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TOWARDS A COMMUNICATIVE ARCHITECTURE
THE ARCHITECTURAL LANGUAGE OF ALVAR AALTO

by

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Abstract

Every building expresses some aspect of an ideology either to its designer or to those who use it, or to both. However, the communicative content of the language of contemporary architecture has suffered for two reasons: the use of stereotyped Modernist expression divorced from its psychological meanings and the use of Post-Modern architectural expression which has severed its ties of comprehension from the language of architecture.

This thesis proposes a valid method for the analysis of the communicative aspects of architecture. This is done by the evaluation and assembly of various communication theories to provide a semiotic model capable of analysing the communicative aspects of architecture at both a general level and in depth.

The works of the Finnish architect Alvar Aalto are used to demonstrate the various theories through their application to actual buildings. Aalto's works were chosen because of their close relationship to the homogeneous culture of Finland.
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Architecture is a built expression of culture. Every building expresses or represents some ideology, or aspect of an ideology, either to its designer or to those who use it, or to both. However, there exists a problem within the language of today's architecture which has made many of these meanings unclear. The communicative content of contemporary architecture has suffered for two opposite reasons. Stereotyped Modernist expression has used the vocabulary of architecture divorced from its psychological meanings while the anarchist Post-Modern renewal of architectural expression has severed its ties of comprehension in the language of architecture. In order for architects to regain control of the language of architecture they must first understand the meanings which their buildings communicate and how those meanings are communicated.

The purpose of this thesis is to propose a valid method for the analysis of the communicative aspects of architecture. In order to achieve this, a variety of architectural communication theories will be analysed, compared and contrasted in regards to their usefulness for explaining the nature of the architectural communication process. In order to analyse the various theories, some existing architecture has been selected to provide an actual testing ground.

The architecture of the twentieth century Finnish architect Alvar Aalto has been selected as the basis for this study. Aalto's work was chosen for a variety of reasons which make it appropriate for a communicative study. Of primary importance is the location of Finland on the geographical edge of the European continent. Because of this, the culture which has developed has a high degree of homogeneity which more readily enables the embodiment of cultural values or meanings. Furthermore, this idea of embodied cultural values has been reinforced in the Finnish arts by the numerous attempts at control over Finland by its neighboring countries, Sweden and Russia. The last of these, by Russia, was a direct influence on the period of architectural
development at the turn of the century which is known as the Finnish National Romantic movement. Two of Aalto's predecessors, Eliel Saarinen and Lars Sonck, were the most prominent architects of this period, which is characterized by a revival of primitive Finnish architecture and vernacular styles. Aalto's architecture is appropriate for this study not only because of its close ties to the National Romantic style, but also because it is an architecture which has escaped adequate analysis through the traditional formal means. Therefore, Aalto's architecture will be used to demonstrate the following communication theories in order to see their applications while simultaneously it is hoped that these communication theories will be able to shed new light on the embodiment of meaning in Aalto's architecture.


INTRODUCTION TO COMMUNICATION IN ARCHITECTURE

Meaning in the environment is inescapable, even for those who would deny or deplore it. Everything that can be seen or thought about takes on a meaning, or position within a signifying system. All buildings symbolise or at least 'carry' some form of meaning. Inevitably, architecture affects a wide range of the senses simultaneously: seeing, smelling, hearing, feeling; temperature, texture; equilibrium, position and movement of the muscles and joints (kinaesthetic); etc. All buildings are constantly 'sending out messages' which affect one or more of the senses and can be 'decoded' by the observer. These 'messages' have been divided into two groups by Panofsky, which he has termed 'iconology' and 'iconography' or the difference between unconscious symbols and symptoms which are conveyed by an art work versus those intended and conventionalised meanings. This seemingly clear separation of unconscious and intended meanings becomes somewhat more complex when the full communication process is taken into account. The division between unconscious and intended meanings which are conveyed must be examined both on the level of the creator of the architectural work and on the level of the interpreter of the work. Thus we must examine those meanings which are intentionally embodied and conveyed on the part of the architect as well as those meanings which are unconsciously embodied and conveyed. Also, we must be concerned with those conveyed meanings which are interpreted and consciously responded to, as well as those conveyed meanings which are responded to in an unconscious manner. While this categorization defines the different stages of the communication process it still leaves open the question of how these meanings are determined by the individuals. Primarily, two psychological theories arise to explain this phenomenon. These have been termed by Jencks as the intrinsic and extrinsic explanations of meaning.

The intrinsic theory can be characterised by the Gestalt psychologist Arnheim who contends that since we are a part of the world it is conceivable that our nervous
system shares a similar structure (or isomorphism) to forms. Thus, for example, a jagged line intrinsically means activity while a flat line intrinsically means inactivity or repose.\(^5\) Examples of this concept can be found throughout architectural history, such as the circle in the Renaissance, which signified harmony and repose. This tradition, which has included such people as Rousseau, Freud, and Jung, has continuously sought to find those universals and absolutes in man which determine meaning.

The extrinsic theory contends that meaning is formed by stimuli from the environment. Thus, as Gombrich maintains in *Art and Illusion*, the way we perceive any object is determined by the concepts we have, or schemata.\(^6\) These schemata are gradually created through language and other cultural sign systems as well as through thought and logic, and guide perception according to former expectations. As Delevoy points out:

> An artistic phenomenon, whatever its nature, can only come to life in the individual consciousness when there exists a social and economic context which ... allows the work or art to set itself up as a response to the fleeting solicitations of taste, as an object of active perception, and as a field for emotion; in other words, something specially designed to be at once experienced through an imagination focused by history, perceived through an alerted sensorial system, and read in accordance with acquired codes.\(^7\)

In accordance with Delevoy, Ernesto Rogers has applied this extrinsic nature specifically to the building and its context. According to Rogers:

> "It is clear...that a building cannot be isolated from the environment which surrounds it; and this does not merely include the landscape which visually embraces the place where the building is erected; but also the unity of images born of the most diverse associations, all of which are legitimate by reason of the serrated logic of sensation."\(^8\)

Thus, a similar subdivision to that which occurred within the concepts of iconology and iconography must also occur within the extrinsic concept. Not only is perception guided by the former expectations of the individual but it is also guided by the expectations which are created by the context that the object is located within. In
architecture this contextual effect can be seen on a variety of scales. The three primary scales in which this occurs are those of the building in relation to its site, the room or fragment in relation to the entire building, and the detail or element in relation to a specific space. The utilization of these three scales of the object-context relationship was highly developed in Aalto's architecture. An example which readily demonstrates all three levels is Finlandia Hall in Helsinki. The white marble, rhythmic facade dominates the area around the lake much like the acropolis above Athens. Simultaneously, the angular form of the main concert hall rises above this base like the Parthenon on the acropolis and gives a focus to the building. Upon closer inspection one can see that the columns at the ground level are clad in vertical strips of marble which remind one of the Classical columns one would associate with the Parthenon and the acropolis. Thus, not only can the building be designed to take on particular meanings within its context, but fragments of the building can be designed to take on particular meanings within the context of the building, which can itself be designed to contribute to the meanings of those fragments.

Primarily, in analyzing architecture as a communication process we should be concerned with those intended meanings, or those which are consciously embodied by the architect. Because we are examining the communication process we should be primarily concerned with what the architect was trying to tell us as the users of the building. However, those meanings which were unconsciously embodied often come into play. A problem with this type of historical analysis is that in most cases it is impossible to positively determine whether a particular meaning was consciously embodied or not, so the analysis must rest primarily on the actual built form as well as with any other available information. In any case, it is the actual building which matters. Regardless of the architect’s intentions, the interpreter’s assessment is what in the end determines the value of the building. Thus, it is important for the architect to understand, as much as is possible, the interpreters of his buildings. The architect, as
well as the critic, must be concerned with the schemata of, or the expectations of, the
individuals who will use the building and how they will be affected both consciously
and subconsciously, as well as with the objects and contexts which will create these
effects.

Throughout the history of architectural theory various models have been
proposed to explain the effects which architecture has on those who use it and to give
reason to various architectural designs or design approaches. While these models have
explained various phenomena, for the most part they have been somewhat limited and
rather shallow in defining the complexities of the communication process involved
with architecture. These various theories have been classified into six models by
Widdowson: the Expression Model, the Communication Model, the Mathematical Theory
of Communication, the Non-verbal Communication Model, the Experiential Theory, and
the Semiotic Model. Within each of these classifications exists numerous variations, but
most important to analysing the communication process are those variations of the
three models which have traditionally been the most popular and into which some of
the other models might be classified: the Semiotic Model, the Communication Model,
and the Expression Model.
THE EXPRESSION MODEL

The Expression Model maintains that beauty is simply successful expression and that art, or architecture, is an activity in which the internal feelings of the artist are externalized for the benefit of the spectating public. This model deals only with the artist/maker, his or her intent, and the object. Thus, either the intention of the artist/maker or the expressiveness of the object are the crucial datum.

Hugo Häring was one of the major proponents of the Expression Model in architecture during the rise of Modern Architecture. Häring maintained that forms which are the result of functional criteria are created by life, and are therefore of an elementary and natural kind, not originated by men; while forms chosen for the sake of expression derive from laws formed by the human intellect. According to Häring, functionally based forms are fundamentally eternal and universal because they are constantly regenerated by life, naturally and anonymously, while expression based forms are ephemeral and exposed to changes in human cognition. Since they come from psychological constitution, they are subjective and indefinable, and therefore depend on time and place. Häring felt that Modern Architecture was a turning point in the history of architecture since it showed that certain functional forms were more satisfying in terms of expression. He proposed to relate expression to life creation, movement and nature by following the path of nature in the creation of functional forms. In something of an intrinsic vein, similar to Arnheim's attitude, he proposed that "if we prefer to search for shapes rather than to propose them, to discover forms rather than to construct them, we are in harmony with nature and act with her rather than against her." Aalto's attitude in respect to the selection of forms seems to be similar to Häring's on a basic level. By using forms which are both expressive and functional, his architecture is able to convey meanings which could be considered fundamentally eternal and universal while at the same time conveying meanings which are subjective and depend on time and place.
In the article *Form in Architecture: Imitation and Abstraction*, P. A. Michelis has proposed that architecture has looked to nature, not in order to imitate it, but in order to give each constructive element an expression symbolic of the work it performs. "Architecture has not, therefore, merely imitated natural objects: it has raised them to tectonic symbols." Such members are free to suggest a metaphor, and become symbolic tectonic forms, if they are presented as to display their ability to excel their technical function, and so to acquire a higher significance. As Michelis points out:

The formation of an architectural member is, therefore, morphologically guided by two poles of contemplation: imitation and abstraction. Imitation attempts to refer the static function of an architectural member to some natural model with a kindred function. It thus introduces a metaphor while borrowing the forms themselves from outside. Abstraction attempts to derive the morphology of the architectural members from their structural function, from within, and to express the forces at work within the members. The metaphorical reference to the natural indeterminate forms is only subtly suggested, as in the fluting of the Doric column or the ribbing of the Gothic vault. Where, however, architecture refuses every imitation or metaphor, ...all that remains to determine its form is its structural function... But even in this extreme case, there is still - after the cross section has been determined by the science of statics - the artistic problem of the form's proportions and attitude. ...thus leaving the spectator's imagination free to introduce the suggested metaphor.

The results of this imitation and abstraction can be seen in many elements of Aalto's architecture. A prime example are the wooden posts used in the Villa Mairea, especially those which form the screen around the main staircase. These posts are reinforced with ribs and are connected in groups which serve to increase their structural stability while at the same time metaphorically referring to the natural growth and placement of trees in the landscape.

Another Finn with similar attitudes to Aalto was Eliel Saarinen who used this metaphorical link between nature and architecture to demonstrate the communicative ability of expressive forms. According to Saarinen, in organic order, expression and correlation "act always and everywhere together and in mutual cooperation." In
expression, "nature's form-richness is established through a certain significative 'order', different in each case, and expressive of the meaning behind form."\textsuperscript{14}

...we have learned to consider nature's form-expression a specific language in itself. It is a language by means of which nature communicates with those able to feel and understand. Thus, the more we study nature's form-world, the more clearly it becomes evident how rich in inventiveness, nuances, and shiftings nature's form-language is. ...in nature's realm, expressiveness is "basic".\textsuperscript{15}

Saarinen felt that the expressive language of man's art is just as significant a means of intercommunication between men as is the spoken language. His definition of this process combines the Expression Model with some characteristics of the Non-verbal Communication Model. He proposes three factors of intercommunication: (1) the artist - who expresses himself through art; (2) the work of art - which radiates this expression; and (3) the public - to which this expression is conveyed. Thus, "the 'aura of man' results in the 'aura of form', and therefore: man influences form and form influences man".\textsuperscript{16} In this sense he feels that the art of the great civilizations "is like an open book with its unmistakably clear language. It conveys the emotions and thoughts of the historic ages..."\textsuperscript{17}

...during the whole course of man's existence, there has developed the spoken language - which, in richness and expressiveness, covers all of man's world of thought, feeling, and wish. And simultaneously with this there has developed the language of art, with an equally broad scope of richness and expressiveness. Thus, there have come into being two distinctly different means of spiritual intercommunication between man and man: the spoken language, and the language of art.

-the spoken language - communicates directly with man's intellect, and through intellect with his inner sensitiveness.

-the language of art - communicates directly with man's inner sensitiveness. It has that silent tongue, which - at best and when honest - brings to all mankind its 'expressive' message of the deepest and most precious achievements of man.\textsuperscript{18}

With this expressiveness, according to Saarinen, there must also exist some trend of correlation "so as to keep things together and to make of the whole an integrality of correlated order".\textsuperscript{19} Thus, Saarinen points out the need for an underlying structure in architecture to unify the elements into a comprehensive whole. This correlation
should also extend beyond the building and into the site. Just as a tree is shaped for its own particular location, a building, or any manifestation of form, must adjust itself with the correlative demands of its environment. Thus, as architectural environments develop,

simultaneously there ... should develop a corresponding spiritual form-atmosphere in which to live. And this spiritual form-atmosphere ... should constitute a proper resonance for all who live in these architectural environments of various natures and of various dimensions. ... Then, there should exist a spiritual interrelationship between the population of the community and the form-treatment of the community.20

A final important point made by Saarinen in response to the expression of forms and tradition, is that even though "any new achievement is a new substance of mental order" it "is not rhapsodically independent of the general progress, but sequentially coherent and the result of a continuous 'transmission' - 'tradition' - from one achievement to the following". In other words, "the progress of tradition, therefore, is a continuous process that runs parallel and together with the progress of form-evolution".21 That this paralleling of the 'progress of tradition' and the 'progress of form-evolution' exists in the architecture of Aalto, cannot be denied, as is shown by the following quotations from Aalto's writings.

Nothing old is ever reborn. But it never completely disappears either. And anything that has ever been always re-emerges in a new form.22

As the tiny eggs of the fish need time to grow up into mature salmon, similarly whatever the human mind gives birth to, needs time to develop. And in architecture what matters above all is time.23

Throughout his career, Aalto's architecture is full of forms, materials and details which have 'evolved' from traditional architectural forms. Examples of these are numerous and appear throughout his career, from the Industrial Exhibition at Tampere with its vernacular-like pavilions to his later churches like the one at Vuoksenniska which has a white flowing 'ribbed' space much like many of Finland's Gothic churches. While this model explains where these elements came from, a problem arises in that it does
not give an adequate reason for why they should be used.

