Humboldt was convinced of the inter-relatedness of all human intellectual activities, and that art was a medium for the recognition of higher truths. In extensive studies on language development and on the nature of historical research, Humboldt used artistic creation as the defining metaphor to explain history.¹⁴

In his famous 1821 essay "On the Historian's Task" Humboldt dealt extensively with the similarity of the artistic and historical professions.¹⁵ He defined both language creation and history writing as fundamentally creative acts. For Humboldt, individual events that made up the past were structured by a changeable hidden spirit or idea, just as the infinite variety of the visible world was structured by ideas. The historian's task was to go beyond the mere facts and to reveal the idea behind the empirical surface of the historical events, just as it was the artist's task to go beyond physical imitation and make the ideal visible through art. For Humboldt the task of the historian was not to chain the history of humanity to a fixed scheme, but rather to reveal the principles exhibited in diverse human effects. The task of a historian was to awaken in the reader a sense of reality through a study of the past. History's power, he felt, lay in its ability to enliven our sense of acting on the present.

Like Humboldt's historical and linguistic studies, Bötticher proposed working backwards from the existing evidence to uncover the nature of the original seed that spawned development. He was, however, not as interested in origins as he was in the underlying principles that guided change. Bötticher thus hypothesized the existence of an original Doric temple that was a pure expression of the Doric spirit.¹⁶ Like Goethe's "Ur-pflanze" (original plant), Bötticher's hypothetical ur-temple antedated all the known and remaining temples in Greece. It was simultaneously the purest expression of the Doric temple--the type--, and the progenitor of all future variations and development. This ur-temple was the source of his innovative theory of tectonics laid out in *Die Tektonik*. Bötticher then followed Humboldt's musings about idealist history by working critically from his evidence, finding common traits, weeding out all abnormalities or deformities according to his own expert intuition in order to propose principles.¹⁷

Although Bötticher, like Humboldt, held Greece in high esteem for its sophisticated grammars of representation, he insisted that every historical epoch be judged on its own merits, according to its own standards. Greece was not the ideal by which to judge all others, but rather a very good example from which we can learn. The forms of each individual epoch were determined by the social and political character of the particular people, as well as the material and technologies available. Using the famed

archaeologist Karl Müller's studies about the particular characteristics of each tribe of the Greeks, Bötticher claimed to derive the three different orders of Greek architecture from the individual character of each Greek tribe.¹⁸

The Doric people were characterized as "manly and energetic," favoring isolated, landlocked environments, and generally closed-minded with regard to outside influences. They were very civic minded, dedicating all their energy to furthering the welfare of the tribe. Their primary architectural efforts thus went into temples and centralized public institutions. As Bötticher explained in the long final chapter of his book, every element of Doric temples was a direct response to the elaborate rituals performed in and around the temples.¹⁹

The Ionians, by contrast, were "feminine," much more worldly. They lived along the sea and through vast colonies integrated outside influences to promote their own development. Their government was largely federal, the emphasis on the individual rather than the community. As a result, their architecture was much more individualized, with much personal iconography and great variety of styles.

The Corinthians and Athenians, finally, each represented the synthesis of the earlier two, introducing little that was totally new. They were able to combine the best of both the Doric and the Ionic into an "eclectic" architectural practice that often involved copying elements from their ancestral pasts. Ever intent on drawing lessons from history, Bötticher considered Athenian buildings such as the Parthenon to be the most perfect copies of the original Doric ur-temple, better even than the late works of the Dorians themselves. In creating their designs based on knowledge of the past, the Athenians were, perhaps, the original historicist architects.

DETERMINISTS

Let me turn now from the idealist aspects to the more deterministic ones in Bötticher's writings.

