Form Outside In

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> "A perfectly constructed form is a delimited, *not* closed form; it does not pretend to be able to imagine the Absolute (closed form) but intend to unveil the plurality of thinkable *and* constructable orders, by virtue of which the continue is imaginable. Just as any element whatsoever can never be given exhaustively, never is conceivable within a closed horizon, once for ever, likewise any order whatsoever will always 'emerge', intrinsically, out of its own structure, it always will project itself, on the horizon of the possible orders."
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> Massimo Cacciari, *Icone della Legge*

Ever since Kant defined the form as "that which allows the manifold of appearance to be ordered in certain relations,"[1] form has always been, in one sense or another, associated with ordering of appearance. However, whether this ordering should rely on a perception of the *appearance* of form or on a conceptual bringing to *appear* remains problematic.[2] Raising this question, necessarily implies facing the indecidable fluctuation of its order between the representation of its *appearance* and the presentation of its *appearing*. Yet the problem of the re-presentation of form, is all the more present when physically embodied within architectural form. This is clearly illustrated by Peter Eisenman's doctoral research on the *formal basis of modern architecture.* Conceived as a theory of architectural form, Eisenman's investigation not only concerns the form of or in architecture, but above all the form of its language, or that which makes its formal language singular in relation to other languages. In an attempt to radicalize the Modern Project—and thereby confront the representational problem of its pro-jection—Eisenman's formal language pushes the question of form beyond its traditional association with ordering and representation towards a questioning of its transformative and distorting capacity, and in a sense, rediscovers the manifold denotation of form in its original sense of figure.[3]

Rather than an extensive analysis, this introduction is meant to be a retracing of some of Eisenman's multiple tracks in his quest for the *interiority* of form in architecture and its necessary and problematic *exteriorization* through the distorting language of its formal layers. How to read and how to write architecture, or better, how to *see* architecture, are questions which are constantly returning and returned in Eisenman's theoretical discourse on architectural form.

Considering the original sense of theory as an act of seeing (*theorein*), one could conceive Eisenman's theory of architectural form, not only as a 'way of thought' (8), but above all as a *way of seeing* which would tend to open the vision from the level of mere perception to a level of conceptual visibility. The clarity of the visibility thus exceeds the traditional understanding of clarity as the 'literal transparency' of vision.[4] Seeing would then mean to bring into visibility the conceptual references of the perceived architectural forms, or better, to bring into apparition the deployment of these absolute formal principles in their in-forming and trans-forming essence. The visibility of the seeing distinguishes itself from the vision of looking, by shifting its perspective away from the perceptual vision of form-as-object to the conceptual visibility of form-as-relationship.[5] The former engages the rational intention of the willing subject and focuses on the total comprehension of the form of the object as a closed entity, while the latter stimulates a reading of the form in its relational essence of forming, which, as we will see later, involves a movement of self-disclosure derived from the "inherent dynamics" of its own "internal order", that is from the very geometric properties of the "generic form" itself (6).

Architecture's essentiality can then be seen in its "form-giving process", as being essentially a "giving of form" (12) from which will evolve a "language that will communicate the nature of the formal essence of any architecture" (5)—and not only the formal basis of modern architecture, as suggested by the title. "Giving of form" is not just the shaping of aesthetic ally pleasant objects—nor is it an end in itself, for it presents an order which is inherent in its own giving-of-form (22). To see is more than the systematic classification of specific forms through the identification of their generic antecedents; rather than focusing on types of *identity*, it involves seeing the processes which *differentiate* the specific from the generic antecedents, since these are made comprehensible by drawing attention to the "absolute references from which specific *distortions"* derive (42). However, these references can only be conceived as ab-solute and universal insofar as they are cut off from the reality of the perceptual realm, while at the same time in-forming (ordering) the transformations (distortions) of the specific, perceptual form. Since all formal ordering involves a "complex dialectic resulting from the respective demands of generic and specific form within the design process" (40), it is through the critique of the design process in its own processing activity, that the form-giving process can be best approached.

Bearing in mind, once again, the message carried by its title *the formal basis of modern architecture*, Eisenman's way of seeing might further be considered as a critical attempt to open up the rational architecture of the historical modern avant-garde to its own formal premises which were repressed by the historical reduction of its rationality to mere functionalism-as-technique. This necessarily implies an abstraction of rationality and modernity out of the grips of the historical zeitgeist of the modern movement, introducing a movement of reflection which, by

exceeding the narrow historical context of this particular period, opens rationality to its own problematic condition by challenging its traditional understanding as being determined through the mediation of the subject of the *raison moderne.*[6] Eisenman's formal investigation, while it is a critical rereading of the modern architecture, exceeds the strict scope of its object in order to explore the rationality of "all architecture regardless of style" (5). By loosening the diachronic ties in which rationalism was entangled and fixed, its theoretical significance for architecture can then be freed from historicist misinterpretation and obscuration[7] and opened up to its inherent formal potentialities—which, in a sense, continue (and transgress) a formal geometrical investigation as old as the history of architecture, while abstracting it from its strict methodological and idealists ends.

Eisenman's theory of architectural form can be seen as a "open-ended theory," an attempt to develop a systematic formal language which signifies itself by the open-ended character of its methodology.(146) While developed from within the design process itself [8] (on the basis of the generic properties of form), it does not really present itself as a comprehensive systematic tool for the ends of design or criticism (5). This theory is not a methodology meant for direct application and consumption—or, in Tafurian terms a *critica operativa*. Tending towards the understanding and clarification of principles and fundamentals, rather than their codification (145-6), it provides a language for discussion and interpretation whose open-endedness resists to all temptations to codify and normalize which could derive from its development in logical and rational terms. (146). This resistance to legitimization is in a way critical of the methodology in itself, since the latter is constructed on a necessary petrification of its own regulatory apparatus. Eisenman's open-ended theory thus exceeds the traditional understanding of methodology as an analyzing technique comprising a set of rules and procedures, without yet overcoming the very logic of methodology's rationality. While assumed as an absolute and necessary condition for architecture, rationality is opened to an internal trembling inquiry tending to loosen its own deterministic tendency to closed or fixed ending. But opening rationality's positivity to its own negativity, does not therefore necessarily imply a leap into the polemics of total relativism (or organic vitalism).
To chose the way of the open-endedness could then be considered an attempt to escape the historical tendencies of architectural theory to both over-rationalization—the systematic and typological classification of the classical "closed ended" treatises—and under-rationalization—the "polemical" manifestos so characteristic of the Modern Movement (138-145). It is meant to trace the critical zone of the line which separates the closure from the openness, while not stepping beyond the line which can then be deepened by opening its ends to its internal condition as a temporal relation.

The singularity of Eisenman's "open-ended" methodology can be fully illustrated by considering the broader theoretical spectrum of the sixties as characterized by its general concern with the strict methodologies of design processes. While assuming the broader conceptual premises of the rational heritage, Eisenman's way of seeing critically inscribes itself on the edges of its rational ends, in a sense anticipating the broader 'revisionist' tendencies of the late sixties, which will only fully emerge, in contradictory forms, in the next two decades. His seeing resists to the determination of rational positivism and develops a formal language based on rational and logical basis, whose rationale, in its assumptions of ambiguity and indeterminancy, singularly contrasts with formal languages based on mathematic-logical principles—as shown, for example, in the rigorously scientific and axiomatic approach of Christopher Alexander's almost contemporary writings.[9] But, on the other hand, it also eschews falling again into the classical tendencies of formal classification, contrasting thereby with Norberg-Schultz's later assumption that "a real formal language…can only be solved through the [hierarchical] formation of types."[10] It contrasts too with Aldo Rossi's analogical attempts to develop a truly autonomous and scientific *Architettura della Città* through architectural morphologies and urban typologies.[11] Eisenman's formal theory further contrasts with the polemical and stylistic undertone of Venturi's gentle manifesto, whose *complexity and contradiction in architecture,* relying on the "difficult obligation toward the difficult whole,"[12] does not really succeed in overcoming its debt to dialectical alternation. The international success of both Rossi's and Venturi's 1966 publications will further boost the steadily growing distrust towards strict functionalism in modern architecture which already clearly emerged with the final disbanding of the CIAM Conferences in 1956.[13]