While these variations on the Expression Model propose that a communicative relationship exists, they lack the descriptive power to account for such a phenomenon. With the exception of Saarinen's spiritual 'aura', the model deals only with the artist/maker, his intentions, and the object. The important questions which arise, then, are the question of what process is involved in the interpretation of the object and the question of how these two processes are related. Another problem which arises, in terms of a communication process, is that the model concentrates on the expression of primarily internal or subconscious feelings, and for the most part, excludes conscious thoughts. While architecture can, and does, embody subconscious thoughts and feelings, this is only one level of the communicative process. Therefore, this model must be extended or incorporated within another model in order to examine the process of communication more closely. In order to do this, we must first examine more closely the relationship between the interpreting individual and the object, or the process of interpretation.
The process of interpretation is one aspect of the communication process which the Expression Model fails to take into consideration. As Rudolf Wittkower points out, "the only visual messages which find response in our brain are those which we judge in some way or other useful or important to us". Irregardless that a claim might be made that every signal we receive is interpreted, Wittkower points out that while the meaning of conventional signs has been fixed and accepted by general consent, no such agreement exists, or can exist, in the arts. Therefore, the meaning of every work of art is open to interpretation. Instead of considering the work of art as merely an expression of the artist's internal feelings, Wittkower considers it as the visual, or physical, manifestation of the artist's interpreting activity. This is because he considers the work of art to actually be a compound of ideas, concepts, and sense messages which are ordered, adjusted and digested in the artist's mind.

Representational meaning can not be understood unless the objects or events shown by the artist belong to the general human experience of the percipient. The latter must, moreover, have the obvious or hidden key to the represented concept in its totality, and he must be conversant, above all, with changing conventional idioms.

As Wittkower points out, for correct interpretation to be achieved, the interpreter requires information about the ideas embodied in the work of art. The complexity involved in a complete interpretation may go well beyond the means of the average interpreter. "More often than not, it is necessary to delve into a tangle of historical, religious, literary or philosophical relationships." To this list we would also need to add the long list of possible architectural relationships which might be created. While much interpretive analysis can be fairly clear, Wittkower points out that "interpretive analysis of the expressive function and meaning of line, form and colour in a given context are hardly capable of being tested objectively". Not only is the process of interpreting the symbols in the work of art subjective, but also the
artist's process of choosing those symbols and deciding which ones to modify or leave intact.

Each generation not only interprets its own meaning into those older symbols to which it is drawn by affinity, but also creates new symbols by using, modifying and transforming those of the past.28

There exists something like spontaneous rediscovery or remembrance of the original meaning of visual symbols. In fact, it occurs frequently and seems to be a prerogative of artists and poets. But in certain situations all of us rediscover the power of symbols which have long receded into the subconsciousness.29

It goes without saying that architecture is inclusive of many different forms of knowledge derived from many and varied sources. Thus architecture is commonly referred to as a 'field of knowledge' - But I maintain that architecture is more than just a field, and that no enumeration of the contents of architecture, no matter how long or inclusive the list or taxonomy might be, can describe, let alone explain, what architecture is. In this sense, the function of architecture in the creation and enhancement of locations for human actions is catalytic, acting upon and giving form to the infinite variety of ideas, modes of expression, methodology and technological means, to which every architect (professional or otherwise) has access, and through which every work of architecture is interpreted.30

As Chris Abel maintains, architecture is a much more diverse process than a mere Expression Model can explain. While all these factors contribute to architecture, it must be remembered that primarily the process of experiencing architecture depends on the actions and reactions of two groups of people, or two people, the architect and the user. The architect creates architecture and it can be interpreted as intended or another interpretation might add different meanings. In this way, the interpreter can hypothetically create a different architecture than the architect intended.
THE COMMUNICATION MODEL

The Communication Model is more complex in its treatment of the communication process. Its main advantage over the Expression Model is its consideration of the process of interpretation. In general, the Communication Model is concerned with all aspects of the communication process: intention, expression, medium, interpretation, response, etc. Many types of communication models have been proposed, often due to an increased interest in communication as elemental social behavior. Characteristic of the various types of communication models is one proposed by J. Reusch and W. Kees which has been called a Non-verbal Communication Model:

"...People communicate by making statements. The statements are signals that are coded in various prearranged ways. When they impinge on earlier impressions, they become signs. These signs, in the strictest sense of the word, exist only in the minds of people, because their interpretation is based upon prior agreements. A statement becomes a message when it has been perceived and interpreted by another person. Finally, when sender and receiver can consensually validate an interpretation, then communication has been successful."^31

James J. Gibson has proposed a theory which takes the Expression Model beyond its limitations and into this type of Communication Model by considering the effect of the artist/maker on the perception of the interpreter. Gibson points out the difference between becoming aware of something - or a 'first hand experience' - and being made aware of something - or a 'second hand experience'. "The process by which an individual is made aware of something ... is a stage higher in complexity ... it involves the action of another individual besides the perceiver."^32 Noting that our percepts are specific to the various features of the surrounding physical environment, Gibson proposes the use of 'surrogates' or stimuli produced by another individual which are relatively specific to some object, place, or event not at present affecting the sense organs of the perceiving individual. The perceiving individual may have a mediated or indirect perception of what the surrogate is specific to. The use of a surrogate serves the purpose of mediating the perception of, rather than the arousing of an action in,
one's fellow man. The specificity of a surrogate depends upon the psychological activity of its producer, or more specifically on the precision of his apprehension. The most obvious possible consequence of this is that the surrogates created by an individual might be perceived or recognized by the perceiving individual but might only be completely apprehended by their creator. On a general level, it is important that the creator of the surrogates understand the perceptual ability of the percipients who will be observing his work so that a fairly correct interpretation is possible. Once this has been accomplished, the ambiguity of the surrogate can provide a richness by creating many different levels of meaning by allowing a variety of different interpretations to take place. These different levels of meaning, if properly expressed, will arouse different interpretations from within different groups. The architect, if his surrogates are specific enough, can control many different levels of these interpretations although due to the nature of interpretation, and the amount of the process which rests on the percipient, it would be impossible to determine all of them. An excellent example of this control can be seen in Aalto's Villa Mairea. While the average Finn might recognize the references to vernacular architecture or those to Modern Architecture, another might recognize the basic configuration of the villa as being that of a traditional Scandinavian villa. On still another level, another person more versed in architectural history might recognize the typology of the Pompeian courtyard house, etc. If a common body of perceptions exists among the group it might lead to a sort of consensus of experience among the interpreters. In the case of Aalto's architecture, this common body was primarily represented by Finnish culture, architectural history, and nature. Through this process, one person can figuratively transmit knowledge to others. Gibson has defined primarily two types of surrogates: conventional surrogates, or those which are attached by convention with no direct relation; and non-conventional surrogates, or those which are projective or replicative.
Lawrence K. Frank has proposed that these 'surrogates' are actually surrogates for basic biological signals. Conditioning, the process by which these surrogates are learned, takes "place naturally in an organism's natural environment as it learns to recognize as signs those signal messages which occur concomitantly or just preceding or following the appearance of a biological symbol". The organism becomes "oriented and prepared for a variety of activities which are instrumental or preparatory to its normal life" by becoming responsive to these surrogate signals or signs. Unlike any other organism, man has been able to create symbols which he can perceive as patterns or configurations of signals in nature, and interpret as meaningful messages. These symbols have been developed over history by the different human groups "for transforming the world around them into a symbolic cultural world of meanings and of patterned conduct for group living". Organisms are continually exposed to a wide range of signals, all of which they are responsive to physiologically, but only a few of which they are aware of. Each organism is susceptible to various kinds of signals with an inherited pattern of functioning and response. But, the actual behavior and functioning of an individual organism at any one time is not determinate, since what it will be aware of and how it will respond is governed largely by its physiological state at that time and by the context in which the signals are met.

Thus we can see the effect of both the intrinsic and extrinsic theories. Symbolic performance arises in childhood as the child is inducted into the world of symbols. This symbolic cultural world arises and is perpetuated in and through the individuals who constitute the cultural group and use their familiar culturally derived symbols for maintaining their social order and for patterning their behavior into the required conduct and relationships. The written records and other graphic symbols, the monuments and buildings, all the artifacts by which symbolic meanings are maintained through time, are dependent upon human observers and interpreters for their operation as symbols.

These symbols are those which are group-recognized and commonly used and which have been established by tradition or have been newly created and then generally
accepted. All types of symbols have the possibility of being ambiguous since each individual has learned to recognize them and use them "in his own idiomatic way, imputing meanings and coloring these symbols with feelings and sometimes with strong emotional reactions which may warp and distort them"\textsuperscript{38} and therefore seriously interfere with the communication process. It is important, therefore, that if symbols are to be intentionally warped by the individual using them, this process should be a gradual one. In this way the meaning of the symbol can be retained in a fairly constant manner, or gradually transformed, while the physical form of the symbol is transformed. An example of this could be the facade of the Villa Mairea which, although being 'modern', still retains a sense of Finnish domestic architecture. Even though the house is constructed with modern construction techniques and materials, the wooden elements of the facade, and especially the board and batten of the studio, are reminiscent of vernacular Finnish domestic architecture. An example of this process happening too abruptly could be that of Pessac, by LeCorbusier, where the housing units could not be recognized as such by the inhabitants and the facades and other parts of the buildings were therefore modified by the residents. Aalto avoided this problem in his housing at Sunila by incorporating a variety of vernacular symbols. The multitudes of recognizable symbols can be combined in numerous ways within a piece of architecture. Since, as Norberg-Schulz points out

...qualities of different kinds are spontaneously mixed when experiencing. Perception thus functions in a way which is basically different from scientific analysis. The experience has a 'synthetic' nature, it groups complex wholes where components which have no logical relationship are nevertheless completely integrated.\textsuperscript{39}

Our orientation to the environment is somewhat subjective since our attitudes are to a high degree socially conditioned and therefore change with place and time. Because of this subjective nature of perception, "art does not give us descriptions but direct expressions of certain aspects of reality. We may say that art concretizes phenomenal complexes or life-situations."\textsuperscript{40} Because of this, these non-descriptive
symbol-systems do not provide us with knowledge, but with experience and direction for our behavior.

...art is able to concretize values and individual situations. The most important function of art is, however, that it may concretize possible complexes of phenomena, that is, new combinations of known elements. In this way it expresses previously unknown life-situations and releases new experiences. Hence it contributes to change man and his reality. As a work of art, architecture gives visual expression to ideas which order reality. Such ideas may be ideological, social, scientific, philosophical, religious, etc. Because of this, it is essential that we recognize that the 'landscape' which we live in is structured in advance. Our possibilities of 'movement' are defined by this system of existing 'ways'. Since we accommodate ourselves to this system from childhood on, we are therefore conditioned by our environment. According to Colquhoun, this concretization occurs due to "the need to represent the phenomenal world in such a way that it becomes a coherent and logical system". In regards to what he terms 'socio-spatial schemata', our senses of place and relationship in an environment are not dependent on any objective fact that is measurable; they are phenomenal. The purpose of the aesthetic organisation of our environment is to capitalise on this subjective schematization, and make it socially available. The resulting organisation does not correspond in a one-to-one relationship with the objective facts, but is an artificial construction which represents these facts in a socially recognisable way.

Our aesthetic perception of this organization functions, according to Kiemle, on the basis of a three-phases-model. In the first phase, or 'selective phase', environment-chunks of the size of human channel capacity are carved out of the environment. In the second phase, or the 'synthetic phase', the information of the original chunks is reduced by recognition of their structural parts, the so-called supersigns. In the third, or 'analytical phase' the construction of the supersigns out of signs is analyzed. Kiemle feels that the problem with modern functionalist architecture is that it does not allow for this third phase of aesthetic perception to take place. Since the signs incorporated within the architecture are not understandable to
the average person beyond their constructional aspects, he is therefore unable to analyze them for any further meaning.

Probably the most structured of all the various versions of the Communication Model is that proposed by Koenig in his *Architettura e Comunicazione* of 1970. Koenig postulates an architectural communication process which sits between the Communication Model and the Semiotic Model with its underlying structure. Koenig feels that the real stimulus in the architectural sign process is not the architectural object, but a human need. The architectural object denotes those human needs which men satisfy by means of those objects. Koenig divides his process into twelve parts:

1. The sender: the architect or the architectural team;
2. The codes and lexicons: the functional, legal, structural and economic rules according to which a building is designed;
3. The signal: the sum of drawings, models and written specifications of an architectural design;
4. The channel: the construction site.
5. The physical signal: the material building resulting from the design signal;
6. The noise: the environmental disturbance of perceiving, and the physical disintegration of the architectural sign complex;
7. The receiver: the human being, his sense organs;
8. The significant aspect of the message: architectural space including its qualifying objects;
9. The codes and lexicons of the receiver: functional, legal, structural and economic expectations;
10. The semantic noise: the prejudice of the receiver;
11. The receiver as a collective: the city as a system of communication;
12. The meaning (significat) aspect of the message: the original function which the architectural object denotes and the second function which it connotes.

While this model points out many important aspects of an architectural communication process, it also seems to place equal emphasis on those aspects which are not as important. For example, while the 'signal' - the drawings, models, and specifications - is important before and during construction for communicating ideas to the owner, investor or contractor, it is of little importance after the building has been built, and of no importance to the average person seeing or using the building. Similar remarks might also be made about the 'channel' and the 'noise'. Although it is structured into
twelve distinctive sections, the model is primarily descriptive of these sections instead of describing their interrelationship. Thus, an interesting aspect of this highly structured process is that its 'codes and lexicons' are based on functional, legal, structural and economic rules which primarily affect construction while it has no codes or structure for composition, or what the semiotician would call the syntactic aspects.

This lack of structure is one of the main differences between the Communication Model and the Semiotic Model. While the Communication Model is concerned with examining all aspects of the communication process, its analysis is primarily on a general, or somewhat superficial level. In turn, the Semiotic Model takes this analysis a step further and examines not only the superficial aspects of meaning but also the underlying structure which organizes it.
THE SEMIOTIC MODEL

The problems of architecture, if considered in the same way as the other arts, as a "language", are the basis for a whole new current of thought, which allows it to be treated in terms of information and communication theory; and that the meaning can be treated as a process which connects objects, events and beings with "signs", which evoke just these very objects, events and beings. The cognitive process lies in our ability to assign a meaning to the things around us, and this is possible because the "signs" are links between our own consciousness and the phenomenological world. So signs are the first and immediate tools of every communication. I am sure of one thing: architecture, like every other art, must be considered as an organic whole and, to a certain extent, institutionalized ensemble of signs, which can be partially identified with other linguistic structures.47

This statement by Gillo Dorfles, from his book Simbolo, Comunicazione, Consumo of 1959, characterizes the contemporary attitude towards semiotics which arose in Italy during the 1950's. This use of a linguistic-type model arose largely due to the building boom and the resulting urban sprawl which occurred in Italy during that decade, and was a search for both meaning and order in architecture. During the 1960's this developed into a quest for the minimal meaningful units of architecture. "Mostly", this took the form of "plugging in architecture to currently fashionable linguistic models in hope of specifying the nature of architectural 'deep structure' or of classifying architectural formations into phonemic, morphemic, or 'textual' unities."48 As will be seen, the development of theory within the discipline of linguistics was an indispensable condition if language was to serve as a model for the field of architecture, instead of just as an analogy.

The first major appearance of this analogy with language occurred in the eighteenth century, in the writings of French men of letters who were seeking to subsume all of the arts within a universal theory of expression.