Bötticher flushed out his idealist Humboldtian "theory of history" that guided the collection and interpretation of evidence, with a more specific and deterministic "model of development" or narrative structure taken from Hegel. Although Bötticher disagreed sharply with Hegel's conception of architecture as a mere symbolic shell for more advanced forms of true art, Bötticher's model of development was to a large extent based on Hegel's historical dialectic.²⁰ Like Hegel, Bötticher saw all of human history, but particularly the development of human culture, as a series of nested, "progressive" "cycles," each composed of individual "moments." Each moment was composed of three "phases," which stood in classic Hegelian dialectical relation of "thesis, antithesis, and synthesis."²¹ Each phase always stood in opposition to the one before, but also sought to reconcile previous opposing views. The same relationship of thesis-antithesis-synthesis that held true for the phases within each moment also structured the development of the moments within any given cycle, as well as the whole overall cycle of human history. Finally, each stage of overall synthesis was followed by a period of "stasis" in which each of the three previous stages were rehearsed together, thereby presenting a kind of mirror of past developments. From this unclear period of stasis emerged the germ of a completely new and original stage that was the antithesis of the last completed synthesis, and the beginning of a new cycle, with the genetic potential for all future development.

In detailing this historical model, however, Bötticher often cloaked Hegel's metaphysical theory in biological metaphors that implied a different form of organic, natural development. Thus the purpose of every "moment" was to develop a particular formal essence or idea (*Wesenheit*) that was assigned (*zugewiesen*) to it from a master genetic code at its core. Like a seed, Bötticher contended, each of these stages contained the genetic material for its own development as well as all future phases. The unfolding was to be "as in a plant, where the fruit is the desired end which is already inherent in the seed, and the stems of the leaves and the flowers all unfold in anticipation of its [i.e. the fruit's] fruition."²² Each development ended when the assigned idea had come to fruition. Further development was only possible when a new essence blossomed from the existing genetic code that helped further the progress of the overall cycle. Bötticher stressed the discontinuous nature of this progression when he stated specifically that each new age was *not* an evolution, metamorphosis or successive development of previous periods, but a complete dialectical opposite.²³

Overall, Bötticher's historicist model thus combined Hegel's discontinuous and abstracted model of development with a more organic, continuous one. Although architecture did not imitate nature, as it had for Laugier, nature provided the physical model for architecture's aesthetic essence and a model for its development over time. Bötticher's organic approach was the influence of Schinkel, the Humboldt brothers, and ultimately Goethe's nature studies. Unlike Hegel, who speculated on the vast spiritual and metaphysical developments of human history, Goethe took his models from his own empirical, morphological study of plants, minerals and colors.²⁴ Influenced by Goethe, both Schinkel and Bötticher conceived of architecture as a "second nature," as a "continuation by man of the constructive activity of nature."²⁵

Once outlined, Bötticher outfitted his model of development with historical facts. Thus, he made the Greeks the culminating moment of the development cycle of the pre-Christian, ancient world. He assigned the Doric, Ionic, and Corinthian-Attic styles to the three phases within the Greek moment.²⁶ Each carried within them the lessons from all previous development, including those of the Egyptians, Phoenicians, and Pelasgians, as well as the genetic material for all subsequent development. The Dorians, as the first "thesis" stage of the Greek moment, were a completely new and original phase whose essence had not previously been developed, and whose complete genetic material would gradually be

developed by the succeeding Ionic and Corinthian phases. This led Bötticher to his controversial theory that the Doric temple was a totally autochthonous development. To use Richard Streiter's metaphor, the stone Doric temple sprung from the brow of Zeus ready and armed, like Pallas Athena.²⁷ It was not, he felt, a derivative from earlier developments in wood construction or from other cultures. Bötticher thus buttressed Hübsch's earlier materialist arguments about the superior sense of materials of the Greeks with historical arguments.

According to Bötticher, the Dorians eventually gave way to their spiritual and architectural opposites, the Ionians. The Corinthians and Athenians, in turn, were a synthesis of the two. Later, the Romans represented the uncreative phase of stasis after the genius of the Greek moment and thus were only able to copy all three previous phases of Greek development--Doric, Ionic and Corinthian. Out of the Roman decadence, however, came the spore of a large new cycle which culminated with the Gothic style. The period from the Renaissance to the nineteenth century represented, like Roman times, another period of stasis, and thus saw the revival of all previous phases of development. The nineteenth century was thus ripe for another major synthesis and forward evolution.