However, among the late fifties writings[14] challenging orthodox modernist confidence, those of Colin Rowe—from his *Mathematics of the Ideal Villa* (1947) onwards to his *Transparency: Literal and Phenomenal* (1956)—are particularly influential in the sense that they renewed acquaintance with the formal preoccupations of the European classical tradition, through the pivotal figure of the late Corbusier.[15] Rowe introduced in the field of architectural critique and design education—in both of which he was directly involved as a architectural critic[16]—the scope of the formalist art historical tradition, in which, as Wittkower's unique pupil[17], he was fully embedded.
In many respects, Rowe inscribes himself in the continuity of the formalist tradition of the German aestheticians[18], even if, through his particular sense for ambiguous dialectics, he pushes his investigation beyond the edges of its historicist underpinnings. This can be seen for instance in Rowe's spatial development of the Gestaltian ground-figure relation, which, in one sense or another, could be considered as a further elaboration of some of Riegl's or Wölfflin's formal categories.[19] Yet, Rowe's interpretation of the figure-ground relationship as an interaction between "shallow" and "deep space", introduces a supplementary dimension of spatial contradiction and stratification.[20] Another example of Rowe's formalist background is his rejection

of “the notion of an overriding coercive and creative *Zeitgeist*” [21], which implicitly refers to Riegl’s *Kunstwollen* as the *Wollen of an Epoch.* Even in his propensity to dialectical tension—through his distinction between the perceptual and the conceptual, the transparency and the opaque, or through the use of notions as ambiguity, tension, conflict, contradiction or juxtaposition—Rowe is still indebted to the tradition of dialectical oppositions so typical of the formalist tradition.[22] However his critique of the modernistic will to transparency and novelty—by systematically confronting it to its historical dimension— and his sense for ambiguous dialectics will inspire a whole generation of young architectural critics and architects.

During his 2 years stay at Cambridge where he spent his time between teaching activities and doctoral research, Eisenman had the opportunity to become deeper with the subtleties of the formalist approach—mainly through his frequent contacts with Colin Rowe with whom he also went twice on architectural tour through Europe. In his attempt to elaborate a formal language based on the intrinsic properties of form itself, Eisenman comes really close to the formalist *objectivity*[23]*,* or at least to Fiedler’s idea of *pure visibility*[24]. However, his formal investigation largely exceeds the scope of mere formalist aesthetics, since it has to face the three dimensional reality of the architectural form, which is rather different than the aesthetic *mimesis* of spatial depth on the flat surface of a picture plane. For Eisenman, architectural form deals not only with specific perceptual properties (such as shape, color, texture, size, scale and proportion), but, above all, with generic properties (such as volume, movement, mass and surface) which constitute the very *interiority* of the architectural form. (37) Yet, prior to examine the *interiority* of the architectural form and its systemic *exteriorization* (through the grammatical and syntactical development of its formal vocabulary), let us first further reflect on Eisenman’s understanding of form in relation to architecture, and more specifically on the priority given to formal considerations over functional, structural and technical ones.

Opening up form to the contingencies of the architectural realm, necessarily implies to test it to the resistance of its own physical condition—the *Gestalt-as-Beschaffenheit*[25]—or what Eisenman today refers to as the *presence* of architecture, t. i. its necessary obedience to physical, functional and representational contingencies. Architectural form has to be inscribed within the realities of these positive containments while withstanding the figurative traps of the architectural presence. What makes the singularity of the architectural form in respect to form in aesthetics, is its capacity to be both specific and generic. In its specific manifestation, architectural form has to respond to the conceptual and programmatic demands (intent and function) of the architectural reality, while, in its generic dimension, it acts as a trans-forming and in-forming reference for this same physical manifestation.(23, 37)
It is precisely this capacity to be both specific form and generic form—or better, this capacity to *be* and to *ex-ceed* at the same time the mere phenomenal condition of specificity—which confers

to the architectural form its priority in respect to the other elements of what Eisenman calls the "architectural equation".[26] By claiming the priority of architectural form in relation to function, structure and technics, Eisenman certainly does not underestimate the importance of these elements, on the contrary. Considering architectural form as perceptual and conceptual, specific and generic at once, in a way enables Eisenman to loosen the deterministic linkage of form to mere functionality and technicality—so characteristic of orthodox modernism—without falling into an aesthetic search for "form for the sake of form". The priority of the architectural form much more involves the temporal dimension of an a priori *presentness*—which in a sense exceeds the containments of architecture's presence by necessarily including these other elements in an excessive way. It is not a matter of overcoming or excluding their presence, but a matter of including them by critically opening their excessive conceptual dimension. The conceptualization of these elements, through the reading of their conceptual form towards they intent, tends to open their reading to the 'visibility' of their presence by transgressing the forms of the perceptual 'vision'. Seen from this perspective, function, structure and technics can be seen as both in-formed by the *genericity* of the architectural form and conditioned by the internal organizational force of their own specific condition, both conditions co-existing simultaneously as 'and...and'. In this sense, Eisenman's "hierarchy of elements"(20) also exceeds the traditional understanding of hierarchy as a linear process of ordering implying fixed rules of domination of the elements among each other.

This brings us to question the very *interiority* of the architectural form by considering the properties of its generic form. In its generic condition, the architectural form reveals a remarkable capacity to self-generation and self-multiplicity—"an additive or reproductive quality which allows it to generate and multiply" (14)—which confers an inherent dynamic dimension to its static geometric condition. This additive capacity would for instance allow a cube, or a sphere—to mention only the basic geometric solids—to be considered in their dynamic dimension of *cubeness* of *sphereness*. It also allows the generic form to meet the open-ended requirements of a future order "capable of encompassing change and growth, while still retaining its character as an absolute." (12). In this respect, it is thus obvious that Eisenman's generic essentially differs from the common understanding of the generic as the banal, which necessarily recalls the notion of the repetition of the same. Today Eisenman would argue that the *self-similarity* of the generic radically diverges from the *self-sameness* of the banal, since, what is repeated, is the differential singularity to generate perceptual change (14) through addition and reproduction, and not the identity of the same.[27]

The generic, if it will keep the continuity of its future open-ended, can only be absolute, universal and total insofar as its order is *ab-solutely* cut off from the realm of the specific—in fact *ab-solutus* refers originally to a cutting off. This implies that the visibility of the generic radically breaks with

the vision of the specific—which in its Latin root *specere* also means looking. Its immanent transcendence, implied within the logic of its own inherent order, cannot be directly externalized, unless through the manifold distortions of the specific forms.

Since generic form is static and dynamic at once, it conjugates simultaneously the one-and-the-multiple, or better, it declines at once the one-as-the-multiple and the multiple-as-the-one. Both conditions of its one-multiplicity are involved into the internal dynamics of the standing as *stasis*. For it cannot be reduced to a mere stationary standing without motion[28], the *stasis* of the generic could then be interpreted as a movement-as-interval (32), rather than as a movement-as-motion. The temporal dimension of its standing-between, or better the *in-stant* of its standing-in, would then fully contrast with the mechanized Time-Space which tends towards the diachronic *moment* of the movement.[29]

In light of Eisenman's many gestaltian references, it might be interesting to consider how the generic form further differentiates from the holistic concept of form as *Gestalt*, which bears the *Ganzheit* principle that "the whole is more than the sum of its parts." [30] Contrary to the latter, whose exclusive ex-cess involves an movement external to its parts, the generic form generates an inclusive excess, in which both the one and the multiple are conceived in their necessary inclusive interaction as com-possibility. It is furthermore interesting to note how Eisenman constantly pulls some of the gestaltian prerogatives to which he refer—as for instance clarity and comprehensibility—out of their psychological, holistic and perceptual context in order to test their validity for the conceptualization of a rational architecture.

The implied and inherent logic of the generic appears the more obviously when considering the four properties which Eisenman reckons to be generic of the architectural form and necessary to its conceptual understanding. Volume, movement, mass, surface, all of the four properties are engaged in a web of mutual implications linking, roughly speaking, volume to movement, mass to surface, or further volume-movement to mass-surface. The entanglement of their paradoxical interrelations—the one being signified through the other—makes that none of them can be clearly circumscribed; they all thus participate to the same open-ended visibility of the generic.