...the analogy was employed to validate competing morphological choices by grafting on them the prestige of literary creation. It was concerned simply with making explicit the process of combination, the constituent of every architectural project, by relating it to a fundamental and commonly held knowledge of grammar. ...the desire of architects to legitimize the poetics of their architectural composition.49
Examples of this attitude occur as early as 1745 when Germain Boffrand proposed that the "sections of moldings and the other parts which make up a building, are, in architecture, what words are in a discourse." In 1781, Francesco Milizia, went on to say that "materials in architecture are like words in a discourse which separately have little or no effect and can be disposed in a despicable manner; but combined with art and expressed with a motive and agile energy are capable of unlimited effects." One of the more interesting writings of this period is *Laocoon* (1766) by G. E. Lessing. Lessing differentiates between a poetic, or narrative mode, which is progressive in its manifestation, its elements appearing in sequence, and a visual, or presentative mode, the elements of which are simultaneously juxtaposed in space. In reference to this, it should be noted that architecture is seen or experienced primarily in a visual or presentative way. However, it can also be seen somewhat in the poetic or narrative mode. Buildings which have an increased ability to be seen in this way are those which have a sense of procession embodied within them, like exhibit pavilions or museums. However, in most buildings there are certain sections or spaces, such as entrys or passages, in which the architect can achieve this type of reading. In any case, due to the freedom of movement of the individual, and his freedom of vision, no building can be seen completely in the poetic or narrative mode.

The recent revival of this analogy of architecture and language is in debt to those structuralists who paved the way for the use of the models of linguistics. Exemplary of this attitude is Levi-Strauss, who made the assumption that "structured meanings are embedded in social action and give sense to it without individuals being fully conscious of these meanings nor of the logic that underlies that structure." Therefore, it was assumed that these structures and meanings existed within architecture and were just waiting there to be discovered. And furthermore, that "the goal of semiology is to bring the intuitive", these structures and meanings, "up to the conscious level, in order to increase our area of responsible choice."
Meaning can be transmitted through language—a system of agreed-upon rules to communicate. It can be seen as the product of certain operations performed on language, or as the operation of language itself. Meaning becomes a problem only when access to it is difficult. When one encounters an unfamiliar language, for instance, the first communication problem is that of meaning. For any message to acquire meaning, it must be submitted to translation. Meaning, then, is linked to language, to communication, and to message.

That architecture is indeed a system of signification is suggested by the fact that function represents a relation between architectural products and their use, which is a recognized and understood cultural fact. In order to link together these two statements by Gondelsonas and Morton, we must realize that creating architecture, in the sense of creating cultural symbols, happens in the same way that significant statements are made in spoken and written language. This occurs by relying upon the repertory of object-meaning conventions which we share in common. In other words, the architect can attempt to create cultural symbols, which, because of his understanding of conventional object-meaning relations, have a high probability of being interpreted correctly or congruently by the interpreters. It must also be understood that just because architecture must be created on the basis of these pre-existing and conventional object-meaning relationships, the architect is not limited to repeating available forms.

The existence of a common verbal language does not stifle creative verbal expression, it guarantees an audience and enhances communicability. Likewise in architecture, a repertory of knowable conventions makes creative expression possible by guaranteeing a reachable if not sympathetic audience.

Although no absolute object-meaning relations exist in architecture, conventions do exist within the specific cultures. Therefore it is important that the architect's selection is a convention from the repertory of the appropriate culture, and not just from any previous or foreign culture which has no connection with the task at hand. Furthermore, in order for these conventions to be utilized in an appropriate way, they should in many cases be modified in an honest and evolutionary way so that they may be adjusted to the contemporary task. This sense of evolution and honesty is a primary
aspect of Aalto's architecture which allows it to be, at the same time, both 'modern architecture' and 'Finnish architecture'.

By considering

...architecture as a system of cultural meaning; it attempts to explain the nature of form itself, through viewing the generation of form as a specific manipulation of meaning within a culture.57

Any "act of communication, whether language or not, is defined by a set of factors comprising sender, receiver, channel, code, referent, and the message itself. The presence of these factors", according to Gandelsonas and Morton, "is indispensable to any communication".58 With this definition, any object, whether architectural or not, has the possibility of communicating a message.

The primary meaning in architectural messages is "buildings (as messages) 'representing' their use (referents) or their physical structure (channels). Secondary meanings 'represent' and emphasize the areas related to sender, receiver, and code – rarely conscient and explicit parts of architectural design.59

According to this definition, Gandelsonas and Morton show that Kiemle's third phase (see Communication Models), or 'analytical phase', was absent from modern architecture since the main concern of the 'functionalists' was with the area of primary meaning, or the functional area. They propose that in architecture, signification might be described in terms of two interrelated aspects. The first being a set of possibilities for structuring the components, subcomponents, systems and subsystems of a building, and the second being a repertory of ideas, images, and notions from an architectural repository.

With this model, the semantic dimensions of the architectural system can be seen as a synthesis between the first, specifically architectonic aspect, and the second, repository aspect, which can draw its formal patterns from architecture itself or from anywhere else, such as painting, music, etc. The architectonic aspect does not provide form but only the possibility for structuring form; the repository aspect provides the sources of actual formal patterns.60

This architectonic aspect is composed of codes, which are either organized architectonic ideas or sets of rules for their organization, and the operations of
metaphor and metonymy, which enable the selection and combination of architectonic ideas or rules to form complex architectonic units. A code is the organization, or system, that interrelates the elements, or units, of any message and makes its understanding possible. The basic elements of a code should be seen as pairs of oppositions which are interrelated in infinitely complex ways. Each of these pairs embodies two notions which have something in common in conjunction with something that separates them.

To suggest this complexity, architectonic code could be seen rather as a field of dynamic tensions, based on oppositions, which only provide an empty framework of possible architectonic relationships. It is through this framework that the sets of ideas, images, and notions of buildings drawn from the architectural repository must pass, in order to create the synthesis that underlies architectural form.\(^{61}\)

The concept of metaphor refers to an operation that links a message, by the selection or substitution of its elements through a code. Thus a connection is made between elements present in the message and elements absent from the message which could be substituted for them. Metonymy refers to an operation which interrelates the elements present in the message itself, by their internal combinations.

Architectural forms can be seen as the manifestations of the codes, plus 'quotations' drawn from the architectural repository. These quotations are sets of ideas, images in general, and notations about buildings in particular. In drawing from this repository, the architect can select any form or idea in its original state; he can use formal patterns directly from the five orders of classical architecture,... Alternatively, the architect can use the opposite of an original form or idea (asymmetrical vs. symmetrical). Finally, the architect can modify or transform earlier ideas or forms to generate new ones.\(^{62}\)

A problem which arises from this theory is that it seems to suggest the acceptance of an 'eternal eclecticism', the same problem which has occurred in so-called 'Post-Modern' architecture. By suggesting that the structuring and the various elements should come directly from the repertoire of the past, the progressive aspects of the theory are downplayed. In Aalto's case, while the elements, and structuring when relevant, were influenced by those of the past, there always existed an evolutionary process which
brought those elements and the resulting forms up-to-date with the current times. Thus, these transformed elements were incorporated into primarily new forms instead of re-issuing the existence of outdated and obsolete ones. It is important to emphasize that this repository was utilized in order to access the memory of the interpreter, but always in an evolutionary way, in order to be appropriate in the contemporary situation.

This evolutionary transformation of conventional codes of meaning was critical to the acceptance of Aalto's architecture. As De Ventos has pointed out:

the innovatory use of the code is a very delicate operation, therefore - discovering in it possible variations which have not yet been used, never heard of before, but still pertinent; ...transformations able to enlarge the primitive code, which by means of this creative use, is enlarged and becomes a new code, from which the new scientists, artists, or writers will begin, and from which the people will perceive their works.

Thus, not only was Aalto's architecture an evolution of the Finnish architecture which proceeded him, but also it was evolutionary in itself, as well as serving as a step in this evolutionary process for the Finnish architects which are currently in practice. The modification of these codes, and the effects of this modification can be seen in the following diagram by De Ventos which shows their transformation as seen from both sides of the process.

From the creative point of view:

\[
C_1 \rightarrow U \rightarrow C_2
\]

\[C_1\] - The code: Stylistic, literary, or theoretical tradition.
\[U_1\] - Repetitive use of the code \(\rightarrow\) 'usage' or degradation of the code.
\[U_2\] - 'Eccentric' use \(\rightarrow\) inefficiency and marginality of the message.
\[U_3\] - Pertinent creative use \(\rightarrow\) renovation or transformation of the preceding code.
\[C_2\] - New code

From the consumers point of view:

\[C_1\] - System of expectations, such as tonality for music,
verisimilitude for literature.

U - Reaction against a non-orthodox work that breaks those expectations

C₂ - Enlarged system of expectations - new code of reception

It is these codes which form the basis of a meaningful communication system in architecture. Their purpose is to provide a conventionalised meaning which one can utilize in the communication process. In architectural semiotics they function in much the same way as they do in verbal language: they provide a common ground for communication between the architect and the percipient.
SEMIOTIC THEORIES

...in the visual experience there is always a percept, a concept, and a representation. This is irreducible. In architecture, one sees the building, has an interpretation of it, and usually puts that into words. In each sign situation we can see language immediately entering and thus understand why semiology first grew out of linguistics.

Charles Jencks

Various versions of the Semiotic Model have arisen to describe the communicative process of architecture. These models have their basis in linguistics, and for the most part, have developed from the work of three men: Charles Sanders Peirce, Charles Morris and Ferdinand de Saussure. Throughout the development of architectural semiotics the theories of these three men have been applied, further developed, and often combined with those of others, to create models which are both more inclusive and more specific. More inclusive in terms of the processes which they put forth, and more specific in terms of the restrictions the put on these processes. The purpose of this section will be to examine some of these models in order to show their usefulness in analyzing and developing an understanding the architecture of Alvar Aalto. In order to do this, the architecture of Aalto will be used as the primary tool for analyzing these theories for their validity. This is not to say that Aalto consciously used these theories or models in his design process, but hopefully it will be shown that various aspects of these theories were inherent in Aalto's design process and therefore became physically embodied in his Architecture.

LINGUISTICS AND ARCHITECTURAL SEMIOTICS

The relationships between words and the things they stand for was first investigated systematically by the American philosopher Charles Sanders Peirce (1838 - 1914) who published a series of papers on the topic in the 1860's. He called this science of signs 'semiotic'. A 'sign' in Peirce's sense is something which makes thought possible, and his 'semiotic' became a comprehensive study of signs, sign-processes, sign-mediation and of all the other complex transactions which take place when people
exchange thoughts about objects. Peirce divided the aspects of the sign-process into two groups: that which acts as a sign, and that to which the sign refers. In focusing on the definition of 'sign', three types were defined by Peirce, and were presented in his theories. The following definitions are derived from Peirce's concepts:

**Icon:** A sign which refers to the object that it denotes by virtue of certain characters of its own and which it possesses just the same, whether any such object actually exists or not. It reminds us of its object by some complex kind of resemblance.

**Symbol:** A sign which refers to the object that it denotes by virtue of law, usually any associations of general ideas, which operates to cause that symbol to be interpreted as referring to that object. The relationship between the symbol and the entity it represents actually has to be learned as meaning something within a particular cultural context.

**Index:** A sign or representation which refers to its object not so much because of any similarity of, or analogy with it, nor because it is associated with general characters which that object happens to possess, and because it is in dynamical (including spatial) connection, both with the individual object on the one hand and with the senses or memory of the person for whom it acts as a sign. A sign which indicates some particular object or circumstance in terms of a physical relationship.

Of the theories of signs which have influenced architectural semiotics, Charles Morris has proposed, according to Broadbent, "the most sophisticated analysis of signs yet produced." In his *Foundations of the Theory of Signs*, published in 1938, Morris proposed that a symbol or sign-vehicle refers indirectly to a 'denotatum' and directly to a 'significatum'. The object of a reference is a 'denotatum' "where what is referred to actually exists as referred to." A significatum is what the sign refers to. In *Signs, Language, and Behavior*, 1946, Morris goes on to state:
If anything, A, is a preparatory-stimulus which in the absence of stimulus objects initiating response-sequences of a certain behavior-family causes a disposition in some organism to respond under certain conditions by response-sequences of this behavior-family, then A is a sign.
If something, A, controls behavior towards a goal in a way similar to (but not necessarily identical with) the way something else, B, would control behavior with respect to that goal in a situation in which it were observed, then A is a sign.69

To Morris, a 'sign' is a property or set of properties of an object while a 'sign vehicle' is all the properties of an object, not all of which are used for the sign. Morris defines 'semiosis' as somebody, an interpreter, taking account of something absent, or a referent, through something present, a sign. The role of the interpreter therefore is twofold. The interpreter abstracts properties from the 'sign vehicle' which will be the 'sign' and he also ascribes meaning to that 'sign'. Given one 'sign vehicle', there is no reason why a number of interpreters should ascribe the same 'sign', and given one 'sign', there is no reason that a number of interpreters should bring to it the same identical meaning. An important aspect of Morris's theory is his contribution to the breakdown of semiotics into three separate aspects or phases:

Pragmatics: The relationship between signs and their users. Deals with the origins, uses (by those who actually make them) and effects of signs (on those who interpret them) within the total range of behavior in which they occur.

Semantics: The relationships between signs and their meanings. Deals with the signification of signs in all modes of signifying, or with the ways in which they actually 'carry' meanings.

Syntactics: Syntax. The relationships between signs and other signs. Deals with the combination of signs (such as in the way sentences are formed from words) without regard to their specific significations, or meanings, or their relations to the behavior in which they occur, thus ignoring the effects those meanings have on those who interpret them.

The terminology of Charles Morris was introduced into architectural semiotics by
Koenig in 1964.

Architecture is a language since it is composed of signs used in accordance with rules. These signs, which are preparatory stimuli in Morris' sense have a meaning which is common to a group of interpreters and constant in different situations. The denotata of the sign complexes of architecture are functions belonging to the socially organized life of men:
- a given function
- is implemented by an architectural space
- and is expressed by a volume
- surrounding man.

Koenig went on to emphasize the impact of the architectural sign on the behavior of the inhabitants, and concluded that architecture is made up of sign vehicles which promote certain types of behavior.

In a reversal of the typical relationship between linguistics and architectural semiotics, Ferdinand de Saussure used architecture to illustrate his linguistic theories. From the associative and syntagmatic point of view, a linguistic unit is like a fixed part of a building, e.g., a column.

On the one hand the column has a certain relation to the architrave that it supports; the arrangement of the two units in space suggests their syntagmatic relation. On the other hand, if the column is Doric, it suggests a mental comparison of this style with others although none of these elements is present in space; the relationship is associative.

For Saussure, language is a social contract or an agreement implicit between people as a whole, that each word should have a particular meaning and should be used in certain ways. In the history of architecture there have been parallels to this which were particular styles. A prime example of this is Saussure's own use of Classical architecture to demonstrate his principles. Classical architecture, as well as other styles, was a social contract between people who agreed that certain elements meant certain things and should be combined in certain ways. Because this social contract embodies certain agreed upon values, it must be learned in detail by the user in order for him to manipulate it. Likewise, because it is agreed upon and learned by a social group, no individual can alter it at whim and still expect it to be clearly understood.
Saussure defined the workings of this system of communication through two principles or elements: the signifier and the signified. The signifier being some material representation, and the signified being the concept to which that representation refers.