HISTORICAL METHOD AND TECTONICS

Having analyzed how Bötticher derived his ideas from both idealist and determinist theories of history, I would like to finish this paper by looking at how specifically Bötticher's well-known theory of tectonics relates to his historical method. In an outline of the development of architectural roofing systems appended to Die Tektonik. Bötticher explicitly made the connection between his genetic history and tectonics.²⁸ Much like Hirt, Hübsch, and Schinkel before him, and Semper after him, Bötticher felt that the single most important determinant of architectural form and style of any historical "moment" was the dominant spanning or roofing system.²⁹ These systems determined the details of the structural armature, the roofing geometries, the spacing of the supports, the nature of the walls, the plan and every other component of the architectural style. By analyzing the historical progression of these structural systems, Bötticher sought fundamental insights into the nature of architecture and the nature by which it changed.

Bötticher distinguished thirteen successive structural and stylistic "moments" leading from the earliest monolithic caves, to the rational trabeated system of the Greeks, and culminating in the vast vaulting systems of the Gothic era. His story parallels a similar one in Hirt's canonical textbook of Greek architecture, and duplicates almost exactly Schinkel's famous course of "historic-tectonics" proposed for the introductory section of his "Lehrbuch."³⁰ Schinkel had outlined a hypothetical development from the Greek system of stone trabeation to the invention of the round arch, and theorized briefly on the later development of the pointed Gothic arch. Bötticher expanded Schinkel's timeframe back to the cave, and completed its development forward to the pointed arch of the Gothic. Although he greatly admired the structural prowess of the Gothic style and its ability to span vastly larger spaces than the Greeks, Bötticher was severely critical of the tectonics of the Gothic style. Like Schinkel, he considered it unsettling and unstable, unable to create a lasting, permanent architecture.³¹

Bötticher used this brief "genetic" history of tectonic form to develop principles of architectural form and development, as well as its implications for the present. He posited a progress towards ever larger spaces to be spanned, while using ever smaller architectural members, in an increasing variety of materials. Over time individual architectural components became both more differentiated but also less structurally significant. Thus the development of the Greek orders, for example, proceeded naturally from the spare, abstracted Doric to the highly florid, more sculptural multi-faceted Corinthian.³² As technology improved, architecture developed from almost pure construction to a complicated system of representation. In addition, Bötticher speculated that the technical perfection of construction would eventually remove all accident and chance from the building site. This would allow for an increased variety of possible spaces and building types. At some point, he claimed, tectonic prowess would allow the realization of any space using "any somehow useful material" to build any kind of building.³³ While generally following Schinkel's earlier tectonic-historic development, Bötticher clearly inserted elements from Hegel's deterministic view of historical progress towards ever greater "freedom" from the material world. Architecturally, this freedom manifested itself by "conquering" the exigencies of specific materials, structural members, and program needs.³⁴ As in Hegel's aesthetic, architecture progressed away from base utilitarian requirements towards greater freedom and artistry.³⁵

Although Bötticher alluded several times in Die Tektonik to the implications of this brief history of tectonic development, it was only in his famous lecture honoring Schinkel in 1846 that he fully applied the principles of the past to his own time.³⁶ Since his developmental model defined the nineteenth century as a period of "stasis," he predicted that a synthesis (*Verschmelzung*) of the thesis and antithesis of the largest cycle of human cultural development--the Greek and the Gothic--was immanent.³⁷ He speculated that the new style would develop its structure from the Gothic prowess in spanning large spaces, while artistically it would develop from Greek formal principles. Bötticher's rigorous historical model of development also allowed him to conjecture that the technical potential of stone construction had been maximized with the Greeks and the Goths, and that further development in the nineteenth century would require the introduction of a new material, with static principles opposed to the compression of stone. "That new material," he claimed presciently, "will be iron," arguing that iron's strong tensile qualities synthesized the "relative" and "reactive" forces of the former styles.³⁸ Besides shaping the expression of individual members, Bötticher's historicism thus provided the logic and argument from which to theorize or even predict progress in architectural development.