However, a good point to start with, is to consider the architectural form as essentially a dynamic "volume that exists in space" whose dynamic condition is brought about by the limitation and containment of the space. (25) But to fully grasp the real implications of this statement, it certainly might be helpful to refer to the whole quotation:

> *"…volume can be thought of in a dynamic sense: it is particularized, defined and contained space. It can be thought of as both exerting a pressure and capable of resisting pressure upon it. Thus, 'space', considered as a continuous, unbound condition becomes a redundant term, even though it must be conceded that all forms exist in this*

> *state. Space cannot act, flow, or interpenetrate in its own right. Architectural form can be thought of as 'volume' that exists in 'space'. Volume is the dynamic condition of space, brought about by its limitation and containment: it cannot be thought of in an unstressed condition since by definition it is activated space."* [31]

Eisenman's architectural form thus clearly develops from the *containment* of the space and not from is *continuity*. This spatial limitation, which is obtained by means of the two other properties of mass and surface (33), makes the volume to exist as dynamic and activated space, and thus as movement. (This is thus how the four properties are implicated within each other.) However the action of the movement within or upon the volume cannot be reduced to mere physical circulation since it "encompasses time, interval, and circulation" (32). Movement affects the volume in all its physical manifestations. It is thus the *interiorization* of the temporal dimension of the movement-as-time that gives volume all its dynamics and informs the whole development of the architectural system.(32) On the other hand, space might be considered, in its dimension of absolute continuity, as a sort of 'pure form'—in the original sense of *forma* as receptacle or supporting frame model— conferring a condition for the *exteriorization* of form. The dynamic condition of the generic form thus relies on the one hand on the limitation of its spatial condition (which is embodied by the combination of mass and surface) and on the other, on the interiorization of movement-as-time. Both the spatial and the temporal conditions are thus conceived as a priori implications in-forming the phenomenal reality of the architectural form as volume and movement. In their continuity, both the spatial and the temporal are conditioning the exteriorization and the interiorization of architectural form. [32]

Eisenman's spatio-temporal condition drastically differs from the mechanized Time-Space of the Modern Movement, which tends towards total mobility, transparence and openness. The continuity of time-space is the continuity of its condition, and not its phenomenal spatio-temporal manifestation. Time-space can only be absolute, universal and total when its condition is ab-solute and de-cisive, t. i. totally cut of the contingency of the real. Therefore, a continuous space is only possible as impossible continuity.[33]

To exteriorize the continuous as concept within the phenomenal realm, by trapping it within the perceptual world of the volumetric finite, as proposed by some exponents of the Modern Movement, would be absolutely problematic, since it would lead, as expressed in Gropius' new unity of 'absolute neutralism' (143-4), to a condition of total relativism in which the "permanent revolution of the new" is fetishized as a unifying law-made-stone. The externalization of the continuity, its coming out as perceptual phenomenon, far from rendering it visible, makes it the more invisible, reducing it to a closed, external static entity (144) mute about its own internal undecidable condition of implied continuity. This will to represent and to petrify the idea of the continuous in the new forms of the machine—through continuous, pinwheel or transparent

volumes and the like—in a sense constitute, as is suggested in the concluding chapter, the problematic knot of modern architecture.

Contrary to space which “cannot act , flow or interpenetrate in its own right”, volume is thus conceived as an activated, dynamic and limited space, which is capable of both exerting a pressure and resisting pressure upon it. And since the pressure of movement can be thought of as generative of form, volume can be considered as both giving or receiving form. (26). The notion of limitation further appeals to make a distinction between what is enclosed and what is not enclosed, between the positive enclosure of the internal volume and the negative interval of the external volume which is here considered as the space activated between positive volumes. Since the ungraspable conceptual dimension of the spatial continuity makes it virtually impossible to refer to space in the phenomenal sense of outer (or inner) space, it could make sense to distinguish the internal or positive volume from the external or negative volume, as a substitution for the traditional outer and inner space distinction. [However, since volume and movement are mutually implicated in the architectural form, both the internal volume and the external volume are closely interacting with each other, producing an interweaving of figure-ground relationships. (26)] To refer to the negativity of volume as an interval, or as an activated space between positive volumes, is the more significant in the light of Eisenman’s later concern for the *in between* and the *interstitial* space. Both the interval of the external volume and the today interstitial space, could be referred to as voids, whose absence, as a sort of negative productivity, is informing the conditions of the presence.

In the continuation of the idea of a space as pure *forma*, or supporting frame. Eisenman further a develops the idea of a spatial cartesian grid. This spatial implied grid is meant as a pure conceptual and formal receptacle allowing form to be developed both in its generic and specific dimension. As an implied continuum, it provides an absolute reference for the development of the architectural form, t. i. for the formal systematization of volume, movement, mass and surface. In this sense it provides a spatial framework for the dialectics of mass and surface, allowing the volumes and the vectors of movement to be pinned, stretched or tensioned. But, above all, it allows the use of the horizontal or the vertical as framework of reference (31) for what one might call the spatialization of the figure-ground dialectics. By imagining the possible reproduction of figure-ground along the coordinates of the implied spatial grid, one could conceive this spatialization as a stratified succession of horizontal or vertical formal layers, deploying along one horizontal coordinate (horizontal planes) and two vertical ones (longitudinal and lateral sections).(28)

In a way, this is a manner to test the figure-ground relationships to the spatio-temporal conditions of the architectural form. The projection of the simple configuration of the *Gestalt* into the third dimension (31), makes it possible to add an *other* dimension to the figure-ground approach, transgressing its traditional gestaltian and formalist understanding as mere perceptual-optical and two dimensional alternation. This exposure of figure-ground to a spatio-temporal conceptualization which is mainly achieved through the interiorization of the movement within the volume[34] and manifests itself in the "interweaving of the positive and negative volume", introduces a certain internal active fuzziness and cross-fertilization to both terms, opening up their former condition as well defined closed totalities. The dialectical relationships between figure and ground are here thus not read as a simple alternation; or the one, or the other. Ground and figure really co-exists, the one on top of the other, or better fluctuate the one throughout the other, since both of them are fundamentally seen as spatio-temporal interweaving volumes-movements.

If the mutual involvement of volume and movement is basically determining the spatio-temporal dimension of the architectural form, the "real means of containing space" and "controlling volume" (33) are provided by mass and surface, both properties being committed to each other in a sort of reversed reciprocity. While mass is basically referring to a sculptural solid which is cut or eroded, surface can conceptually vary from an almost two dimensional layer stretched about the mass of the volume to the thickness of a three dimensional volumetric plane which, if multiplied, could form an imaginary volume stratified as a pack of cards.(33) But, perhaps it would be more accurate to refer, in the light of Eisenman's first houses, to a House of Cards, since surface planes are not only stratifying along the vertical coordinates of the implied grid, but also along the horizontal ones. It is clear that, in his reinterpretation of Michelangelo's definitions of mass as sculpture and surface as painting, (34) Eisenman is more interested in the forming process of both sculpture and painting as respectively cut-away and additive, than in their respective formal condition of three dimensional and two dimensional object. Since surface is equally qualified in reference to volume, it exceeds as such its traditional connotation as mere flatness.
As in the case of volume and movement which were defined according to their spatial an temporal relational dynamics, mass and surface are thus thought of as open forming processes, rather than as closed formal entities, for mass can be considered essentially as a forming process of subtraction and erosion, and surface as one of addition and building up. It is precisely this way of *seeing* form in its relational visibility rather than in its objectified vision, which enables Eisenman to read a building as surface and mass at once. This double reading, to which Eisenman refers as a "mass-surface dialectic", is achieved in Terragni's *Casa del Fascio* whose purposeful ambiguity allows the building to be read simultaneously as built up in a succession of surface planes and cut of as mass whose has been eroded.

Having exposed “the internal and implied order” in which are implied the four generic properties of the architectural form, we now face the problem of their necessary *exteriorization* in the specificity of the architectural realm. In its process towards manifestation, architectural form undergoes a complex dialectic resulting from the respective demands of the generic and the specific, the conceptual and the perceptual, the formal and the functional, the internal and the external. (37) The problematic dimension of these conflicting requirements fully appears in the design process where the formal language of the architectural form is declined to its full inherent systematic development.

The design process could be conceived as a self-regulating ordering process which organizes the architectural form through the mediation of a multiplicity of self-regulated formal systems. For Eisenman, “any ordering of organization of architectural form within the design process can be called (…) a formal system.” (38) Since each of these systems are providing an ordering framework for the deployment of the grammar and the syntax of the formal vocabulary, they might be considered to “have their own essential generic character and their own self-generated laws” (39).Whereas the grammar is dealing with the implementation and the distortion of the formal vocabulary resulting from the *specific* programmatic requirements (39, 47), the syntax is setting up the basic rules for grammatical arrangement which are deriving from the *generic* condition of building and environment.(39, 50) Both the vocabulary as the syntax are inherently derived from the generic form, which, in itself, is suggested by programmatic requirements. But systems are not only originated from programmatic conditions; they are also constantly confronted to those. Therefore they tend to organize, conceptually and perceptually, the necessary resulting distortions from the generic to the specific.(42) By the interaction of the syntactical and grammatical development of the vocabulary, the requirements of both conceptual and perceptual, specific and generic, formal and functional are thus combined and interwoven, each specific combination of syntax-grammar-vocabulary forming a framework-at-work with its own self-generating order. Let us now analyze how the vocabulary is syntactically and grammatically developed.