Geoffrey Broadbent (Meaning into Architecture, 1969) has pointed out that the relationship between the signifier and its signified is arbitrary until it has been agreed upon by social contract. Broadbent feels that since no such contract exists for abstract form, architects cannot expect people to know instinctively what they mean. The problem with this assumption is that it only applies if architecture is reduced entirely to purely abstract forms (and materials, if that is possible). In the case of Aalto's architecture, not only do abstract forms appear, but in the majority of cases, if not all, these forms can be identified in terms of meaning, whether it be function, importance, or some other meaning. The problem with Broadbent's criticism is that it reduces architecture to just forms. In the case of Aalto, these forms are always expressed with some material or texture which contributes to the communicative power of the form. Thus, Aalto could use abstract forms and still work within the social contract through the use of recognizable materials and details, as in the studio form of the Villa Mairea.

This idea of social contract has been included in the work of Roland Barthes who considers the city to be a text, the meaning of which can be found in the perception of its readers. Barthes feels that the city is a language consisting of relationships and oppositions of elements, or an inscription of man onto the soil. In this way, the meaning of the city is not confined to its functions but consists of the arrangement in the relationship of its elements. In The Imagination of the Sign (1962, 1972) Barthes proposes that every sign includes or implies three relations. The first of these is an interior relation which unites its signifier to its signified and the other two are exterior relations, a virtual one which unites the sign to a specific reservoir of other
signs from which it might be drawn for insertion into a discourse, and an actual relation that unites the sign to other signs preceding or succeeding it in a discourse. These different aspects might be termed as a symbolic aspect, a systematic aspect, and a syntagmatic aspect.

When we consider the signifying phenomenon, we are obliged to focus on one of these relations more than on the other two; sometimes we see the sign in its symbolic aspect, sometimes in its systematic aspect, sometimes in its syntagmatic aspect; one might say that each consciousness of the sign (symbolic, paradigmatic, and syntagmatic) corresponds to a certain moment of reflection, either individual or collective.

Thus, the syntagmatic consciousness is a consciousness of the relations which unite signs on the level of discourse itself, or essentially a consciousness of the constraints, tolerances, and liberties of the sign's possible associations, and the links it extends to other signs. The symbolic consciousness, according to Barthes, implies an imagination of depth. The relation of form and content is ceaselessly renewed by time and history, "the superstructure overwhelmed by the infrastructure, without our ever being able to grasp the structure itself." On the contrary, the paradigmatic, or systematic, consciousness is a formal imagination. It sees the signifier linked to several virtual signifiers which it is at once close to and distinct from: "it no longer sees the sign in its depth, it sees it in its perspective; thus the dynamics attached to this vision is that of a summons: the sign is chosen from a finite organized reservoir, and this summons is the sovereign act of signification." Any of a number of Aalto's buildings could be used to demonstrate Barthes' three aspects of the sign. For example, the previously mentioned wood board and batten exterior of the studio of the Villa Mairea can be shown to have a symbolic relation with Finnish vernacular architecture. In terms of its paradigmatic relation, it must be realized that Aalto could have drawn from any of a number of vernacular characteristics. The third aspect, or the syntagmatic relation, is demonstrated by the use of this 'vernacular sign' in a modern architectural context. Thus, we see one of a number of 'vernacular signs' used in conjunction with other
'modern' or 'vernacular' or 'natural' signs.

Ogden and Richards have incorporated aspects of Saussure's concepts of signifier and signified into a three-part model which has been called either the 'semiotic triangle' or the 'Ogden-Richards triangle'. This three-part model, with each part having a relation to each of the other two, incorporates the 'symbol', the 'reference' and the 'referent'. The 'symbol' is the equivalent of the signifier in Saussure's terms. This signifier, or word of architectural form,9 connotes a signified - a concept, thought or content - and may or may not denote a referent - a thing, object, or actual function in architecture. Broadbent points out that "any building, at any time, can be a signifier, a signified, or referent - or all three simultaneously - in their three-part scheme."8 For example he uses the Parthenon, which, as it stands, is a referent. Simultaneously it is also a signifier of ancient Greece, while photographs of it and words about it act as a signified which denotes the actual structure. It is the relation between these three entities which is important for establishing whether the architectural sign is mostly indexical, iconic, or symbolic in the sense of the Peircian definition. An important aspect of this three-part scheme is that "the signifier is not the object itself, or actual function made possible by the object, but rather a set of visual articulations (figurae) which are interpreted according to certain conventional codes into a meaning (sememe)."9

The virtue of the Ogden-Richards triangle is that, unlike other semiotic models, it incorporates extra-semiotic elements into the universe of architectural meaning. Too many semioticians want to exclude these elements as irrelevant or impure forgetting that 'reality' or 'actual functions' do restrict the codes, or pure semiotic elements, and if the
model does not incorporate this level it's going to end up too idealistic in nature.  

In *Semiology and Architecture*, 1969, Charles Jencks utilized the Ogden-Richards semiotic triangle to show that there are relations between thought, language, and reality, or more precisely, thought, architecture, and language:

- **Thought:** content; concept; signified.
- **Referent:** percept; thing; denotatum.
- **Symbol:** form; word; signifier.

Jencks feels that “if correct understanding is our momentary goal, then we must be able to correlate correctly form, content and percept...or the formal level of meaning with the iconographical (concepts, allegories) into a whole interpretation.” Jencks suggests that since language is doubly articulated into phonemes and morphemes, architecture should be articulated in a similar manner. Since there are normally in architecture: form, function, and technic; he proposes that the articulating units, the fundamental units of architectural meaning, should be called formemes, funcemes and techemes.

When one sees an architecture which has been created with equal concern for form, function and technic, this ambiguity or tension creates a multivalent experience where one oscillates from meaning to meaning always finding further justification and depth. One cannot separate the method from the purpose because they have grown together and become linked through a process of continual feedback. And these multivalent links set up an analogous condition where one part modifies another in a continuous series of cyclical references.

Thus, Jencks proposes the existence of two types of architecture: multivalent and univalent. Architecture will be experienced as a multivalent whole “if the object has been created through an imaginative linkage of matrices.” On the other hand, if the object is the summation of past forms which are weakly linked and remain independent, it will be experienced as univalent. This quality of multivalence might be considered as the quality which results from what Morris termed as syntax. In order for the parts to modify and affect each other in terms of their meaning, there must be
some underlying unifying principle. In the case of Aalto's architecture this unifying principle is supplied by the overriding organic order which allows the various fragments to be combined into a sensible, multivalent whole.

...an entirely relative concept dependent on the past as well as its destruction. ...the only way one can create a new matrix is by active use of those past codes, schemata, conventions, habits, skills, traditions, associations, cliches, and stock responses (even rules) in the memory. To jettison any one of these decreases creation and freedom.\(^{85}\)

In order for the piece of architecture to be multivalent the 'matrices' must be recognizable to the interpreter. In terms of this, the most probable way for a new matrix to be understandable is for its elements to be derived from existing or past matrices. The misunderstanding of this important concept seems to be a justification of much of the so called 'Post-Modern' architecture. While the premise is valid, it must be understood that the use of those past codes must be limited, at least on a primary level, to those codes which are specific to the particular culture and are also still accessible by the members of that culture. In this way, the piece of architecture can be understood, or at least 'related to', by the interpreter or user. It is also important that those past forms which are used are used in an evolutionary way in order to be appropriate for the present time, in terms of economics, politics, available technology, etc.

Another model which utilizes the three-part division similar to the Ogden-Richards model is that proposed by Hjelmslev. Like the Ogden-Richards model this model is also concerned with architecture as connotative and denotative semiotics. The diagram for the model is shown on the left below, as well as a comparable diagram, on the right, by Broadbent utilizing the terminology of the Ogden-Richards model.\(^{86}\)

\[
\begin{array}{ccc}
\text{Plane of Content} & \text{form/substance} & (\text{Signified referent/thought}) \\
\hline
\text{Plane of Expression} & \text{substance/form} & (\text{Signifier reference/symbol})
\end{array}
\]

According to Jencks, the architecture of any period will only be concerned with the
form of content and expression \( (\text{conf/exp}) \). That is, the particular way in which the culture articulates and conventionalises content and expression. Lying behind these cultural units are all possible units, or the actual continuum of the plane of content and expression, or in a sense, what Jencks has termed, the 'ultimate realities' of these two levels.\(^8\)

\[
\begin{array}{ccc}
\text{Content} & \text{expression} / \text{form} & \text{Cultural units} \\
\text{Possible units} & \text{expression} / \text{substance} & \\
\end{array}
\]

A sign or semiotic coupling \( (\text{f/E}) \) of the two planes can itself form the expression of a more elaborate semiotic or metasemiotic \( (\text{f/E} [\text{f/E}] \) ). This might also be called a connotative semiotic.

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**CONNOTATIVE LEVEL**

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**DENOTATIVE LEVEL**

Theoretically, this process could continue indefinitely and after time and use, and understanding, connotations might become recoded into denotations. Accordingly, the difference between connotation and denotation then, is a matter of coding, or the order in which meanings are learned and not the difference between 'vagueness' and 'fact' as it is commonly supposed. Also, the only functions which can be termed denotations are those functions which are socially codified to the point where signifiers (E) and signifieds (C) relate as a reflex action. 'Functionalism' would therefore "then depend on how well a code is known and not entirely on the object's shape or technical qualities alone."\(^8\)

Or, to borrow a summation from Umberto Eco:

Articulating a certain space, in a certain way, signifies the subdivision of all possible spatial articulations and dispositions (substance of expression) according to a system of oppositions (forms of expression) in order to communicate, among all the possible functions that man may perform within his cultural context (substance of content), a series of functions that are specified and defined by a system of cultural units.
An example of this in Aalto’s architecture can be seen in the living area of the Villa Mairea. The part of the living area around the fireplace (substance of expression) is located within a corner made from two walls of brick (forms of expression) and is therefore defined separately from the rest of the living area which is an open, free-plan space with exterior walls made mostly of glass. Thus, two parts of the same space are separately defined according to this oppositional principle. Because of this separation, the area around the fireplace acts a traditional Finnish living room with the hearth as the focus and promotes its traditional function (substance of content).
COMPOSITE THEORIES

As can be seen in the previously examined theories, the process of architectural communication is too complex to be defined by a single simple theory. Because of this, a number of theories have been proposed by semioticians which combine aspects of other theories to form larger and more complex ones. Among the most prevalent of these are the following three by Umberto Eco, Charles Jencks, and Juan Bonta.

**Umberto Eco**

In *La Struttura Asente*, 1968, Umberto Eco argued that the architectural sign is not a preparatory stimulus for something else which is not present, but that the architectural object is itself a significant stimulus whose meaning (significat) is the function it implements. "Architectural signs are thus describable and enumerable significants put into correspondence by means of cultural codes with significats denoting functions: the architectural object denotes a particular cultural way of inhabiting it." Like Hjelmslev, and Ogden and Richards, Eco differentiates between 'architectural denotation and connotation, but defines connotation as the result of an original architectural sign's acquisition of a second, more or less symbolic, function. "The original bifacial units of the architectural significant with its corresponding functional significat as a whole becomes the significant corresponding (always through a cultural code) to a second function which is called 'connotative'." Eco also hypothesized that existing architectural codes codes probably lean upon other non-architectural codes, in reference to which the users of architecture decode the behavior imposing messages of architectural objects. Thus, for Eco, the signifier might be a staircase while that which is signified is the act of walking up. In *A Theory of Semiotics*, 1976, Eco defines the referent of a sign as an abstract entity which is a cultural convention. These cultural units are simply anything that can be culturally defined and distinguished as an entity. Thus, "a cultural unit can be defined semiotically as a semantic unit inserted into a system."
In his Componential Analysis of the Architectural Sign [Column], 1980, Eco expounds his theories on a more specific level by discussing five important aspects of the architectural communication process:

1. Aspects of culture as communicative processes. Aspects of culture: (a) can be regarded as communicative processes; (b) have a cultural function precisely because they are also communicative processes.

2. Architecture is composed of artifacts, which delimit spaces (outside and inside them) so as to permit functions: going up or down, coming in or out, sheltering from the weather, gathering together, sleeping, eating, praying, celebrating events, ...

3. Defines architectural signs generically as a system of manufactured objects and circumscribed spaces that communicate possible functions, on the basis of systems of conventions (codes). I distinguished simple processes of stimulation (a stair I stumble on in the dark). Processes of signification - the articulation of a few morphological elements that are together recognized as a 'machine for ascending' - it can even communicate this without allowing it. - Thus: in architecture the communicative aspect predominates over the functional aspect, and precedes it.

4. Signified functions of architecture are not necessarily referents - they are not necessarily functions that may be carried out. They are not tokens, but types: they are classes of possible functions. Thus cultural units, before being practical acts. An architectural object is therefore a sign vehicle that denotes a meaning.

5. Primary functions: going upstairs, taking the air, standing at the window,...
Secondary functions: 'symbolic values'
Denotation of primary functions, connotation of secondary functions. For many architectural objects - communication of the secondary functions is more important (socially and ideologically) than communication of the primary functions.

With these points in mind, Eco goes on to classify as sememes those cultural units, or the objects of structural semantics in architecture, which he related to referents in A Theory of Semiotics. Furthermore, he classifies those architectural sign vehicles, of number four, above, as morphemes. In a manner similar to the metasemiotic of the Hjelmslevian model, this process continues on indefinitely with every semantic marker of a sememe being itself a sememe that in turn calls for its own componential analysis.

A componential analysis of architecture proves that every semantic marker of a sign is a verbal interpretant (or some other type) and demonstrates that semic analysis never comes to an end, but must continually return to the problem of semantically defining its own
instruments, thus realizing an unlimited semiosis.\textsuperscript{94}

Eco further explores the nature of denotative and connotative semiotics (his primary and secondary functions) in \textit{Function & Sign: The Semiotics of Architecture} of 1980. "Architectural objects which function not only communicate their function but also can be designed in such a way to enrich that function through the use of communication.\textsuperscript{95} Therefore, according to Eco, it is of primary importance that a plausible semiotic model should recognize in the architectural sign, the presence of a sign vehicle whose denoted meaning is the function it makes possible.

The semiotic perspective that we have preferred - with its distinction between sign vehicles and meanings, the former observable and describable apart from the meanings we attribute to them, at least at some stage of the semiotic investigation, and the latter variable but determined by the codes in the light of which we read the sign vehicles - permits us to recognize in architectural signs sign vehicles capable of being described and catalogued, which can denote precise functions provided one interprets them in the light of certain codes, and successive meanings with which these sign vehicles are capable of being filled, whose attribution can occur, as we will see, not only by way of denotation, but also by way of connotation, on the basis of further codes.