Although Bötticher had originally intended to write a third volume of *Die Tektonik* that would present a "comparative history" of Greek architecture from which architects might more directly take the lessons of history, the theoretical volumes and related essays that Bötticher managed to publish were in many ways more full of history than such studies might have been.³⁹ Bötticher's integration of history and practice established him as an essential link in the whole "Berlin School" of architecture that started with Gilly and Schinkel and even continues to shape Berlin's cityscape to this day in the planning ideas of Franz Kohlhoff. The broad combination of innovation and tradition, so lacking in Giedion and the other modernist historians, here has a fruitful precedent. By reconstructing Bötticher's attempt to understand Greek architecture we also gain many potential insights on contemporary trends. The current revival of Bötticher studies has been motivated as much by a general ascendance of nineteenth-century studies as by the current backlash against the decorative and representational nature of much postmodern architecture and the corresponding rekindling of modernist technicist sensibilities in design circles. It is, however, Bötticher's historicist outlook—the idea that all socio-cultural phenomenon are historically determined and that all truths are relative-- that makes him ever relevant to the present.

Endnotes

- ¹ Karl Gottlieb Wilhelm Bötticher (1806-1889), whose name is often spelled "Carl," even in his own books, is not to be confused with two of his near contemporaries, the archaeologist Carl August Boettiger (1764-1832) or the late nineteenth-century architect Georg Bötticher. There are, however, notable exceptions to the Bötticher revival: David Watkin in Tilman Mellinghoff's survey book *German Architecture and the Classical Ideal* (Cambridge, MA 1987) doesn't even mention Bötticher, arguably the most important theorist of the classical ideal in Germany!
- ² Michael Brix and Monika Steinhauser, in their lengthy essay on historicism in German architecture, for example, have noted: "Die Literatur zu Bötticher ist umfangreich, sein Geschichtsverständnis aber wurde noch kaum untersucht." Brix and Steinhauser, "Geschichte im Dienste der Baukunst," in Brix & Steinhauser, eds. *"Geschichte allein ist zeitgemäß"* (Lahn-Giessen 1978) 318, n.112. This lacunae has still not been adequately addressed.
- ³ On historicism in France see Barry Bergdoll, *Léon Vaudoyer, Historicism in the Age of Industry* (Cambridge, MA 1994).
- ⁴ "Um den Verdacht von mir zu entfernen als habe ich eine unfreie und einseitige Neigung für die Gebilde der hellenischen Tektonik bei der Arbeit über ihre Prinzipien geleitet, und mir Auge und freien Blick benommen für den Werth der Tektonik des Mittelalters..." Bötticher, *Die Tektonik*, excursus, 1. Translation partially adapted from Socratis Georgiadis' introduction to Sigfried Giedion, *Building in Iron. Building in Ferro-Concrete* transl. J.D. Berry (Santa Monica 1995) 5.
- ⁵ "Alles tote Nachahmen einer Kunstweise, noch mehr aller eklektischer Gebrauch ihrer Formen, ist eine Barbarei und führt geraden Wegs in den Zustand der Zerrüttung." Bötticher, "Aesthetische und ethische Sentenzen," in his *Karl Friedrich Schinkel und sein baukünstlerisches Vermächtnis*, 93.
- ⁶ "Also nur, wenn die völligste Kunde baulicher Werkthätigkeit sich vereint mit der Kunde des Wesens der wissenschaftlichen Überlieferungen, wird die Wahrheit gewonnen; eine der beiden Tätigkeiten allein kann nicht zum Ziele führen." Bötticher, "Prinzip," 31. Emphasis in original.
- ⁷ True to the recent biased readings of Bötticher, Herrmann's slightly different translation tends to downplay the historical aspect of research in favor of theory when, for example, he translates "wissenschaftliche Überlieferungen" as "methodological research" rather than "scholarly records." Herrmann, *In What Style*, 164.
- ⁸ The bibliography on German historicism as a theory of history is extensive. A good recent overview is Georg G. Iggers, "Historicism: the History and Meaning of the Term," *Journal of the History of Ideas* 56:1 (Jan. 1995): 129-152; as well as his classic *The German Conception of History* (Middletown, CT 1968, 1988) 295-298.