Since vocabulary is derived from the four generic properties of the generic form (volume-movement-mass-surface), Eisenman advances several types of formal systems which are roughly organized according to them and which could be considered as a first systematic elaboration of vocabulary for further grammatical and syntactical development.
Eisenman refer to them as volumetric systems, movement systems and mass and/or surface systems, each of them comprising several subdivisions. If *volumetric* systems appear to be continuous*,* static or composed of volumetric planes[35], *movement* systems involve pinwheel,

echelon and spiral movements[36]. Eisenman further differentiates *surface* systems from *mass* systems, which can be combined to form a "mass-surface dialectic." [37]

It should be noted that, besides a clear desire not to conceive a comprehensive and exhaustive catalogue of types—the multiplicity of the programmatic requirements makes it irrelevant to catalogue every specific application of the systems (47)—there is here even a more explicit will to problematize the very nature of types which, due their mutual interaction, are to be considered as problematic structures, rather than as a well defined types.[38]

In the specific development of the architectural form, the typical elements of vocabulary will be assembled according to grammatical and syntactical needs. This means that the specific configuration of volumetric-, movement-, mass-, and surface systems will fluctuate from project to project, involving even combinations of systems of the same type.[39] (Yet, volumetric systems should generally be considered to be basic to all specific developments—since, after all, architectural form is primarily volume.) Moreover—and here resides the singularity of Eisenman's formal analyses—the diachronic and synchronic combination of these systems during their formal development will lead to mutual disturbances and distortions, t. i. to situations where some dominating systems will repress others [40] or where two systems will coexist in simultaneous ambivalence.[41]

Whereas the grammar is specifically dealing with the implementation of these distortions of the vocabulary, the syntax is setting a set of guidelines for their implementation (syntactical rules), which derive from the generic conditions of both building and site (50). Both building and site have their own syntactical development, which, in the case of the former (internal syntax) derives from the programmatic and functional [42] organization inherent to the building, and, in the case of latter (external syntax), develops from the buildings external relationship to the site on the level of its access. In both cases Eisenman distinguishes two syntactical categories [43], the linear and the centroidal—which, in a sense, emanate from the dynamic condition of the generic form as linear (a linear bloc or a cylinder) and centroidal (a cube or a sphere) at once. A linear system thus inherits the "additive and reproductive" capacity of the generic form, contrary to a centroidal system, which is indebted to the enfolded, but still dynamic, condition of the "static" as *stasis*. Both categories are thus referring to a dynamic condition and not to the shape of a volume or an environment; centroidal sites can be read linearly [44] (56) and linear sites centroidally. This dynamic condition is provided by the interaction of vectors or lines of forces (51) which could be considered to work inwardly (thus acknowledging a center) and outwardly (by linear axial progression) within the architectural form, in order to produce respectively a centroidal and a linear condition. However, as we already exposed, these vectors are not only

interacting diachronically upon each other—in an interplay between the internal and external condition of an architectural form, they are also interweaving synchronically along the multiple systemic layers (the formal systems) of the architectural form.
The distinctions between centroidal and linear on the one hand, and internal and external on the other, lead to a range of conflicting combinations, which can vary from centroidal and/or linear tensions between external and internal syntax (building-site relationship), to centroidal and/or linear tensions inherent to internal (building) or external (site) conditions. From this dynamic interaction of vectors within the architectural form emanate syntactical "principles" and "rules", which are informing all distortions of the generic form. For instance, when a building is considered in specific relation to its environment, both internal and external requirements are acting-reacting upon each other, producing distortions ('syntactical problems') which have to be resolved through the grammatical development of the formal systems. These problems will fully appear at the level of the access to the building, where the syntax of both internal and external conditions enter into collision. Yet the intensity of their mutual interaction will vary according to the angle of the external axis in relation to the building—t. i. the axial direction of the main road leading to the building. If the impact of the external axis is perpendicular to the building, and thus directly hitting it, both internal and external conditions will act and react upon each other in such a manner to create an ambivalent conflicting state of non-resolved oppositions, where both conditions are simultaneously coexistent as "both…both". [45] In this case, the direct external impact is both denied (stopped or stuttered) and acknowledged by the internal generic condition, or, to say it in another way, the external vector is both determining (reckoning), and distorting the internal syntactical condition.[46] On the other hand, if the external axis is passing in a parallel way along or in a diagonal way on the building, the conflicts between internal and external requirements will not lead to such a state of ambivalency, and the distortions will remain tensioned through processes of domination and repression.[47]
To sum up, formal systems must thus develop from both external and internal functional requirements, which, in their generic condition have their own syntax (61) that has to be acknowledged in the grammatical development.

In this complex nexus of relationships, it is precisely the architect who intervenes as grammatical interpreter of the "formal essence of the building" by giving physical form to the generic requirements of the building.(40) His interpretation, aside from any ethical or aesthetic consideration, tends to match both the formal and functional requirements which are essential to the building and his "imagination and intuition (…) come into play in the subtle interweaving of system with function." (39-40) However, functional, as we already mentioned, exceeds its traditional meaning as utilitarian—which is anyway presupposed—in the sense that it refers to the dynamics of the vectors within the formal systems.(52) This requires then from the architect an

ability to *see* form in its dynamic functionality, or better, to *see* the distortions produced by the syntactical interaction of internal and external vectors within the architectural form. (52) The conceptual syntactical requirements of both building and site, have thus to be acknowledged in their inherent complexity throughout the grammatical development, what doesn't imply that, in its interpretation of the programmatic and formal aspects of the syntactical conditions, the formal language of the architect should be—according to the much controversial "form follows function" statement—linearly bound by the functional requirements. "The argument that a building must have this or that form because of a specific function cannot be sustained, since although all systems originate from given programmatic conditions, there is normally more than one system capable of satisfying them." (39-40)

This is fully illustrated by Eisenman's analyses of formal systems, in which the confrontation between four different grammatical developments in more or less similar syntactical conditions[48], proved that "the use of *language* in architectural context" (64) could offer a multiple and differentiated formal reading of architecture, without therefore sacrificing the rationality of its formalism or falling into the mere positivism of strict functionalism. Much has already been said about these formal analyses, but perhaps it would be useful to review some of the characteristic grammatical tools of each of the analyzed architects, more specifically in the light of their respective conceptual and rational inclination.

Frank Lloyd Wright, indubitably, can hardly be labeled as a fully 'rational' or 'conceptual' architect in eisenmanian sense. His grammar is still much indebted to the classical Beaux-Arts tradition, since it engages a play with mass volumes which are symmetrically mirrored ("counterpoised") about minor or major axes, and avoids the implementation of movement or surface systems. However, Wright's use of an overlaid double grid system (respectively along the transverse and the longitudinal major axis) in his *Avery Martin House* introduces some interesting distortions and dislocations which are produced by the pressure of the axial grids upon each other. In Eisenman's reading, it is the exceptionality of these dislocations in respect to the overall symmetrical logic—rather than the idea of centrality, symmetry or continuity—which is producing compositional significance.[49] Yet, Wright's idea of grid overlay doesn't exceed the condition of a two dimensional figure-ground collage and misses the three dimensional quality of f. i. Le Corbusier's spatial grid. Wright's axes, in this context, are still thought off as *flat* configurations for the mirroring of mass volumes, and—contrary to Le Corbusier's, Terragni or even Aalto—are not considered in their *planar* potentiality as surface references for spatial tensioning, extrusion and stretching. If the particular non conflicting syntactical condition of the *Avery Martin House* (no direct impact of the external axis on the building) still allows Wright to systematically control the dialectical condition of the major axes by avoiding a confusion between minor and major axes[50]

and by organizing distortions in relation to an axial counterpoise, the direct conflict between internal and external syntactical conditions in the *Avery Coonley House* leads to a shattering of what Eisenman presumes to be a centroidal generic[51] form into a linear one, and to a "fluctuating, ever-shifting state of *non*-purposeful ambiguity" (97) where the constant changing grammar hesitates between a centroidal volumetric ordering organized about an axial counterpoise on the one hand, and an aborted desire for a linear movement ordering on the other.