Significative forms, codes worked out on the strength of inferences from usages and proposed as structural models of given communicative relations, denotative and connotative meanings attached to the sign vehicles on the basis of the codes - this is the semiotic universe in which a reading of architecture as communication becomes viable, a universe in which verification through observable physical behavior and actual objects (whether denotata or referents) would be simply irrelevant and in which the only concrete objects of any relevance are the architectural objects as significative forms.\textsuperscript{96}

Thus, besides making a function possible, Eco believes that the form of an object must "denote that function clearly enough to make it practicable as well as desirable."\textsuperscript{97} In order to do this, an architect cannot make a new form functional, and cannot give form to a new function, without the support of existing processes of codification. Thus, a new object must contain in its form indications for the decoding of its function. In order to do this, new elements would have to progressively transform already known forms and the functions conventionally referable to those forms. "Otherwise," according to Eco, "the architectural object would become, not a functional object, but
indeed a work of art: an ambiguous form, capable of being interpreted in the light of various different codes." While this transformational aspect is necessary for the meanings of forms to be understood, it must also be pointed out that this process cannot be specified indefinitely due to the variations in codes and conventions which the interpreters bring into the process. For Eco, an architectural object must first be functional before it can be considered a work of art. In regards to Eco's remark, it must be noted that both functional architecture and art are both attainable at the same time through proper design. The previously cited example of the 'readings' of the Villa Mairea as Finnish vernacular; Scandinavian; Modern; Pompeian courtyard; etc., as well as its communication of functions, should attest to that fact. In fact, it was Aalto's deep understanding of this transformational process at a variety of different levels which allows these 'readings' to occur. As is demonstrated by the Villa Mairea, this progressive transformation of the forms (materials, details, organization, etc.) is of crucial importance in relation to non-changing functions, such as a residence or a civic building, where the requirements of new technology or economics require the re-evaluation and change of existing forms. It can also be easily seen in the details of the Villa Mairea that besides denoting its function, an architectural form can connote a certain ideology of that function. A prime example of this is the tension created by the main stairway as it reaches the upper floor. Here the top step is butted against the floor surface so as to possibly suggest the relationship between a ship and a dock. Enforcing this reading is the handrail which curves away from the person arriving at the top of the steps. Simultaneously, appearing in his view is the entry to the studio which has an odd shaped door reminiscent of the bulkhead of a ship. These connotations can be carried even further by entering the studio with its rope and wood ladder and its large window facing out over the pool, much like the bridge of a ship.

This transformational process can produce a number of changes throughout the course of history. Both primary (denoted) and secondary (connote) functions might
be found to undergo either losses or recoveries, or substitutions of various kinds. Eco feels that "these losses, recoveries, and substitutions are common to the life of forms in general, and constitute the norm in the course of the reading of works of art proper." He proposes six possible readings of these changes:

1. (a) The sense of the primary function is lost and (b) the secondary functions for the most part remain. (Parthenon)
2. (a) The primary function remains and (b) the secondary functions are lost. (rustic lamp in modern house)
3. (a) The primary function is lost, (b) most secondary functions are lost, (c) the original secondary functions are replaced by others, through codes of enrichment. (pyramid)
4. (a) The primary function becomes the object of a secondary function. (A selected object of use is made an object of contemplation and then ironically connotes its former use.)
5. (a) The primary function is lost, (b) another primary function takes its place, and (c) the secondary functions are deformed through codes of enrichment.
6. (a) The primary functions are vague and (b) the secondary functions are imprecise and deformable.

In regard to this consumption and recovery of forms, Eco feels that the "dialectical interplay between forms and history is an interplay between structures and events, between configurations that are physically stable (and objectively describable) as significative forms and the constantly changing play of circumstances, which confers new meanings on them." At this point, Eco seems to disregard his previous discussion of transformational architecture and proposes an architecture which one might compare to Venturi's 'decorated shed'. He proposes that architects design for variable primary functions and 'open' secondary functions in order to prevent obsolescence and consumption. He feels that an architecture like this would provide "a continuing stimulus, communicating the possibility of operations through which it could continually be reworked to fit the situations developing in the course of history." These operations would be "acts of responsible decision", which would be based on comparisons of the forms with alternative configurations that their constitutive elements could assume, and also on comparison of the forms with the ideological
perspectives which would be their justification. The result, according to Eco, would be:

Protean and open objects, implying, with changes in the rhetorical apparatus constituted by them, a restructuring of the ideological apparatus, or with changes in the way they are used (or in the form they take in use), change in ways of thinking, in how the forms are seen in the broadest context of human activity. 

Eco proposes inventing different codes, rather than rediscovering them, or abandoning the curiosities of history to design for the future so that we are no longer dealing with obsolete forms. While these points are to a degree valid, it must also be remembered that the codes, and the buildings which are their physical expressions, must be derived from those which preceded them. Therefore, we must remember the transformational aspect and design for the present. In this way, obsolete forms will not be produced. The problem with designing for the future is that the currently existing codes might not be incorporated. If this occurs, and as a result the building is not understood, then the building will be, in a sense, obsolete, immediately upon completion. One might say that the building is not obsolete but that the codes of its interpreters are obsolete. In any case, the building is in some ways inappropriate for its use. An excellent example of this is LeCorbusier's housing at Pessac which was not understood by its inhabitants. While it was technically advanced and in many ways better for them than their previous conditions, they did not have the proper codes with which to read it and therefore could not accept it. Because of this, the building has since been modified to a more traditional state by its inhabitants so that it can be understood. Aalto's housing projects which one might compare to Pessac did not meet with this fate since they incorporated aspects of architecture which could be interpreted and understood by the common man. Another concern which arises is in relation to this idea of variable primary functions and open secondary functions, is this that unlike our current-day lease structures with their open floor slabs and temporary infill? This does not seem like an appropriate solution to the problem.

Eco points out that verbal language is a code-language which has certain
connotative subcodes. In a similar manner, he feels that visual codes must also have a number of levels of codification. He defines three varieties of these codes which already exist:

1. Technical Codes: Architectural engineering: beams, columns, flooring systems, insulation, wiring,... - at this level no communicative 'content' except where the structural (or technical) function or technique itself becomes such. There is only a structural logic, or structural conditions behind architecture and architectural signification - similar to a second articulation in verbal languages, where though one is still short of meanings, there are certain formal conditions of signification.

2. Syntactic Codes: Typological codes concerning articulation into spatial types. Also: other syntactic conventions exist (a stairway does not go through a window,...).

3. Semantic Codes: The significant units of architecture - the relations established between individual architectural sign-vehicles and their denotative and connotative meanings. Possible subdivision:
   A. units denote primary functions
   B. units have connotative secondary functions
   C. units connote ideologies of inhabitation (kitchen, dining,...)
   D. units at a larger scale have typological meaning under certain functional and sociological types. (hospital, villa, school,...)

Eco feels that these are codifications of already worked-out solutions or codifications which yield standardized messages instead of constituting a system of possible relationships from which countless numbers of significantly different messages could be generated.

They establish, not generative possibilities but ready-made solutions, not open forms for extemporary 'speech' but fossilized forms - at best 'figures of speech' or schemes providing for formulaic presentation of the unexpected, rather than relationships from which communication varying in information content as determined by the 'speaker' could be improvised.

If this is to be the accepted definition of architectural codes, then the codes of architecture would amount to little more than a rhetoric, or a store of tried and true discoursive formulas. Of this Aalto seems to have been aware, and inherent in his creation of architectural space was an attempt to produce spaces which could not be readily or simply defined. Goran Schildt has explained this as Aalto's attempt to create natural space on the interior of his buildings. This process enabled him to
improvise freely and create an architectural message which was appropriate for each specific occasion.

In discussing architecture as a type of mass communication, Eco notes that architectural discourse generally aims at mass appeal. This is because architects generally start with accepted premises and build upon them with well-known or readily acceptable 'arguments'. Since architectural discourse is generally persuasive, a certain type of consent can be elicited from the interpreter and therefore one is generally prompted to follow the instructions which are implicit in the architectural message. Functions are not merely signified by the architecture, but are promoted and induced. Eco points out that there are a number of complications in this communication process. For example, it is of primary importance that architectural discourse is generally experienced inattentively rather than wholeheartedly as might be the case with a painting or a symphony. Partially because of this, architectural messages can be interpreted in an aberrant way without the interpreter realizing that he is perverting them. Because of these factors, architecture fluctuates between being rather coercive and being rather indifferent, in affecting its interpreters. In some cases it will suggest that they use it in such and such a way, and in other cases it will let them use it as they see fit. Eco also feels that not only does architecture promote and permit certain functions, but it is self-reflexive, that is, it may also direct one's attention to itself, and the way in which it goes about permitting or promoting those functions.

While architecture develops from premises given by the society in which it is produced, the architectural object can still become something new or different, or as Eco says, "something more important than mass communication." 107

...even when highly conventional, architectural objects stand as alternatives to other architectural objects: besides permitting and promoting certain functions, they permit and promote 'critical' readings, in which one compares them with prior (and subsequent) means and ideologies of inhabitation. 108
Because architecture and architectural messages are either long-lived or subject to rapid obsolescence, the forms produced by architects today will almost inevitably be juxtaposed with those forms and dispositions left over from former codes which are now outmoded. Here we have a direct illustration of why the transformational aspect of the architectural code is important. If the codes of the contemporary building are related to those of the past, this juxtaposition will be, if not more subtle, at least understandable. The same can be said for a building in the future when it is to be juxtaposed to one from the present day. Thus, Eco declares that the architect of today has three choices. The first would be one of thoroughly integrating his work into the reigning social system (of which some of the work of the current "populists" might be an example). The second would be to dispense with conventional architecture and oblige people to live in a totally different architecture (of which certain functionalist architecture might be an example). And the third would be to create an architecture which would be new but would be intended to answer the basic code of conventional architecture (of which Aalto's architecture would be an example). "Only once he has an idea of what would...link them with the basic code of society and make them acceptable and comprehensible to its members - does he attempt to elaborate and introduce the new system of architectural sign-vehicles." Thus, if we look at Aalto's architectural works we see that his early works were a kind of 'Classical Vernacular' and those which followed were varieties of 'Modern' architecture. During the 1930's, after 'experimenting' with both types, Aalto combined the two in order to make an architecture which was appropriate for both the times and the location. By providing what the interpreters had come to expect from architecture as well as providing something that they did not yet expect from it, Aalto created "an architecture that would eventually be accepted and comprehended in the light of prevailing expectations and related to the whole of the society's systems of cultural communication."

In the last analysis the architect has to elaborate his sign vehicles and
messages in relation to systems of meanings that lie outside his province, even though these meanings might be signified for the first time in his work, given their first sign-vehicles in architecture and for that reason the architect might find himself in the position of having to reject the existing architectural codes, when rather than providing for the generation of the messages called for, they hold out only already produced message-solutions that are no longer relevant.\textsuperscript{111}

To summarize Eco's viewpoint thus far:

Architecture is based on codes external to it.
A. To be able to communicate the functions it permits and promotes, architecture would have to be based on codes.
B. Codes which could properly be called architectural establish rather limited operational possibilities - they function not on the model of language but as a system of rhetorical formulas and already produced message-solutions.
C. Resting on these codes, the architectural message becomes something of mass appeal, something that may be taken for granted or that one would expect.
D. Yet it seems that architecture may also move in the direction of innovation and higher information-content, going against existing rhetorical and ideological expectations.
E. It cannot be the case that when architecture moves in this direction, it departs from given codes entirely, for without the basis of a code of some kind, there would be no effective communication.\textsuperscript{112}

There is only one possible answer according to Eco:

Architecture must in fact be based not only upon existing architectural codes, from which the architect may depart, but also upon other, external codes (and it is with reference to these that the users would identify the meanings of the new architectural message).\textsuperscript{113}

He feels that in order to think like an architect, we must first think like a sociologist, a psychologist, an ideologist, and an anthropologist so that we might identify a series of social exigencies and a system of functions to satisfy them, and a system of forms which would correspond to them. This is because of his belief that although the elements of architecture constitute in themselves a system,\textsuperscript{114} they only become a code when they are coupled with systems which lie outside the definition of architecture. In this way architecture is like language, which is "a system of sign-vehicles (or a 'plane of expression')...coupled with semantic systems (on the 'plane of content') lying outside it; these semantic systems are systems of cultural units that can transcend particular languages and be designated in different ways in them."\textsuperscript{115} For Eco, a code is a
structure, or a system of relations arrived at through successive simplifications with respect to an operational intention of some kind. So a solution to an architectural problem involving more than one point of view, e.g. perceptability, proxemics... would have to be based on some sort of underlying 'ur-code' common to all of them, and relating the different systems. "The architect must think in terms of the totality."\(^{117}\)

In Aalto's architecture this overall organizing principle is provided by the 'organic' character of the individual building. This overriding principle serves to unite the variety of forms into a coherent and multivalent whole which can remain coherent under a variety of readings utilizing different codes while working within the framework of history.

While looking outside architecture, then, for the code of architecture, the architect must also fashion his significative forms in such a way that they will remain relevant under different codes of reading. This is because the historical situation in which his attempts to identify a code would be grounded will be outlived by the significative forms he feeds into this situation. ...and he must realize throughout that his work will at best cooperate with, not prescribe, the movements of history.\(^{118}\)

This aspect of architectural semiotics, which utilizes codes from within architecture and from without, has been further explored by Charles Jencks who utilizes some of Eco's postulations in his own theory.
Charles Jencks

Since architecture is an unstable hybrid based partly on codes external to itself (like film and opera), its practice is more difficult and polymorphous than other fields (painting and poetry). Furthermore, the codes which are most specific to architecture (such as habitable space) may not always be the most important to it.\(^{119}\)

In *The Architectural Sign*, 1980, Jencks agrees with Eco that architecture must be partly based on codes which lie outside it. Jencks includes not only aspects of Eco’s theories but also aspects of the theories of Peirce, Saussure, Morris, and Hjelmslev. For Jencks, “architecture is the use of formal signifiers (materials and enclosures) to articulate signifieds (ways of life, values, functions) making use of certain means (structural, economic, technical, and mechanical).\(^{120}\) As can be seen, Jencks’ definition includes the triad of form, function, and technic within the signification process and also allows for additional historic meanings to be built upon this essential foundation.