- ⁹ On Humboldt (1767-1835), Ranke (1795-1886), and the idealist vision of history see Iggers, "Historicism," 130-132; "Colquhoun, "Historicism," 5-6; Schwarzer, *German Architectural Theory*, 10; and Georg G. Iggers and Konrad von Moltke, eds. *The Theory and Practice of History* (Indianapolis, New York 1973), which includes translations and analyses of several methodological texts by Humboldt and Ranke.
- ¹⁰ "Wie es eigentlich gewesen ist," was Ranke's catchphrase to describe his own goals in historical writing. See *ibid.*
- ¹¹ "eine Geschichte die nicht bloß vom äußern Schematismus bestimmt wird, die nicht bloß ein glattes Aneinanderreihen der Erscheinungen nach subjektiven Anschauungen ist, sondern auf einer *genetischen* Entfaltung der Resultate basiert, kann nur erst werden sobald die inneren leitenden Prinzipien dieser Erscheinungen gewonnen sind." Bötticher, *Die Tektonik*, xi. Emphasis in original.
- ¹² "Nach unserer Überzeugung läßt sich bloß aus der Geschichte ein System der Baukunst aufstellen, welches Ideal dieser Kunst entspricht." Hirt, *Die Baukunst nach den Grundsätzen der Alten*, vii. Emphasis added.
- ¹³ On Schinkel's historicization of the ideal see Bergdoll, *Karl Friedrich Schinkel*, 217.
- ¹⁴ Wilhelm von Humboldt was the brother of the famous naturalist and explorer Alexander. He is perhaps best known as the founding spirit of the University of Berlin and the academic institutionalization of knowledge that still characterizes most university curricula today. His most important literary work was a giant three volume history of the development of human languages, language being the most fundamental expression and shaper of human intellect and creativity. While acting as German ambassador to Rome he gained a thorough familiarity with antique languages and art, and also began a life-long friendship and lively intellectual exchange with Schinkel, from which Bötticher eventually benefitted as well. He helped fund Schinkel's first Italian trip, and later commissioned Schinkel to develop his country house in Tegel (1820-24). On the close relationship of Schinkel and Humboldt see Bergdoll, *Karl Friedrich Schinkel*, 20, 64-65.
- ¹⁵ Although Bötticher does not directly mention Humboldt as precedent for his own work, he was intensely aware of Schinkel's great debt to the "noble statesman and scholar." Bötticher, "Prinzip," 12.
- ¹⁶ See the excellent introduction to Humboldt's language studies by Hans Aarsleff in Wilhelm von Humboldt, *On Language* (Cambridge 1988) xvii-xxxii.
- ¹⁷ Wilhelm von Humboldt, "Über die Aufgabe des Geschichtsschreibens," (1821), translated as "On the Historians Task," in *The Theory and Practice of History*, 5-23. For architecture's debt to Humboldt see Schwarzer, *German Architectural Theory*, 10; and Colquhoun, "Three Kinds of Historicism," 5-6.
- ¹⁸ Bötticher, *Die Tektonik*, 111-113
- ¹⁹ Bötticher, *Die Tektonik* 85-87.
- ²⁰ For Bötticher's characterization of the Greek tribes see *Die Tektonik* 19, 23, 105-110. Müller's views were expressed in his famous study of the Doric tribe *Die Dorier* (1824). His characterization of cultures according to tribal character was innocently influenced later irresponsible racist theory by the Nazis. See Calder, "Müller."
- ²¹ See "Der hellenische Tempel in seiner Raumanlage für Zwecke des Kultus," *Die Tektonik*, vol.2.
- ²² Hegel's views on the development of art are contained in his fam *Aesthetics: Lectures on Fine Art* (1820-29) transl. T.M. Knox (Oxford 1975-88). His knowledge of architecture derives in large part from the canonical history by Hirt.
- ²³ On Hegel's view of history see for example Karl Löwith, *From Hegel to Nietzsche. The Revolution in Nineteenth Century Thought* (1964) (New York 1991) 208-219. On the relation of Hegel and Bötticher, though only on matters of aesthetics (!) see Kroll, *Das Ornament in der Kunsttheorie* 19-23; Streiter, *Karl Böttichers Tektonik* 13-14; Bauer, "Architektur als Kunst," 147-155.
- ²⁴ See for example Bötticher, *Die Tektonik* 93, 103, 115.