Whereas Wright's volumetric grammar doesn't really succeed in overcoming its indebtedness towards axial counterpoise, Aalto's volumetric grammar even seems to lack every vertical axial reference, since the volumes are placed in relation to each other according to an ever changing picture plane (101), which implies the use of both volumetric as movement systems (spiral and echelon). However—contrary to Le Corbusier's conceptual internalization of movement systems into volumetric systems—Aalto's movement systems still are perceptually embodied in the volumetric dimension; both spiral and echelon are primarily expressed as spiral and echelon volumes.[52] Despite the fact that these volumetric movements aren't organized about a static axial picture plane, they still could be considered as being organized in reference to a horizontal coordinate (the level of the central court, or the ground level) in relation to which the volumes are vertically varying (in height or depth); the presence of this conceptual horizontal reference, enables Aalto to rationally control his grammatical development.[53] At the same time, Aalto is fully aware of the specific grammatical articulations which are implied by the different internal-external syntactical requirements. If, in the *Saynatsalo Civic Center*, the diagonal impact of the external vector on the building both determines its generic state and distorts its specific development [54], it doesn't lead to a fully ambivalent dialectical condition as in the *Tallinn Museum*, where the direct external impact induces a composite system where both volumetric and movement systems are mutually overlaid, and where the external axis is at the same time activating the internal syntax and stuttered by it.[55]

Yet Aalto's grammar seems to rely on both volumetric and movement systems, and his use of the latter still remains confined to its volumetric expression—which cannot be said of Le Corbusier's conceptual use of both volumetric and movement systems. Le Corbusier further singularizes himself through the use of a *spatial* grid which serves as a sort of three dimensional conceptual framework for the pinning and above all the distortions of volumetric, movement, mass and surface systems—this, in total contrast with Wright's *flat* understanding of grids and counterpoise axes. This allows him in a sense to 'spatialize' the ground-figure problematic by using both vertical and horizontal planar references [56] as ground (surface) for the volumetric development of mass (figure), which could be considered to be moved by the (internal) conceptual working of movement systems and the trust of external vectors.

If we now consider Le Corbusier's *Pavillon Suisse*, one could argue that his grammar fully acknowledges the direct conflicting nature of both internal and external syntax, by continuing the spiraling movement of the external axis within the internal linear volume—the whole internal volumetric system being triggered from within and from without, in a swarm of successive volumetric distortions which are resulting from the interaction between the external centroidal and internal linear movement syntax. [57] In the *Cité de Refuge*, on the contrary, where a direct (perpendicular) conflict between internal and external was syntactically inconceivable, an entire entry complex had to be organized through a succession of smaller pavillons, whose volumetric progression is guided by the internal formal syntactical characteristics of the successive elements.[58] In both cases though, Le Corbusier is playing on the conceptual dimension of respectively the movement systems (for the former) and the volumetric systems (for the latter), relying on major part on their inherent conceptual dynamism (linearity, centroidality, compression, expansion, shear etc.). In either cases, the trust of the external vector is dislocating the longitudinal axis of the linear building towards the rear of the building, forming a vertical "backbone" planar surface from which volumes are stretched and extruded, columns and walls are in- and deflected. Yet, in the case of the *Pavillon Suisse*, the direct conflict of internal and external syntax, are producing a "two part" volumetric and movement system leading to an ambiguous dual reading at the level of the columns, the facades and the endings of the volumes.[59] In the *Cité de Refuge* though, the indirect entry articulation prevents Le Corbusier to develop his distorting grammar up to the level of a dual reading in relation to the columns, the facades or the ending of the volumes.[60]

Le Corbusier's grammar primarily develops from a conceptual approach towards volumetric and movement systems, and, in the here analyzed projects, towards an spatial incorporation of mass-as-figure and surface-as-ground into a conceptual spatial grid. Yet, his *Villa Garches*—when analyzed as a volumetric stratification of planar surfaces[61]—could suggest another formal reading of architectural form in which mass-surface systems could be more emphasized in relation to volumetric and movement systems, what is exactly where Eisenman's reading of Terragni is leading us to. Whereas Le Corbusier's implementation of mass-surface systems still involves a dialectic of mass volumes *against* a dominant planar surface (the one being stretched or distorted by the other), Terragni's formal grammar, in his *Casa del Fascio*, further systematizes the *Garchian* logic of stratification, pushing it to a problematic point
where the mass-surface dialectic cannot be a diachronic one anymore, but only a synchronic one. The *Casa del Fascio* can indeed be read at once as a massif volume and as a volume composed of planar surfaces, the former being derived from the internal centroidal syntax of the building, and the latter from the external linear syntactical requirements of the site. If the direct impact of the external site axis on the building considerably distorts the massif volume of the generic cube

(notably on the ground and on the top floors), the centroidal massif identity is still very present, certainly on the second and third floor.[62] As to the linear succession of planar surfaces, it can at the same time be read as derived from the external trust, and as developing a succession of transverse layers which finally stutters the external axial pressure. If the *polemos* between internal and external syntax produces the mass-surface ambivalence so typical of the *Casa del Fascio*, the *Asile Infantile*, which is not directly hit by an external axis, produces, so to speak, its own internal state of surface-surface ambiguity, unveiling the problematic condition of the internal *stasis*[63] inherent to its own centroidal syntax. By developing simultaneously two planar systems from two adjacent surfaces (the entry facade, and its adjacent facade on the left), Terragni tries to stick closely to the centroidal syntax inherent to the building, avoiding at once a possible reading of the building as linear, massif or composed on basis of an axial counterpoise of volumes about the diagonal. [64] Yet, the crossover plaiding of both surface systems, introduces distortions on each other which are fully acknowledged in Terragni's grammatical development.[65]

Throughout this short review of Eisenman's formal analyses, we have been able to grasp how different grammatical development of vocabulary—ranging from mere volumetric, via volumetric movement to mass-surface systems—were dealing with internal and/or external syntax problems, and how close grammar, syntax and vocabulary are interrelated in the frameworks of the formal systems, and thus in the overall strategy of the design process.
However, in order to fully grasp Eisenman's systemic approach, we cannot pass in silence over his methodical use of diagrams for the analysis of formal systems, since they are indicative of the overall concept of formal systems in itself. Even if Eisenman never relates either terms to each other, it seems very obvious that both are closely related—certainly in view of the theoretical importance of diagrams in relation to Eisenman's later projects. Only once, Eisenman mentions the importance of diagrams, when he refers to the "diagram of the generic state" for the understanding of its distortions.(97) The singularity of Eisenman's diagrams—compared to these of Rowe and Wittkower (static and mathematical), and even those of Le Corbusier (the four compositions)—is his cinematographic use of sequenced dynamic diagrams, as if they were composing a conceptual storyboard retracing the virtual processes of formal ordering. Yet, the very virtuality of this diagrammatic sketchbook would also enable a rewind, erase and replay mode since all of the diagrammatic sequences retrace only *possible readings*, in search of a never fully dis-covered generic condition.[66] In a certain way, through the use of these diagrams, it is possible to re-read the design process, to make a cartography, a genealogical mapping, of the genesis of the formal ordering process by unveiling the successive layers of formal systems.
Yet, these diagrams are not only a perceptual means of communication for the reading of formal analysis[67]—so to speak the diagrammatic memory of formal traces—they also act, conceptually speaking, very much alike formal systems, and in this sense they could tell us something about

their conceptual processing, or, more generally about the design process as both reading and writing process.
Diagrams, in their original Greek sense, refer not only to sketches or plans (*diagramma*), they also implicitly refer—if one analyzes both verb (*grammein*) and adverb (*dia*) separately—to a writing apart and a writing through. The very idea of dia-gram as a sketch for writing apart-through thus implies a notion of dislocation, and, more fundamentally, the notion of the temporality of the passage-duration, which are both notions we have already encountered during our commentary (cf. movement as time-interval and the specific distortion of the generic form). In their diagrammatic capacity, formal systems thus act as framework for both reading and writing of architectural form. Moreover—in the light of Eisenman's description of formal systems as self-regulated frameworks for the grammatical and syntactical deployment of the formal vocabulary (39)—it becomes clear that both *writing* and *reading* are necessarily simultaneously interlaced within the systematic development of the design process in order to permit the matching of grammar and syntax on conceptual (formal) and perceptual (functional) level.