According to Jencks’ theories the signifier is the plane of expression while the signified is the plane of content. Signifiers use expressive codes and are made up of forms, spaces, suffaces, and volumes, which have suprasegmental properties: rhythm, colour, texture, density, etc. Beyond these are second level signifiers such as noise, smell, tactility, heat, kinaesthetic qualities, etc. Signifieds use content codes and are made up of iconography, intended meanings, aesthetic meanings, architectural ideas, space concepts, social/religious beliefs, functions, activities, commercial goals, etc., while second level signifieds are made up of iconology, betrayed meanings, latent symbols, anthropological data, implicit functions, proxemics, land value, etc. In other words, the signifieds of architecture can be just about any idea or set of ideas as long as they aren’t too long or complex. Unconscious or implicit second level signifieds may become consciously signified and therefore first level signifieds or intended messages. Also, Jencks points out that there are many cases where the first and second level signifieds are contradictory, and feels that it is the duty of the critic to decode these
oppositions as well as to show the 'substance' of content, "since architecture like any
sign system is open to new interpretations and the decipherment of unintended or
betrayed meanings."\textsuperscript{121}

In regards to signification and communication, Jencks believes that in most
cases architecture intends to communicate a message. "For a building to work in any
rudimentary way, it must be in some code which is comprehensible, or, be accompanied
by an instruction booklet (which replaces this code)."\textsuperscript{122} Therefore, all architecture
intends at least signification, if not conscious communication. Systems of signification
are built up over time following the adoption and re-use of certain forms or are built
up piecemeal by the introduction of new forms into a previous semantic field. Thus,
the place of a form with respect to all other forms constitutes part of its signification,
its value, or its place within a semantic field. Jencks believes that conventional codes
are only one aspect of the architectural sign and that the initial stages of an object's or
form's use is not primarily communicative. However, the 'actual function' of a building
can only be perceived through a code, whether it be a use or an idea. Thus, the notion
of actual function must be expanded to include ideas and social customs and at the same
time, the concepts of denotation and connotation must only be distinguished from each
other as a matter of degree and learning. For example, habituation, stock-response, and
frequency of use tend to turn connotations into denotations. Jencks agrees with Maria
Luisa Scalvini that "architecture is an area of connotative semiotics, where the basis
functional aims ('tectonics') are incorporated, but secondary to the new primary aim of
aesthetic significance. (as opposed to 'building')"\textsuperscript{123} Thus, we can see that Jencks'
theory is in opposition to Eco's, in regard to primary and secondary functions. For Eco
the primary functions are the actual physical functions while the secondary functions
are the symbolic values. For Jencks, it is the aesthetic values which are the primary
functions while the physical functions take on secondary importance. Jencks
incorporates the Hjelmslevian model of connotative semiotics, and believes that
connotative semiotics has a semiotic system in itself \((C_f/E_f)\) as its plane of expression. Thus, for architecture\(^{124}\):

\[
\begin{align*}
\text{Plane of 'connotators' (style, etc.)} & \quad C_f \\
\text{Tectonics' (basic function) (1st. level)} & \quad E \quad C_f/E_f \\
\end{align*}
\]

To study architecture we need tools that explicate primarily the connotative level, but also (to a lesser degree) the denotative level. The role of the actual function is not absolutely essential to architecture, but often plays some part.\(^{125}\)

It seems that in the use of small scale functional elements or details the function of the object is normally readily recognized by the user, but that connotative details can help to heighten this process by adding layers of meaning to its function. For example, the previously discussed handrail and step details at Villa Mairea. It seems that if the piece of architecture is to function as a part of a building, the denotative level must be evident, but at the same time, the connotative level can help to make the denotative level evident by further expounding related meanings. In the case of Aalto's buildings, seen as wholes, the role of the actual function is one of the things which is primarily signified. Whether or not it is signified as a particular function (as compared with other functions of other buildings) might be arguable, but in any case, functions are expressed in terms of their relative importance, whether determined socially, politically, or hierarchically. Evident examples of this could be in the majority of Aalto's buildings, but a complex example on an urban level might be that of the civic center at Seinajoki. Here the tower of the church 'quietly' dominates the entire composition, and represents the importance of the church in the life of the town, much like that of Medieval times. Since the church itself is somewhat reclusive from the rest of the composition, being secluded in its own forecourt, the form of the town hall council chamber dominates from a central position. Not only does this form dominate as the most important part of the town hall, it also dominates the entire composition of
civic buildings. Thus, while the main reading room of the library, or the main hall of the proposed theater are the dominant aspects of their respective buildings, they are, along with the police station, subordinate to the council chamber. Thus, through these elements, the separation of church from the government functions is expressed at the same time as its importance in the community. While the church does not dominate the civic functions, it is also not dominated by them. Instead, a harmony exists in the composition which one would hope to find in the community itself. While this expression is evident in the forms which incorporate the functions, it is also enforced by the materials and colors which clad these forms. For example, at the urban level, the purity of the white cruciform-shaped tower as a dominant religious symbol which is a center to the whole composition from a distance, and the power of the blue tile-covered council chamber area which forms the dominant central focus when one is amongst the buildings (with the appropriate exception of the church forecourt). In all of these cases, the connotative aspects work together with the denotative aspects to suggest the meaning of the form. Jencks feels that the primary level of signification is, for the most part, only relevant to architecture insofar as it is made aesthetically and ideologically pertinent.

The tendency, according to Jencks, is for architecture to dramatize its aesthetic codes, or its secondary and tertiary levels, in five major ways:

1. Fetishism and the self-reflection of the aesthetic code. Since architecture is a connotative system it can focus on the expressive plane of meaning with such obsession that the expression becomes the content. Architecture, it is often said, is about other architecture, or even about itself. It sets up a small, internal world where forms are heightened and refer back to themselves as forms because of excessive repetition, brightness, an odd texture, an exaggerated window or roof, etc. There are key points to an architecture, erogenous zones and pleasure centers, such as the entrance, which I have analysed...as the usual points of fetishism.

This 'internal world' is in many cases necessary for architecture to communicate meanings about itself. Whether it be related to typology, as in the case of
the examples of the Villa Mairea's plan which has been discussed as Pompeian and Scandinavian, or in terms of expression of functions which can be seen in the Villa Mairea's distinctions between the studio, the living wing, and the service wing. In Aalto's architecture this 'internal world' is important in interpreting the functions of the building, either through the typological associations or through the expression of like functions and the differentiation of unlike functions. Thus, when confronting an Aalto building, either from the exterior or from the interior, one can normally recognize the more important spaces.

2. Distortion and disruption in the aesthetic code. Distortions and disruptions in the aesthetic code take extra time to perceive and this lengthening of the perceptual act could itself be characterised as essential to the aesthetic code. Often these disruptions or distortions do not take longer to perceive but by their nature are immediately noticed, although their connotated meanings might take longer to comprehend. In the case of Aalto's architecture, one might say that the majority of his buildings are created utilizing such disruptions or distortions. (In comparison to a style like the Doric where each piece had a particular location and relation to the next.) The previously sited examples of evolutionary development would be considered as distortions, such as the use of wood board and batten on the studio of the Villa Mairea.

Due to Aalto's combination of so many distortions (and often in what might be called a disruptive manner), they become the normal expressive elements. These 'distorted' elements are derived from a variety of appropriate codes: vernacular, nature, culture, technology, etc. and are held together in the composition by the overriding organic order of the buildings.

3. Redundancy and miniaturization in the aesthetic text. Messages which refer to themselves and even to small messages within the whole. This property, often referred to as 'unity in variety' can make even the smallest perceivable detail important.

- Architecture is in the details because it is the semiotic cross-reference of details which makes a text endlessly decodable.
- Appears to achieve a magical endlessness of signification.
- It is the imagination of the architect which codes differences
to bring out similarity.
- It 'fuses' various parts of the architecture by finding some
  semiotic link that either hadn't existed before or was unnoticed. This
  link then relates part to part in such a way that their previous meaning
  is modified and transformed. 128

This 'architecture of the details' is an important part of the communicative
aspects of Aalto's architecture. Virtually every fragment expresses some meaning to
the interpreter, be it by connotation, denotation, or by both. Not only do these details
connote certain ideologies or denote certain functions, they also serve to unite what
might have been two or more totally disjunct elements. For example, the first step of
the main staircase in the Villa Mairea is not merely a step like those above it. Instead, it
is a landing, like a section of the floor which has been lifted up to ready one for the
change from horizontal to vertical or from vertical to horizontal. Simultaneously, it is
a step, with its wooden construction, but not like those above it. Therefore, it oscillates
between the two meanings and serves to unite the staircase to the main floor level.
When this reading of separateness is taking place between the floor and the bottom
step, it, together with the separation which occurs at the top step, emphasizes the
transparency of the staircase and highlights the distinct separation which occurs
between the floor slabs. In this way the staircase exists within the layer of space
created by the floor slabs and serves as a link between the two, and not as a
continuation of either. As Jencks points out, this process of decoding could continue
indefinitely.

4. Imaginative transformation or other aspects of the aesthetic text can
be hermeneutic, esoteric and even completely private.
- Personal dialect, artists invent their own language (or parts of)
- New depends on the old for its impact. - Since one can only
  perceive and understand messages of high information content
  when they are cued by other, expected redundant messages. All
  architecture does in part send new, unexpected messages in a
  new code which at certain points becomes personal and
  variable. 129

While the new depends upon the old for its impact, it must also be remembered,
especially in the case of Aalto, that the new depends upon the old for its
comprehensibility. Without the specific references to known codes (vernacular,
cultural, etc.) and the transformational process which modifies them, the new would appear as something which is foreign to its environment. It must also be realized that what in some cases has been called a 'personal dialect' is not actually that. Although personal elements might exist in Aalto's architecture, for the most part these elements are to be found in recognizable codes, although they have been transformed somewhat by Aalto. What has occurred in many of the critiques of Aalto's works is that the critic did not recognize, or did not examine close enough to recognize, the codes which were existing in Finnish architecture.

5. It is continuously open to new interpretation, multivalent and plural in its range of meanings. Architecture is reinterpreted anew by each generation and the history of architecture is an organic unity of traditions where the introduction of a new building, or movement, or style, or set of ideas changes the relation of all previous buildings in that tradition.130

This 'organic unity of traditions' is more easily conceivable and more readily understood when the traditions are modified gradually and the new interpretations can be based upon the previous ones. Thus, is a similar way, perhaps, to the way Romanesque was transformed into Gothic, Aalto's architecture (with a only a few exceptions) transformed the previous architectural traditions into modern architecture. Thus, Aalto's architecture, the housing at Sunila, for example, was more readily accepted by its inhabitants than many works of 'Modern Architecture'.

As can be seen in Aalto's architecture, the aesthetic text has the ability to articulate radically different experiences, meanings, emotions, and values as a whole. Jencks considers this as an attempt, by analogy, to record the full spectrum of life. He feels that the most powerful metaphors are those that are ambiguous, mixed and suggested, rather than those which are singular and named, because the latter become univalent and not open to multiple interpretations. Thus, the implication of multivalent architecture is its creative effects on its inhabitants and viewers. "It, along with other signs, shapes people in a multitude of different ways, articulating
their full spectrum of moods, thoughts and behaviors." This multivalence or ambiguity appears in Aalto's works in many forms. For example, in the Villa Mairea, the columns in the main living area are located on a grid, thus suggesting the typical rational placement of structure. But, instead of this simple configuration, in some locations there are two or three columns instead of just one. Thus, the interpreter is confronted with the seemingly rational and the seemingly irrational simultaneously. Furthermore, these readings are compounded or reinforced by the situation of the 'modern' steel columns being bound in cane or with wooden slats. This multivalence continues even further when one focuses on one of the columns bound with the wooden slats. Not only does this ambiguity between materials occur but also an ambiguity between historic periods. The vertical slats of wood not only remind one of the fluting of Classical columns, but the placement of the slats in relation to the top and bottom of the column divides the column into the Classical tripartite division. A similar multivalent reading occurs in Aalto's civic buildings such as Finlandia Hall. Here the lower-level columns are surrounded by vertical strips of marble. The columns' form and construction technique are definitely of the twentieth century but again the ribbing, and the marble, both allude to the Classical tradition. Together with the white marble which covers the entire building, these columns, refer back to not only the great Classical temples and civic monuments, but also to the myriad of public and civic buildings which have been built in classical revival styles. Thus, while the denotations and initial connotations of the columns in the Villa Mairea and Finlandia hall are similar, the secondary levels of connotation are different with one relating to a domestic scale and the other to a public or monumental scale.

"Clearly architectural 'words' are more elastic and polymorphous than the written and spoken variety (and then are relatively more hermeneutic or based on contextual codes)." Jencks feels that the history of these 'words' or units shows another parallel with language:
At first - when the word is invented - it is seen in terms of a metaphor.

After a few years of usage this metaphor becomes a cliché, or

the connotation becomes a denotation.\(^1\)

When people first see unfamiliar architectural units they map them metaphorically onto systems they already know. This metaphorical activity, which Jencks feels is a necessary aspect of all creative thought, was crucial to Modern Architecture. While many architects applauded the machine aesthetic and accepted the new style many people disliked those associations and preferred more traditional associations. Jencks feels that since the architectural sign gathers meaning over time, these traditional units have acquired more meaning than modern ones. A problem arises with this theory of 'cumulative meaning', however, since simultaneously, the signs are losing meaning. For example, while a keystone has been a symbol of entry in our culture for a long time, it once was a purely technical solution to a structural problem. As time passed these two meanings became united with the structural use being the justification for the symbolization of entry. Recently we can find examples of keystones used in buildings which are not masonry, and therefore have no need for them. These keystones have lost part of their meaning. They have lost the meaning that their form denotes and not merely their connotated meanings. They are not suggesting entry through a transformational reference to a keystone but are actually creating a false keystone which has no actual purpose. If a system of meaning is based on falsities, is not the entire system eventually false? Jencks has called for a 'radical schizophrenia' in architectural semiotics to bridge the gap between traditional and modern codes. What was actually needed was a way to pull these two oppositions together, and this was achieved by the architecture of Aalto, as has been demonstrated in the previously cited examples.

Following the model proposed by Eco in *The Architectural Sign* [Column], Jencks proposes several revisions:
The architectural sign \( S \) is a combination of coded elements from the planes of expression (E) and content (C) which have further articulation at a second level (figurae and monemes) which are also coded, and even articulation at a third level, which is uncoded.

Several points of a general nature...about this model, which allows an element by element componential analysis:
A. The total sense experience of the five senses is unified at E under the encompassing guidance of visual expression, which is to say visual elements guide, for instance, the smell of architecture rather than vice versa, and that smell only articulates the prevailing visual code. - The predominance of the visual code under normal conditions.
B. The sememe is constructed from second level monemes, or semiotic features which are further divisible at a third level... Theoretically the subdivisions are infinite and we have an unlimited semiosis but practically speaking any sign articulates only a limited, highly structured semantic field. In this case the plane of expression cuts out pertinent features which find their counterpart on the level of content, and we have a series of morphological markers which are further subdivisible into visual figurae and into the articulae of the five senses. - All of this is quite laborious, but it allows us to see what parts, or else suprasegmental elements of the expression, are articulating which connotations, and thereby see certain areas of great signification.
C. Main differences from Eco's model:
1. Function and denotation do not take precedence over connotation, they are reversible...
2. The syntactic, or morphological, or content markers are thus appreciably enhanced for constructing the stem diagram.
3. Non-visual articulae are included at the base level of the sign although guided and unified by the visual code at a higher level.
D. The level at which we take an architectural sign is thus partially dependent on previous coding and the present context. ...depending on one's interest and experience.\(^4\)

Jencks uses the Peircian definition of the sign, or the definition of the relation between the signifier and the signified, as being either indexical, iconic or symbolic, but feels that no real sign is completely pure. Instead, he feels that they are all compound signs which have a conventional, coded element, and are therefore all symbolic signs at their base. "Most architectural signs are compound, or indexical, iconic and symbolic all at once, with one of these tendencies dominating."\(^5\) At the same time he points out that architectural signs tend to be more indexical and iconic than the linguistic signs, which are relatively more symbolic. Thus, architecture is
more motivated than language, where the initial use is relatively unmotivated. For Jencks, the problem with Modern Architecture is "its obsessive concentration on indexical meanings, it promotes a banal and literalist life of simplified functionality."\textsuperscript{136} Jencks outlines a rough hierarchy of architectural codes. Generally:

codes of expression and codes of content:

Codes of Content (in order of relative importance to the user)

2. A sign of building activity, of the historical process, of change, personal involvement, buying and selling,....
3. A sign of traditional ideas and beliefs. The most commonly known area of signification which traditional architectural history describes as iconography.
4. A sign of various functions, including use, social activity, structural capability, environmental servicing, temperature control, and building tasks.
6. Any city can be read as an economic class and social icon.

Codes of Expression (in order of relative importance to the architect)

8. A sign of spatial manipulation. Concepts of space (internal and external) known to Greeks, Romans,.... In our century space has become fetishized as the specific medium of architecture, where it is clear that it is shared by other sign systems (landscape, sculpture) and that ordinary people notice surface before they understand space.
9. A sign of surface covering. We are continuously looking at the last layer of the constructional meaning, the epidermis, not the deeper architectural meaning. - Probably the most important in conveying the content 'way of life'.
   Most important in expressive codes: many levels of articulation - rhythm, colour, texture, proportion, size, smell, tactility,....
10. A sign of formal articulation, volume, mass, density.
11. The aesthetic sign is both expression and content at the same time, or rather the meaning of the expressive level is the content.\textsuperscript{137}

As Jencks points out, architecture is an impure, pluralistic amalgum, rather like opera.