²² Wie bei der Pflanze die Frucht das *beabsichtigte* dem Keime schon *Inliegende* ist, wegen dessen allein die Momente des Stängels des Blattes, der Blüte entfaltet werden in den sie immer erst als ein *werdendes, zukünftiges* vorhanden ist..." Bötticher, Die Tektonik, 25.

²³ Bötticher, Die Tektonik, 94.

²⁴ On the Goethe's theory of history and its opposition to Hegel see Lowith, From Hegel to Nietzsche, 219-31.

²⁵ This was a common opinion of the day. K.O. Müller wrote: "Auf diese Weise erscheint die Kunst gleichsam als eine zweite Natur, welche den Gang derselben wiederholt und erneuert." Müller, Handbuch der Archäologie der Kunst §16, 6. Similarly Schinkel wrote: "Die Architektur ist die Fortsetzung der Natur in ihrer konstruktiven Thätigkeit. Diese Thätigkeit geht durch das Naturprodukt Mensch." Schinkel in Peschken, Lehrbuch 35. On Schinkel's theory of history and its relation to Goethe see ibid., 39-40; and Bergdoll, Karl Friedrich Schinkel, 149, 205, 208. See also K.O. Müller, who wrote

²⁶ For the following interpretation of the three Greek styles, see Bötticher, Die Tektonik 102-112.

²⁷ "Fertig und gerüstet wie Pallas Athene' dem Haupte eines Mannes entsprungen," Streiter, Karl Bötticher's Tektonik, 118. On Bötticher's ideas of autochthonous development of Greek stone temple see Bötticher, Die Tektonik 23-5, 85, 102-3, 117-8, and Exc.2.

²⁸ Bötticher, Die Tektonik Exc.1, 1-26.

²⁹ Bötticher, Die Tektonik 17, Exc.1, 2; and Bötticher, "Prinzip," 23. For Schinkel see Peschken, Lehrbuch 47.

³⁰ Hirt's text included architecture's tectonic development from the stone cave to the wooden tent, to the log cabin, to the finely crafted wooden Greek temple complete with the entire complement of architectural orders, and finally its transformation into the Doric stone temple. See Hirt, Die Baukunst nach Grundsätzen der Alten (Berlin 1809) 26-36.

³¹ On Schinkel, see the explanation of the famous "Langes Blatt" as well as the "Reinzeichnungen" that followed, in Peschken, Lehrbuch, 50-53, 59-65; Bergdoll, Karl Friedrich Schinkel, 212-217; and Potts, "Schinkel's Architectural Theory," 47-55.

³² Bötticher, Die Tektonik Exc.1, 17-21. On Schinkel's relation to the Gothic see Peschken, Lehrbuch 52.

³³ Bötticher, Die Tektonik, 18-20; and Bötticher, "Entwicklung," 325. This theory about the increasing complexity and sculptural qualities of art had come from Winckelmann but more directly from K.O. Müller. See Handbuch der Archäologie.

³⁴ Bötticher, Die Tektonik Exc.1, 3.

³⁵ See Bötticher, Die Tektonik Exc.1, 17.

³⁶ Here again it is interesting to note the similarity to Schinkel, who defined architecture as the combination of different materials. See Peschken, Lehrbuch 21-22, 49, 117.

³⁷ Bötticher, Die Tektonik 25, Exc.1, 26.

³⁸ See Bötticher, "Prinzip," passim. Bötticher uses interchangeably the words "Verbindungssatz" (Die Tektonik 93), "Synthesis" (Die Tektonik 93), and "Verschmelzung" (Die Tektonik 25, 95), the last being the word that Schinkel used.

³⁹ Bötticher, "Prinzip," 24.

³⁹ Bötticher, Die Tektonik xi-xii.