This palimpsestic superposition of multiple reading-writing systems upon each other, implies a continuos process of addition and subtraction of text, tying and untying[68], in which one formal system is never fully erased by another. Since the former continues *sotto voce* its own process of self-disclosure, it necessarily interferes with other superimposed systems, engendering a process of mutual distortions or resonances. Paradoxically, the whole design process is then seen as an ongoing process of ordering through *dis*tortion. The rationale of this process, far from being derived from the transcendental universal Law (*Nomos*)—and equally far from its opposite, disorder—brings into play a set of self-regulating laws (*auto-nomoi*) which are creating a cacciarian *ordine senza Legge*.[69] The distorting capacity of this order without Law—though already imbedded in the one-multiplicity of the generic— furthermore reaffirms the fundamental assumption of the architectural form as form and matter at once, or better, as form turned *outside in* the matter.

We now might wonder how far Eisenman's critical "use of language in architectural context" (64), which takes into account "the conflicting nature of the written word,"(145)

[1] Immanuel Kant, Kritik der reinen Vernunft, in Albert Görland, ed. Immanuel Kants Werke (Berlin; Bruno Cassirer, 1923), sec. 1,56. "Dasjenige aber, welches macht dass das Mannigfaltige der Erscheinung in gewissen Verhältnissen geordnet werden kann, nenne ich die Form der Erscheinung.".

[2] Contrary to the *apparance* which mediates through the perception of the reasoning subject, the *apparition* endeavors to bring into apparition the being of an phenomenon through a movement of self-disclosure. Cf. Gilles Deleuze, "Deuxième leçon sur Kant," Internet, Inhttp://www.imaginet.fr/deleuze/TXT/280378.htm.

[3] In its original meaning of figure, form not only suggests an ordering, but also a representational or even a transforming process. *Figura*, in Latin, is derived from the verb *fingere*, which means to form, to order, to transform, or to imagine and represent. Originally, the *figura* (or *imago*) was a clay-statuette representing the figure of a dead relative.

[4] I refer to Colin Rowe's differentiation of 'literal' and 'phenomenal transparency, in his essay "The Literal and Phenomenal Transparency", cf. Colin Rowe, *The Mathematics of the Ideal Villa and Others Essays*, The MIT Press, Cambridge, Massachusetts and London, England, 1995 (1976).

[5] cf. Peter Eisenman, "From Object to Relationship II: Giuseppe Terragni, " *Perspecta* no 13-14 (1971): p. 38.

[6] Posing the problem of modernity as the problematization of the subject enlarges considerably the theoretical spectrum of the whole crisis of the modern movement.

[7] "The meaning of such theoretical concepts as 'rationalism' and 'functionalism' has become obscured by the use of these terms in a historical context. This caused a misinterpretation of the theoretical basis of architecture and more specifically of the modern movement." , cf. Peter Eisenman, *o. c.,* p. 2.

[8] In this sense, Eisenman's formal language could be considered as being critical of the design process in its own 'processing' activity.

[9] Cf. Christopher Alexander, *Notes on the Synthesis of Form*, Harvard University Press (Cambridge, Mass.), 1964. Christopher Alexander studied architecture and mathematics at Cambridge University, . Alexander's not yet published PhD thesis was known to Peter Eisenman at the time of his own research.

[10] Cf. Christian Norberg-Schulz, *Intentions in Architecture*, MIT Press, Cambridge, Mass., (1965) 1977, p. 206-207. This publication already expresses the author's emphasis on the perceptual and symbolic meaning of architecture, announcing his later 'phenomenology of architecture'.

[11] Cf. Aldo Rossi, *L'architettura della città*, Padua, Marsilio, 1966. English edition: *The Architecture of the City*, MIT Press, The Oppositions Books series, Cambridge, Mass, 1982.

[12] Cf. Robert Venturi, *Complexity and Contradiction in Architecture*, Museum of modern Art, New York, 1966, p. 88.

[13] The final disbanding of the CIAM Conferences in 1956—partly due to the frontal attacks by the younger members of Team X, already expressed a movement of fundamental doubt towards the ideals of modern architecture—if not earlier acknowledged by its own openings towards themes such as monumentalism and habitation.

[14] Many of Britain's theoretical writings in the late fifties—f. i. James Stirling's *Regionalism and Modern Architecture* (1957), Peter and Alison Smithson's *The New Brutalism* (1957) or Alan Colquhoun's *The Modern Movement in Architecture* (1961)—are further developed from this renewed interest for Le Corbusier. Other critical notes emanate from *Team X* members (Aldo Van Eyck, Peter and Alison Smithson a. o.) or, to a lesser extend, from Reyner Banham's *Theory and Design in the First Machine Age* (1961). Jane Jacobs' *The Life of American Cities* (1961), a virulent social critique of the CIAM's functional urbanism, will, in the United States, overshadow Lewis Mumford contemporary *The City of in History*, an apology of the Garden Cities. At the same time in Italy, Ernesto Nathan Rogers' involvement as editor of the renewed *Casabella-Continuità* (1958), will give editorial space to the ideological critical writings of the members of *La Tendenza*, from which will later emerge the leading figure of Aldo Rossi.

[15] The publication of Colin Rowe's *Mathematics of the Ideal Villa* (1947), Rudolph Wittkower *Architectural Principles in the Age of Humanism* (1949), and Le Corbusier's *Modulor* (1950), all contributed, according to Joan Ockman, to the reintroduction "of ideas of classical proportion into modernism", as expressed by the British propensity towards *New Palladianism*, cf. Joan Ockman, *Architecture Culture 1943-1968*, A Documentary Anthology, Rizzoli, New York, 1993, p. 341.

[16] Whether in Austin, Texas, where he acted, together with Bernard Hoesli, as one of the inspiring forces behind the educational experiences of the Texas Rangers (mid-fifties), or whether in Cornell University, where he further refined his particular ground-figure approach to urban analysis.

[17] From 1945 to 1947, Colin Rowe studied the Warburg Institute in London under the supervision of Rudoph Wittkower. Cf. Alexander Caragonne, *The Texas Rangers, Notes from an architectural underground*, The MIT Press, Cambridge, Massachusetts, London , England, 1995, p. 112.

[18] The German tradition of aesthetic formalism can be considered as a moment at the turn of the century on which the disciplines of aesthetics and art history—till than purely philosophical and historical disciplines grounded on Kantian (and Hegelian) foundations— tended to develop an autonomous and objective formal language inspired by the emerging social sciences like psychology and physiology. Several generations of scholars—as different as H. Wölfflin, A. Riegl, C. Fiedler, R. Vischer, A. Hildebrand—emerged from this tradition. Both Wölfflin's "art history without names" and ,to a lesser extent, Riegl's search for universal formal laws are still very much indebted to the nineteenth-century 'historicism' in the history of art. Rowe, through his affiliation with the *Warburg Institute*, is closer to the school of thought which, in continuation of Aby Warburg's multidisciplinary search for a *Kulturwissenschaft,* engendered a generation of scholars which includes E. H. Grombrich, Rudoph Wittkower or Erwin Panofsky.

[19] Wölfflin's categorical distinction between "plane surface" and "recessional depth" or Riegl's distinction between "haptic" (the perception of objects as isolated, independent, circumscribed entities) and "optic" (perception as open spatial continuum of shared realities) in a sense prefigurate the Gestaltian ground-figure problematic, though one must admit that the very seeds of the 'problem' of the perception were already disseminated with the Renaissance invention of the perspective.

[20] The interactions between shallow and deep space are seen as a "succession of laterally extended spaces traveling on behind the other". Cf. "Literal and Phenomenal Transparency," *in* Colin Rowe, *The Mathematics of the Ideal Villa and Others Essays*, The MIT Press, Cambridge, Massachusetts and London, England, 1995 (1976), pp. 170-175.

[21] Colin Rowe, "Neo-Classicism and Modern Architecture II, " in *The Mathematics of the Ideal Villa and Other Essays*, The MIT Press, Cambridge, Massachusetts, London, England, 1995 (1976), p. 155-6.

[22] Though Rowe might be considered closer to Warburg's more nietzschean and freudian "polarities" or contradictory tensions than to the more hegelian dialectics of Wölfflin's "categories of beholding" or Riegl's formal categories.