All architecture doesn't need to use all of these codes, but sense the codes which guide perception are based on taste cultures or semiotic groups, architecture must be
multivalent.

Architecture is hence a less precise means of communication than language and more subject to mutation, fashion or whim of the interpreter. ...when two readings clash, one can appeal to the context and see which has the more appropriate mapping, thus making a reading more 'correct'.

Also it is inevitable that mixed metaphors will generate major and minor interpretations to be held in the mind at the same time. ...semantic subcodes in architecture are subject to quicker shifts than, say, phonetic or kinship codes.
Juan P. Bonta

Juan Bonta has introduced a theory of semiotics which is more general in nature than the previous models. Bonta feels that the various models which have been proposed are not mutually exclusive and can be defined or incorporated into a more general approach.

In Notes for a Theory of Meaning in Design, 1980, Juan Bonta introduces some new terms into the theories of the architectural communicative process which serve to more fully describe signs in respect to their use by architects. For Bonta, an 'indicator' is a directly perceptable fact, by means of which it is possible to learn something about other indirectly perceptible facts. Thus, a directly perceptible fact is an 'indicator' (a form) while the meaning of that indicator (another form) is the indirectly perceptible fact. "The relationship between form and meaning is natural or factual; the meaning results from the form as the consequence of an act of analysis." An example of this in Aalto's architecture would be any of the references to vernacular architecture or Classical architecture such as the wood board and batten of the studio, or any of the columns in the main living space, at the Villa Mairea, or those columns at Finlandia. These indicators are recognized by the interpreter as referring to a meaning and thus a triadic relationship is formed: [ Form : Meaning : Interpreter ]. Bonta proposes a special class of indicators which he calls 'signals'. These are indicators which must be deliberately used for the purpose of having an act of communication. Secondly, they must be recognized by the interpreter as having such a purpose. If both of these conditions are not fulfilled, then it is not a signal, but just an indicator. The 'emitter' is what sends the signal while the 'receiver' is the one who interprets it. These signals, according to Bonta, communicate 'states of consciousness'. The relationship is conventional, and up to a point, arbitrary or not motivated. Even though it is somewhat possible to limit the arbitrariness of codes, using resources such as iconicity and articulation, the reading of signals always requires the learning of a code or the
knowledge of some conventions. While signals communicate, indicators indicate. The
definition of these depends upon the objects role within the significative process: on
the relations established between its parts, form and meaning; and with the other
elements of the process, emitter and interpreter. Bonta terms as 'intentional indicators'
those indicators which fulfill the first condition of a signal but not the second. Thus,
an intentional indicator is deliberately used by a producer to generate an act of
communication, but is not recognized as such on the part of the interpreter. A problem
arises here in terms of the lack of specificity of of Bonta's definition. It seems that
there should be a breakdown of the term 'intentional indicator' into two discrete types:
one type which are those indicators used by the producer to intentionally
communicate, but which are not recognized by the interprete as such and therefore
have no affect on him. The other type would be those indicators which are
intentionally used and are not recognized as such, but still produce an effect on the
interpreter. These might be described as 'intentional subconscious indicators'.
Another type of indicator which might be needed would be that of an 'unintentional
indicator' or an indicator which is recognized as communicating some meaning, but
was not intended to on the part of the producer. Although the determination of these
two types of indicators would be difficult, and in many cases impossible, it would seem
that the differences in their definitions would arise at some points in the analysis
process.

There is a repertoire of conventionalized architectural forms which behave as
signals, almost like words of a language. While their reading demands the knowledge
of a code, these codes can be implicit. According to Bonta, "forms in this case do not
give direct evidence of matters of fact; they remit to states of consciousness." The
meaning of these forms, in Bonta's view, may have all three components (indicators,
intentional indicators, and signals) or just some of them. Thus, a single form may
perform any of these roles in different combinations. It should be pointed out that the
interpreters knowledge of the codes will have great bearing on this. Over a period of
time, interaction occurs between these components and pure indicators tend to produce
intentional indicators which in turn tend to become signals. The previously sited saga
of the keystone is a good example of this. Thus, architectural language, just like verbal
language is in a continuous state of transformation.

It is difficult in practice to distinguish the different stages of the
process, because the perceptive modalities of the various sections of the
community do not always evolve simultaneously. Disparity in reading of
the same form by different interpreters is unavoidable. 141

Bonta divides the architectural form into two concepts: physical form and significant
form. Physical form (which has been called the 'sign vehicle' by Morris) is the set of
all the features of a form which are perceptible: shape, color, texture, smell, chemical,
etc., while the significant form (what has been termed the 'sign' by Morris) is an
abstraction of physical form which includes some of its features - those which
determine the meaning - and excludes the rest. One single significant form can
correspond to diverse physical forms, or classes of concrete forms. Similarly, various
significant forms can correspond to one physical form. Each of these would have its
own meaning, according to which the features of the physical form would be extracted.
The use of this principle by Aalto can be seen throughout the Villa Mairea, in terms of
vernacular, classical, modern, and natural references. For example, if we take the
physical form of a tree, we can see different significant forms for it in the entry loggia
and the main staircase. In the entry loggia, which is outside, saplings have been used
to form a screen for the entry. While performing this function they reflect upon the
enclosure provided by the forest, and in conjunction with the roof of the loggia, which
they seem to support, reflect upon the shade and protection provided by the trees.
Inside the house, around the main staircase, the significant form is different, allowing
for the use of technology. The placement of these wooden posts again reflects upon the
forest, but simultaneously their technology and ribbed bracing, connotes the Classical
column. Bonta, like Jencks, terms this property of significant forms 'ambiguity'. Similarly, he terms as 'polysemy' the ability of physical forms to acquire different meanings. "Physical forms realize or admit significant forms and significant forms organize or analyze concrete physical forms." Form, for Bonta, is composed of features which are the set of values that affect meaning. Meaning, in turn, is composed by the set of values susceptible to being modified by changes taking place in the form.

In terms of the overall process, Bonta proposes that models organize or analyze objects, while objects realize or admit models. Significant models (those which satisfy the definition of form and meaning) tend to constitute systems, such that the system, when considered as a whole, exhausts the universe of discourse. When significant models are conventional, the systems that they constitute are usually called codes. The universe of discourse is the totality of objects taken into consideration in a given circumstance. In each universe of discourse, the object realizes a different significant model. Universal values or features are common to all of the elements of the universe of discourse. Therefore, they lack all discriminatory power and are thus excluded from the significant model. Universal values and features cannot change, at least within the limits of the system in which they are universal.

Theory of signification should be general enough to make room for the multiple significant models with which man organizes the objects of his world, according to his changing interests and needs. Bonta feels that the diverse models of semiotics which have been proposed are not mutually exclusive, and basically feels that it is a waste of time to discuss which is more correct. His main concern is that theory should concentrate on the study of the general abstract properties which are truly semiological, of all possible models.

Generally, each feature of form, in Bonta's terms, can effect one or more values of meaning, and each value can be affected by one or more features. There is 'articulation' when each feature affects a single value and each value is affected by a
single feature. Between each articulating feature and the corresponding value there exists a relationship of signification similar to the one between a form and a meaning. Thus, a new system or level is created which is subordinate to the previous one. Its forms are the articulating features and its meanings are the articulated values of the other system. Bonta terms this type of system - systems whose forms and meanings are respectively articulating features and values of another system - articulating systems, and their models, articulating models. The system which they are subordinate to is called an articulated system. By the means of the models of the articulating system it is possible to compare all the models of the articulated system. The forms of the articulating system, which are features in the articulated system, can appear in more than one form of the articulated system. Bonta uses language as an example:

<table>
<thead>
<tr>
<th>Language:</th>
<th>Articulated system</th>
<th>Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulating system</td>
<td>Monemes (words)</td>
<td>letters (phonemes)</td>
</tr>
<tr>
<td>Second system</td>
<td>(articulating system of words)</td>
<td></td>
</tr>
</tbody>
</table>

Bonta argues that the articulating systems of language, both that of monemes and that of phonemes, constitute a finite repertoire of models, the nature of which are known, and which are independent from the sentences in which they occur. While the phonemes and the monemes of language are, in principle, enumerable, the same cannot be said about the articulating models in design. It is impossible for semiological theory to decide a priori on the nature of the forms and meanings of the models it studies. Furthermore, it is impossible to affirm that their number is finite. For Bonta, articulation constitutes a paradigm, or an ideal pattern to which it is only sometimes possible to adjust in analysing an architectural form. In other words, when an articulated reading exists, it is preferable to other possible readings. Articulation within a system not only depends on certain intrinsic qualities of the objects that realize it but also on the way in which the interpreter organizes the objects in the system. Bonta feels that there are both objective and subjective factors which affect the existence of articulation. He considers as objective those factors which remit to the
instances of the creation of the object, and considers as subjective those which operate in the moment of the objects fruition. He feels that the latter are therefore the primary interest of those concerned with analysis and criticism of existing works. The degree of articulation within a system is, within limits, under the designer's control. He can either try to introduce further degrees of articulation or try to avoid it altogether. When used, the relationship feature/value should be as immediate as is possible. Thus, the architect must perceive with subtlety both the relationships which are already conventionally established and those which are possible within a given cultural system. Probably nowhere has this been demonstrated better than in the architecture of Aalto. Aalto's ability and finesse in combining the different forms, materials, and details which permeate his architecture is a perfect example of Bonta's requirement that "corresponding features must be physically compatible in order to constitute the form." This ability also incorporates that desired quantity of information in the forms which Bonta calls 'significant richness'. Bonta defines two types of articulation: segmental and non-segmental. In segmental articulation, or spatial articulation, articulating elements correspond to physical, spatial components of the articulated form, while in non-segmental articulation the articulating elements are identified with different attributes of the same spatial component.

Bonta points out the relationship which exists between the form, its context and its meaning. He defines context as the "set of factors independent of the physical form changes in which are capable of changing the meaning" of the form. The distribution of meaning between the form and its positional context on the one hand, and the redundancy level existing between both on the other, are variables which are, within certain limits, under the designers control.

The degree of articulation, the significant richness, the use of context and the relative importance of indicative, expressive and communicative components of meaning allow the significant structure of the whole system to be described in a general way; they constitute a deep structure by means of which it is possible to establish analogies between superficially different systems.
Like the previous models, Bonta's theories incorporate aspects of the theories of Morris, Saussure, Hjelmslev, and Ogden and Richards. However, the general nature of Bonta's theory allows a freedom in its use allows one to shift from one scale to another in architectural analysis. The following chart comparing written language and architecture, and using Villa Mairea as an example, can be used to demonstrate this:

<table>
<thead>
<tr>
<th>Written text</th>
<th>Architecture</th>
<th>Villa Mairea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>Site</td>
<td>Site</td>
</tr>
<tr>
<td>Paragraph</td>
<td>Building</td>
<td>Villa Mairea</td>
</tr>
<tr>
<td>Sentence</td>
<td>Room, space,</td>
<td>Living space</td>
</tr>
<tr>
<td>Word</td>
<td>Element</td>
<td>Column</td>
</tr>
<tr>
<td>Letter</td>
<td>Detail</td>
<td>Wood slats</td>
</tr>
</tbody>
</table>

In each case, the unit below is an element of the articulating system which articulates the element of the articulated system above. The process can be extended in both directions, for example, the site of the Villa Mairea would be part of an articulating system which articulates the Gullichson's estate, which in turn would articulate the general region, and so on, while the wood slats might be articulated by the system which includes their fasteners to the column, etc.

Bonta's model allows a general look at the various articulating levels without delving into the actual specifics of the plane of content or the plane of expression. Because of this, it is useful for an overall examination of the various articulating systems and how they affect the various articulated systems. Thus, on a slightly superficial level, one can examine how the different elements of a building modify or effect other elements at another level. It should also be noted that these elements will also affect each other on the same level. In other words, it is not just a question of an element articulating something on the next level, but that element may also articulate another element, or other elements, on the same level. An example being those previously mentioned details of the main staircase such as the handrail and the top step which combine with similar elements in the studio, such as the door and the loft stairs, to connote a possible reading which suggests a ship. In this case the elements affect
the meaning of each other as well as affecting the meaning of the staircase. This model thus allows for an analysis of the elements within the different articulating levels, which could be combined with aspects of the previous models to allow for a more specific analysis.
Through a general comparison of the preceding composite theories a few important differences can be seen. For Eco, an architectural sign's primary importance is in the function it denotes while its symbolic function is of secondary importance. For Jencks, the opposite is true. He feels that the primary importance lies in the symbolic function, or what he terms as the 'aesthetic significance' of the architectural sign. Therefore, while Eco's concern lies mainly with the denoted aspects of architectural signs, Jencks is mainly concerned with the connotative aspects. In contrast to these are Bonta's theories which are, in a more general way, concerned primarily with the overall influence of signs on other signs through articulation.

Utilizing the previous examples, the aforementioned theories can be combined, edited and condensed in order to give a clearer definition to the semiotic process. This summation includes, and is defined by, the following terms (for a complete summary see appendix):

SIGN: a property or set of properties of an object. Something which makes thought possible
ICON: A sign which refers to the object that it denotes by virtue of certain characters of its own... It reminds us of the object by some complex kind of resemblance.
SYMBOL: A sign which refers to the object it denotes by virtue of law. Must be learned.
INDEX: A sign which refers to the object it denotes by virtue of some physical relationship.

Three relations of signs:
SYMBOLIC ASPECT: unites signifier and signified
SYSTEMATIC or PARADIGMATIC ASPECT: unites the sign to a specific reservoir of other signs from which it might be drawn for insertion into a discourse
SYNTAGMATIC ASPECT: unites the sign to other signs preceding or following it in a discourse

SIGN-VEHICLE: all the properties of an object, not all of which are used for the sign.

PHYSICAL FORM: all features which are perceptible in the sign vehicle.
SIGNIFICANT FORM: abstraction of physical form which includes those features which determine the meaning of the sign.

POLYSEMY: the ability of physical forms to acquire different meanings
AMBIGUITY: (multivalence) ability of significant form to take on different meanings
PERCIPIENT: the perceiving and interpreting individual; must have the obvious or hidden key to the represented concept. Interpreter of the signs.

PRAGMATICS: the relationship between signs and their users: origins, effects, ...
SEMANTICS: the relationships between signs and their meanings.
SYNTACTICS: the relationships between signs and other signs: in combinations
CODE: organization or system that interrelates the elements or units of message

Three existing varieties of codes:
  - Technical codes: engineering, structural logic, ...
  - Syntactic codes: typological codes concerning articulation into spatial types
  - Semantic codes: the significant units of architecture - relations between sign-vehicles and their denotative and connotative meanings
    
      A. units denote primary functions
      B. units have connotative secondary functions

CONTEXT: set of factors independent of the physical form changes in which are capable of changing the meaning of the form

METAPHOR: links a message by the selection or substitution of its elements through a code

METONYMY: interrelates the elements present in the message itself, by their internal combinations

SEMEMES: cultural units: enclosure, entrance, ...
MORPHEME: architectural sign vehicles: space, surface, geometry, ...
INDICATOR: directly perceptible fact (a form) whose meaning is an indirectly perceptible fact (another form). Indicators indicate; signals communicate.

SIGNAL: indicators which are deliberately used for the purpose of communication and are recognized by the interpreter as such.

INTENTIONAL INDICATOR: deliberately used for communication but not recognized as such by the interpreter.