[23] One of the core characteristics of formalism is its propensity to focus on the intrinsic autonomous properties of the object—thereby making abstraction off all subjective and historical contextualization. [In his *Principles of Art History*, Wöfflin was already concerned with "a history of form working itself out inwardly" and regarded his stylistic development as "internally determined".] Compare with Michael Ann Holly, *Panofsky and the foundations of art history*, Cornell Paperbacks, Cornell University Press, Ithaca and London, 1994 (1984), pp. 13, 24.

[24] Cf. Harry Mallgrave (ed.), *Empathy, Form, and Space, Problems in German Aesthetics, 1873-1893*, The Getty Center for the History of Art and the Humanities, University of Chicago Press, Santa Monica, 1994, pp. 31, 125-148.

[25] *Gestalt* is etymologically derived from the old German word *Beschaffenheit*, which means physical constitution of the body.

[26] Cf. Chapter One *Form in relation to architecture*, where the author claims the priority of form in the 'hierarchy' of the "elements of the architectural equation", which includes form-intent/concept-function-structure-technics.

[27] Cf. Peter Eisenman, *Princeton University Seminars* (unpublished, 1996): September 27, p. 5-6; October 4, p. 2.

[28] Static: exerting forces by reason of weight alone without motion, [cf. Webster, 10th Edition]

[29] For the temporal distinction between *in-stans* and *moment*, cf. Massimo Cacciari, in *Icone della Legge*, Adelphi Edizioni S.P.A., 1985, p. . Cacciari furthermore distinguishes the *stasis* (as the problematic internal war) from the *polemos* (as the rational war against an external enemy) in *Geo-filosofia dell'Europa*, Adelphi Edizioni S.P.A., Milano, 1994, pp. .

[30] According to W. Ehrenfels' *Prinzip der Ganzheit* (1912), Gestalts are wholes (*Ganzheiten*) "within a field of perception, imagination, thinking , feelings, motives. The distinct parts of the Gestalt are more conditioned from the whole than the parts condition the whole. The whole is more than the sum of its parts." , cf. W. Ehrenfels, .

[31] cf. Peter Eisenman, *o. c.*, p. 25.

[32] compare, on this matter, with Deleuze's interpretation of the kantian space and time *as a priori 'hors categories'*, in Gilles Deleuze, Deuxième leçon sur Kant, http://www.imaginet.fr/deleuze/TXT/280378.htm.

[33] on the problem of the 'possible' as 'impossible', cf. Massimo Cacciari, in *Icone della Legge*, …

[34] "Volume cannot be thought of without movement into it, since by its nature it exists to accommodate movement.", cf. Peter Eisenman, *o. c.* , p. 32.

[35] Contrary to continuous systems which imply a synchronic interpenetration of volumes without wall compartimentation (as in Le Corbusier's free-plan), static systems refer to massive volumes which, when they are composed, are lined up in a diachronic succession of volumes. (43-44) Volumetric planes, on the other hand, refer to a volumetric systemization which encloses a succession of surfaces volumes.

[36] A pinwheel movement is perceived as a three or four part volumetric ordering connected to a center as the vanes of a windmill (as f. i. in Gropius' *Bauhaus*), while the echelon refers to a linear development in right angle stepping. The spiral movement involves a centrifugal or centripetal progression about a central point (like in Frank Lloyd Wright's *Guggenheim* Museum or Le Corbusier's *Musée Interminable*), and can both be perceived volumetrically (cf. Alvar Aalto's *Saynatsalo Civic Center*) or conceptually (cf. Le Corbusier's *Pavillon Suisse*). Since both the pinwheel and the spiral are referring to a center, they are referred to as centriodal movements, contrary to the echelon which is linear.

[37] Surface systems refer to a volumetric ordering by addition of vertical and/or horizontal surfaces, while mass systems refer to cut-away solids. In particular grammatical and syntactical conditions, both mass and surface can be combined to form a mass-surface dialectic, in which both of them can be read in a simultaneous ambiguity.

[38] For instance, continuous systems, due to their synchronic capacity, contain a certain component of movement, and are thus referred to as an interconnection of movement and volumetric system. (43) Both pinwheel and echelon movement systems are primarily perceived in their volumetric ordering, even if conceptually they could be referred to as movement systems. Volumetric planes refer to a systematization of vertical surfaces.

[39] In Eisenman's analyses, F. Lloyd Wright's formal systems are mainly constituted of volumetric (continuous and static) mass systems. Both Le Corbusiers and Aalto's analyzed systems are combinations of volumetric and movement systems. However, for the former, movement systems are internalized in the volumetric systems, while, for the latter, movement systems are externalized as volumetric systems (both spiral and echelon are expressed in a volumetric way). Terragni's approach favors system of volumetric planes, and plays on surface-surface or surface-mass dialectics.

[40] For instance, in Aalto's *Tallin Museum*, the spiral movement is 'shattering' the volumetric system, or in his *Saynatsalo Civic Center*, the spiral movement is overruling a pinwheel system in opposite direction (which is embodied by the library block when could be considered as a vane of a pinwheel). In Terragni's *Asile Infantile*, a possible pinwheel movement is repressed in favor of a surface approach and in order to avoid an volumetric symmetry about the diagonal.

[41] This simultaneity can involve a mass-surface 'dialectic' (in *Terragni's Casa del Fascio*), a combination of volumetric and spiral movement system (in Le Corbusier's *Pavillon Suisse* and Alvar Aalto's *Tallin Museum*), or one of continuous and static volumetric systems (in F. Lloyd Wright's *Martin House*).

[42] Functional and programmatic are, in this case, conceptually conceived in relation to the movement of "dynamic vectors inherent in volumetric or movement organizations".(51)

[43] An *internal centroidal* syntax originates from the condition of a single major function and involves f. i. pinwheel and spiral movements, contrary to an internal *linear* syntax which involves several functions of equal importance and elaborates f. i. echelon movement systems. *External* vectors are considered *centroidal* if they develop from a site condition with 4 equal accesses or 2 adjacent accesses; they are *linear* if the 2 accesses are opposed to each other, and if one axis is always dominant.

[44] The *Casa del Fascio*, for instance, is a centroidal volume with a linear development of planar (surface) volumes. Wright's *Avery Coonley House*, on the other hand, looks like a linear volume, but refers generically to the concept of a centroidal volume which has been shattered.

[45] The most flagrant example is developed in the analysis of Terragni's *Casa del Fascio*, where the unresolved conflict of both internal centroidal and the external linear conditions are simultaneously exteriorized in a "mass-surface dialectic": the building can thus be read at once as a massif volume and as a succession of volumetric surfaces. Both Le Corbusier's *Pavillon Suisse*, and Aalto's *Tallinn Museum* show an other type of simultaneity between volumetric and movement systems which Eisenman describes as a two-part system (for the former) or composite system (for the latter). In the *Pavillon Suisse*, the ambiguity leads to a dual reading of the columnar system, the facades (the North facade is read both as a wrapped membrane about a mass volume and as a stratified surface plane) and the volumetric endings (and 'implied' and 'terminated'). In Wright's *Avery Coonley House*, on the other hand, Eisenman observes an 'interlacing' of static and continuous volumes, and a general state of unrest (as f. i. exemplified in the ever shifting fluctuation of axes) or an "non-purposeful ambiguity" which cannot be resolved grammatically by lack of absolute references.

[46] In Terragni's *Casa del Fascio*, the entry axis is blunted at the entrance by a succession of vertical (surface) planes, but at the same time, it is pushing the central courtyard to the rear, further eroding the mass on both ground and top level. In Aalto's *Tallinn Museum* the external axis is at the same time determining the spiral movement and shattering it apart into several echelon movements. In Le Corbusier's *Pavillon Suisse*, the external vector is displacing the central axis of the building to the rear of the volume which acts than as a vertical 'backbone' plane from which the volumes are tensioned, but at the same time the linear building is blunting the further spiraling movement development resulting from the pressure of the external vector. Wright's *Avery Coonley House*, on the other hand, shows a "fluctuating, ever shifting state of non-purposeful ambiguity" (97) and an never accomplished "desire to articulate both the volumetric and movement order" (98) which is the result of the absence of absolute (pinning) references; here, the trust of the entry vector has totally obscured the generic centroidal form by dislocating it to a linear form.

[47] In Terragni's *Asile Infantile*, for instance, Eisenman observes an obvious intention to avoid a mass-surface ambiguity which is linked to the absence of an internal-external conflict—what doesn't prevent an internal conflict between two competing surface systems. In Le Corbusier's *Cité de Refuge* there is, contrary to his *Pavillon Suisse*, a dissociation between volumetric and movement systems—and thus an absence of dual readings of columns, facade (no mass-surface reading) or volumetric endings (only 'implied' endings). In Aalto's *Saynatsalo Civic Center* the conflict between the diagonal external axis and the centroidal spiral volumetric system, leads to a cutting of the library block from the rest of the building, but the initiated pinwheel movement is still dominated by the overall volumetric spiral movement. Wright's *Darwin D. Martin House*, contrary to the axial 'non-purposeful ambiguity' of the *Avery Coonley House*', doesn't involve a confusion of major axes, but still proposes a double reading of continuous and static volumes.

[48] From each of the four selected architects (Le Corbusier, Frank Lloyd Wright, Alvar Aalto, Giuseppe Terragni), Eisenman analyses two projects which are respectively involved in a situation of direct (perpendicular) and indirect confrontation between external and internal syntactical conditions (*cf*. Footnote … and …). Eisenman further makes a distinction between linear architectural forms (the designs of Le Corbusier and F. Lloyd Wright) and centroidal ones (Alto's and Terragni's designs).

[49] The trust of the longitudinal axis, dislocates the porte-cochere, initiates an secondary echelon movement, and induces a directional ambiguity of the living room. Yet, Eisenman's most challenging interpretation, is this of the central fireplace, which is considered to be shattered apart by the pressure of the opposed axis—a critical reading which is problematizing Wright's humanist centralism at its roots. Eisenman is also questioning the alleged continuity between interior and exterior space, by claiming that "the stuttering of minor axes from inside to out" (92) is denying this conceptual continuity.

[50] The interior minor axes which are transversal on both of the two major axes, are not continued to the exterior in order not to confuse the reading of both major axes. (92).

[51] Eisenman proposes a challenging reading of the formal origin of the *Averey Coonley House* in which the generic state is considered as a re-assemblage of three several wings (the servant wing, the guest wing and the stables) into a centroidal form. He further considers several diagrammatical re-assemblages according to different hypotheses of grammatical and syntactical development.

[52] The *Saynatsalo Civic Center*, could be read—both in plan (stepping volumes) and in section (stepping facades)—as a telescopic unwinding of a volumetric spiral. Yet, in the *Tallinn Museum* if the spiral movement is still volumetrically expressed, it is in a way already conceptualized as an overlay within the volumetric organization that stratifies the volumes into tin layers.

[53] Contrary to Wright who, by trying to overcome the limits of axial counterpoise in the *Avery Coonley House*, also lost the syntactical control.

[54] In the *Saynatsalo Civic Center* the internal centroidal syntax is stroke by a diagonal external vector, which, on the one hand, determines the generic state of the building as an ending point of a diagonal succession of linear blocks, but, on the other hand, distorts the specific form of the building by pulling apart the library wing. The termination of the succession of linear blocks is expressed in the generic diagram by two corner projections (a major corner tower to finish the diagonal) on the diagonal. By the distorting impact of the external axis on specific level, both corner projections have been deflected (the one up-, and the major tower downwards), the entry stairs has been stretched, and the library wing has been pulled out. The latter can than be read at once as a part of the total building, and apart of it (as a beginning vane of a pinwheel movement).

[55] In the *Tallinn Museum*, the external vector is both determining the spiral movement which is pushed into the building, and shattering the spiral movement apart into transverse echeloning volumetric planes which are, like in *Casa del Fascio*, stuttering the external trust.

[56] In the *Pavillon Suisse*, the horizontal reference is constituted by the strong columnar table supporting the main linear building, and the vertical “backbone” reference, by the dominant north facade. In the *Cité de Refuge*, the vertical reference is equally constituted by the rear facade.

[57] The distorting effects resulting from this syntactical interaction, is acknowledged in the deflections of inner and outer walls, in the shifting of columns, and in volumetric deformations (suctions, extrusions, volumetric spiraling and the like) of the annex to the main building. Finally, the spiraling movement is forced to a dead-lock end by the reacting linearity of the internal syntax.

[58] The linear progression between the several pavillons is generated by the inherent dynamic qualities of linear forms (a rectangle triggers) and centroidal forms (a square stops, a circle expands), the combination of both forming a start-stop-start progression.

[59] The ordering of columns can be read as emanating at once from an open volumetric system or as from mere functional-programmatic considerations. The ambiguity of the north facade relies on its reading as both membrane surface (stretched about a mass volume), and planar surface (in a stratified succession of surfaces). There is at the same time an implied ending (of the columnar system of the pilotis of table and of a group of windows on the north facade) and an actual termination of the progression of planar surfaces (from the opaque north facade to the transparent south facade).

[60] Here, there is only a volumetric tensioning of the columns towards the dominating rear facade, and the ending of the columnar system is only developed on an ‘implied’ manner. Any possible mass-surface reading of the front facade is avoided, since both facades read as surfaces posed on mass. The en-suite development of the pavillons also reads as mass versus surface (of the rear “backbone”). is

[61] cf. Peter Eisenman (33, plate 18) and cf. Colin Rowe, “Transparency: Literal and Phenomenal,“ *The Mathematics of the Ideal Villa and Others Essays*, The MIT Press, Cambridge, Massachusetts and London, England, 1995 (1976), pp. 170-175. The article was written in 1955-56, and was first published in *Perspecta*, 1963.

[62] The subtracting and distorting action of the external axis on the mass, can be read in the slicing of the generic cube in half, in the dislocation of the central court to the rear (on the ground - and top floor), in the distortion of the 3-partite volumetric division into a longitudinal axis (on the ground - and top floor) and in the distortion of the 3-partite facades (which are cut in a H-form). However, the centroidal nature of the internal syntax is still present in the massif corner syntax (in volume and in facades), in the recognition of an overall 3-partite volumetric and facade division (even if distorted by the external vector), and on the second and third floor (restoration of the central court, volumetric division of the offices on the transverse axis). Three facades are showing a mass-surface ambiguity (the front, the back and north west lateral facade); while only the lateral south east facade is massif.

[63] The Greek *stasis* refers to an internal war, contrary to the *polemos* which is related to a war against an external enemy. Cf. Massimo Cacciari, *Geo-Filosofia dell'Europa*, Adelphi Edizioni S.P.A., Milano, pp .

[64] The cross-over of the second transverse surface system, could be considered to counter the linearity of the introduced U-form shape (set back of the court yard). In the development of the facades, Eisenman discovers an evident intention to avoid every possible mass connotation which could lead to a mass-surface dialectic. The removal of almost all of protuberances in the final project (the kitchen, the entry- canopy, the ramp etc.), avoids the possible misreading of the annexes as vanes of a pinwheel which could have been motivated by a volumetric logic of axial counterpoise about the diagonal. There is a similar formal intention to stick to the absolute horizontal reference of the roofline, by removing all protuberances above the roofline.

[65] The cuttings and openings in one dominant surfaces are referring to syntactical elements of the other (cf. the cuts in the director's office, the tensioning of the circulation slot by the opposite facade, the centering of the entry slot according to two central axes). Even the direction of the columns are inflected by the pulling force of the one or the other dominating surface. On the whole of the orthogonal columnar system, the struggle for domination between both facades will finally be resolved by the interpretation of the direction of a sole column.

[66] A clear example of this can be found in the formal analyses of Wright's *Avery Coonley House* where Eisenman envisages several formal assemblages according to different readings of the external site conditions.(92 plate 2, 97 plate 13 etc.) Similarly, the analysis of Aalto's *Tallinn Museum* takes into account several dynamic options, (compare the different "generic" positions of the jewel room at pp. 113-114).

[67] Eisenman speaks about the clarity of the transmission of the communication (13, 37), and on p. 40 further states that: "Formal systems order this development and present it clearly from its inception through the architect to the receiver."

[68] Perhaps, it might be useful, in this context, to remind us of Deleuze's understanding of a *diagram*, as a sort of plateau of immanence from which expression and content can be unfolded in a continuous process of *stratification* and *destratification* (tying and untying). "The diagram retains the most deterritorialized content and the most deterritorialized expression, in order to conjugate them.", cf. Gilles Deleuze, Felix Guattari, *A Thousand Plateaus*, Capitalism and Schizophrenia, (trans. Brian Massumi), University of Minnesota Press, Minneapolis, p. 141.

[69] Cf. Massimo Cacciari, "Un ordine che esclude la Legge," *Casabella*, 1984, no. 498, pp. 14-15.