EFFECTIVE and NON-EFFECTIVE INTENTIONAL INDICATORS.
FORM: composed of features which are the set of values that affect meaning
MEANING: the set of values susceptible to being modified by changes taking place in the form

PRIMARY FUNCTION: denoted function

PRIMARY MEANING (Architectonic aspect): Buildings (as messages): representing their use (referents) or their physical structure (channel)
  - Architectonic aspect: provides possibility for structuring form
SECONDARY FUNCTION: connotated function or symbolic function

SECONDARY MEANING (Repository aspect): represent and emphasize the areas related to sender, receiver, and code - rarely conscient and explicit parts of the architectural design
  - Repository aspect: provides the sources of actual formal patterns

SIGNIFIER: plane of expression: use expressive codes: are made up of forms, spaces, surfaces, and volumes: which have suprasegmental properties: rhythm, colour, texture, density,... some material representation

SECOND LEVEL SIGNIFIER: noise, heat, smell, tactility, kinaesthetic qualities,...

SIGNIFIEDS: plane of content: use content codes: are made up of iconography, intended meanings, aesthetic meanings, architectural ideas, space concepts, social/religious beliefs, functions, activities, commercial goals,...

SECOND LEVEL SIGNIFIEDS: iconology, betrayed meanings, latent symbols, anthropological data, implicit functions, proxemics,...

REFERENT: a thing, object, or actual function which may be denoted by a signifier.

The actual communication process can be demonstrated by the following structures which utilize the concepts above:

SEMIOTIC TRIANGLE:
  SIGNIFIER(SYMBOL): connotes a SIGNIFIED(concept, thought, or content) and
Architecture is a system of sign-vehicles (a plane of expression) coupled with semantic systems (of cultural units) (on the plane of content) lying outside it.

<table>
<thead>
<tr>
<th>PLANE OF CONTENT</th>
<th>form/substance</th>
<th>SIGNIFIED referent/thought</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLANE OF EXPRESSION</td>
<td>substance/form</td>
<td>SIGNIFIER reference/symbol</td>
</tr>
</tbody>
</table>

A sign or semiotic coupling \( (C_f/E_f) \) of the two planes can itself form the expression of a more elaborate semiotic or metasemiotic: \( C_f/E(C_f/E_f) \) connotative semiotic

Plane of 'connotators' (style, etc.)

\[
\begin{align*}
\text{Tectonics (basic function) (1st. level)} & \quad C_f \\
\text{Architecture} & \quad E \ C_f/E_f
\end{align*}
\]

Connotative Level: 

<table>
<thead>
<tr>
<th>EXPRESSION</th>
<th>CONTENT</th>
</tr>
</thead>
</table>

Denotative Level:

<table>
<thead>
<tr>
<th>EXPRESSION</th>
<th>CONTENT</th>
</tr>
</thead>
</table>

The architectural sign \( [S] \) is a combination of coded elements from the planes of expression \( (E) \) and content \( (C) \) which have further articulation at a second level (figurae and monemes) which are coded, and even articulation at a third level, which is uncoded.

A. The total sense experience of the five senses is unified at \( E \) under the encompassing guidance of visual expression.

B. The sememe is constructed from second level monemes, or semiotic features which are further divisible at a third level...

Theoretically, this process could continue indefinitely yielding unlimited semiosis. Practically speaking, however, each sign articulates only a limited highly structured semantic field. Examples of this can be seen on a general level below:

**ARTICULATION:** when each feature of form affects a single value of meaning.

**ARTICULATED SYSTEMS:** articulated by: **ARTICULATING SYSTEMS:**

**SEGMENTAL ARTICULATION:** (spatial articulation): articulating elements correspond to physical, spatial components of the articulated form

**NON-SEGMENTAL ARTICULATION:** the articulating elements are identified with different attributes of the same spatial component

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<tr>
<td>Text</td>
<td>Site</td>
<td>Site</td>
</tr>
<tr>
<td>Paragraph</td>
<td>Building</td>
<td>Villa Mairea</td>
</tr>
<tr>
<td>Sentence</td>
<td>Room, space,</td>
<td>Living space</td>
</tr>
<tr>
<td>Word</td>
<td>Element</td>
<td>Column</td>
</tr>
<tr>
<td>Letter</td>
<td>Detail</td>
<td>Wood slats</td>
</tr>
</tbody>
</table>

In each case, the unit below is an element of the articulating system which articulates
the element of the articulated system above. The process can be extended in both
directions, for example, the site of the Villa Mairea would be part of an articulating
system which articulates the Gullichson's estate, while the wood slats might be
articulated by the system which includes their fasteners to the column. Theoretically
we could extend this on the large end of the scale to ultimately include the entire Earth,
or even the solar system, but such an extended elaboration would be meaningless in
most cases. The same can be said of continuing the process in the opposite direction.

This amalgamated model enables both a specific analysis over a limited range,
like those of Eco and Jencks, and a more general and broadranged analysis, like that of
Bonta. Not only can the specific semiotic concepts be incorporated, but also those
concepts which lie outside the specific confines of the semiotic definition. Thus, not
only processes like metaphor and metonymy may be incorporated but also factors
which influence perception such as iconology and isomorphism. Of primary
importance is the incorporation of the diverse cultural associations which can thus be
defined in their influence on the communication process. Because of the separation of
denotated meanings and connotated meanings both, for example, expression-based
forms, which have culture-specific meanings, and function-based forms which are
more universal, can be analysed in their usage. Also, sign-vehicles like symbolic
techtonic forms can be analysed both for their symbolic aspects as well as their
techtonic aspects.

While the previous discussion has described in depth both the pragmatic and
the semantic aspects of signs, in terms of Aalto's architecture the syntactic aspects must
be dealt with more completely. Although the resemblance of architecture, and the
Villa Mairea, to a text was demonstrated, it must be pointed out that this is only one
aspect of a syntactic structure. As with the semantic aspects, not only can a variety of
syntactic codes can appear in architecture, but at times they can appear
simultaneously. The two most prominent of these in Aalto's architecture are
Typological codes and what I will call the 'organic code'.

SYNTACTIC CODES

Typological Codes

Nothing old is ever reborn. But it never completely disappears either. And anything that has ever been always re-emerges in a new form.\(^{148}\)

Alvar Aalto

The art of building is born out of a pre-existing germ; nothing whatsoever comes from nothing...the type is a sort of kernel around and in accordance to which the variations that the object is susceptible of are ordered.\(^{149}\)

Quatremère de Quincy

Typological codes in architecture serve the communication process on two levels. In the first case they provide an ordering structure or syntax for the organization of the architectural work while secondly, they provide an additional semantic dimension by the use of pre-existing spatial or formal configurations. As Porphyrius has pointed out, "the type, founded on habit and social convention, acts as a classificatory tool that makes the visible world legible."\(^{150}\) Because of this, the architect is able to build on a basis of institutionalised and pre-established meanings, thus relating to conventionalised codes on a syntactic basis as well as on a semantic basis. As Gillo Dorfles points out, this type of "architectural message...is constantly based on a complex spatio-temporal dimension" and "only in this sense can its 'code' be deciphered."\(^{151}\) Although Dorfles feels that there should be a twofold system of semiotic analysis for architecture, from both a symbolic point of view and from a point of view based on constitutive elements such as spaces, rhythms and volumes, the close relationship between the two suggests an analysis based on both the semantic dimension and the syntactic dimension. Not only does the typological syntax order the architectural elements but it also has a semantic dimension which connotes other meanings to the work. For example, in Aalto's architecture there are many cases of typological references to traditional or vernacular types, such as the previously mentioned example of the Villa Mairea, and its relationship to the traditional
Scandinavian L-shaped manor house, or its relationship to the Greek or Roman courtyard houses. Another example, on a larger scale, is at the Jyväskylä Pedagogical University where the entire urban composition takes on a Greek character in the spatial disposition of its elements and the relationship of their siting to the act of moving through the campus. This is also heightened by the use of 'Greek typologies' in some of the buildings for the campus. As with the semantic dimension, and its two part distinction between denotative and connotative meanings, we can also examine this use of typologies on a connotative level as well as the denotative or spatial level. Could it not be that Aalto felt a close connection between the Finns and the ancient Greeks? In any case, the ideologies connoted by such a typological use do exist.

A variety of forms or types can appear in architecture just as a variety of possible organizations can appear in written language. Although the primary example used in making a comparison between the two is usually that of sentences and words, it must be noted that the relationship can be extended much further on a typological basis. As with the previous example of articulating systems, the comparison might range from the scale of the letter or most minute detail to the scale of a major written work or a city plan. Throughout the conventional usage of written language lie a variety of syntactic types which bridge the multitude of possible scales of works. An excellent example of this is the 'three-point-five' format. This writing format consists of a series of three points which have an introduction and a conclusion. Thus, the scale can be as small as a 'three-point-five' paragraph with a sentence for the introduction, a sentence for each point, and a sentence for the conclusion, or this scale can be increased with the different points going from sentences to paragraphs, or larger. A similar aspect of this typology applied at different scales might be seen in Aalto's architecture as that of the aforementioned courtyard typology which is used in the Villa Mairea and that of the Saynatsalo town hall. But while this example of written text will suffice for a demonstration of the principle of articulation and for some syntactic
codes, it is inadequate as a total definition of the syntactic level. A more appropriate example of written language would include the multitude of syntactic forms which arise in poetry. Here, I feel that the analogy is much closer to architecture, for in architecture there are a variety of syntactic codes as well as the flexibility which is inherent in the interpretation process. The major point in this analogy with poetry is that like architecture, it has a variety of syntactic codes which structure it and at the same time allow a multitude of semantic readings. Furthermore, it takes us beyond the restricting problem of defining a 'sentence' in architecture, an irrelevant concept in architecture since meaning is not restricted to 'sentences', as poetry illustrates. Thus, as an underlying syntactic structure makes the meaning more coherent in written language, so it does in architecture.

The 'Organic' Code

Another syntactic structure which underlies Aalto's architecture is that which I will call the 'organic' code. This structure can be seen in the majority of Aalto's works, sometimes as the primary organizing principle and sometimes underlying another code such as the typological code. Its main function is to give Aalto "the ability to bind together disparate architectural elements" and also it provides him with "the ability to produce monumental presence." As Werner Moser has pointed out, "Aalto's buildings come across as unified organisms. The widely differentiated building parts are harmoniously integrated into a hierarchical formal structure." The importance of this 'organic' order in Aalto's architecture is shown by Aalto himself professing that "the profoundest feature of architecture is a variety and growth reminiscent of natural life." And that "in the end this is the only real style in architecture." This 'organic' structure in Aalto's architecture manifests itself not only in his plans but especially in the overall form and spatial distribution of his buildings. Buildings in many cases take on an almost biological order reminiscent of a plant or animal. Andres Duany has referred to this ordering sensibility as the 'head/tail' principle. This is because the
primary or most important function in the building takes on an expressive form which normally rises above and dominates the secondary functions and their forms. An excellent example of this might be seen in the town hall at Seinajoki. Here the piece of the building containing the council chamber with its dramatic form is clad in blue tile and rises above both the ground and the white colored office block which becomes its subordinate. In the Villa Mairea this 'organic' ordering principle can be seen overlapping the typological system of a traditional Scandinavian manor house. While the traditional typology would have primarily a major block with a minor wing, Aalto has taken this type and transformed it in a way which enforces both its typological reading and its 'organic' reading. The sauna and its extending roof continue the traditional service wing in a 'functional' way while the rising form of the studio provides an expressive 'head' to the living block of the house. As Aalto said in 1940, after recently completing the house portion of the villa, "every detail of construction, ideological as well as material, must evolve organically. We must build houses that will grow. The growing house should replace 'the machine to live in'." A few years later, Aalto added the sauna and garden extension to the existing portion of the house.

**A Semiotic Analysis of the Villa Mairea**

In analysing the Villa Mairea on a general level, one might begin upon approaching the house. On examination one can immediately notice the dialogue between the landscape and the house. The entire house as a unit articulates the larger-scale landscape and forms a dialogue with each affecting the meaning of the other. While the house articulates the landscape, elements of the landscape, such as the trees, articulate the house. Looking solely at the house one can notice the variety of fragments of the building which articulate it. For example, the three basic divisions of the house, or four if one includes the sauna, articulate different meanings upon their respective segments. While the sauna portrays a more primitive or natural character which is hierarchically the least dominant portion of the house the service wing
provides a solid anchor for the more flexible portions of the house. The main living 
wing fluctuates between being enclosed and protective and being fully open to the 
surrounding landscape. Perched at the end of the living wing, the studio takes on the 
more expressive form and the more dominant character of the major portions of the 
house. Thus, each of these fragments articulates the house in its totality, while 
simultaneously affecting the meaning of each other. Within each of these fragments 
are smaller units or elements which articulate them on a more specific level. For 
example the various columns of the main living space, which contribute to the 
meaning of the living space by not only their form but also their placement. In turn, 
each of these columns, or groups of them, are further articulated by details which 
contribute to their specific meaning.

Concentrating on the columns of the main living space one can identify a 
number of connotations or symbolic functions beyond their initial denoted functional 
meaning. In a pragmatic way, one might notice that their approximate locations 
suggest a rational structural grid. However, this rational reading is contradicted by the 
placement of multiple columns at certain points of the grid. On a semantic level this 
connotes a possible reading of trees in a natural setting, growing alone or in clumps of 
two or three. This series of columns around a square also connotes certain ideologies of 
Pompeian courtyard houses while simultaneously suggesting a similar typological 
syntax within the house itself. Thus, simultaneously, an organic syntax is suggested as 
well as a typological one. These connotations are reinforced at their articulating level 
by the details of the individual columns. The wrapping of the columns by cane or wood 
suggests the Classical tripartite division which allows further connotations of Greek or 
Roman architecture which are also reinforced by the wooden strips which sheath some 
of the columns in a way which appears very much like Classical fluting.

In this one element of the building, the living area column, a variety of 
connotations appear which unite the building both to tradition and to nature. On an
immediate level the surrounding trees of the forest are suggested in a way which unites the house to its site. This connotation of trees also can be applied at a more personal or a social level when one realizes that the clients of the house were members of the hierarchy of Finnish forestry concerns. The tree is thus not only a part of the landscape that they live in but is as well their livelihood and the reason for their social status. Thus, the connotations of the tree serves to unite the house with Finnish culture and the Finnish landscape while the connotations of Classical architecture further unite the house with the traditions of architecture on an international scale.

The column in this case has served as both a sign and a sign-vehicle. As a sign-vehicle it supported the readings made available by its details while as a sign it gave different readings due to its placement in the structural grid. In the case of the Classical references, the sign took on an iconic character due to its resemblance to a Classical column. The same type of relationship can also be said to exist between the columns, and their placement, and trees. However, the relationship of the sign to the connotations of Finnish culture would be primarily a symbolic one.

To utilize the three-part definition of signifier, signified and referent, one might say that the column acts as a signifier for a series of signifieds which are those connotations of Finnish or Classical culture. While at the same time denoting a referent which would could be either a tree or a Classical column. Thus, on the plane of content, the signified might be represented by a tree and the thoughts of Finnish culture, while on the plane of expression the signifier is represented by the placement of the columns as a reference and the representation of the column as a symbol.

This type of analysis could be continued on through more levels of connotations or with other elements but this analysis should suffice to demonstrate how the process operates. As one can see

For the most part, architecture entails a unique experience and interpretation - a kind of free re-creation. Architectural communication takes place simultaneously on several levels, as the level
of collective cultural conventions and meanings; automatic, biologically determined behavioural reactions; subconscious memories and experiences; and the level of collective archetypes.

To contribute to the understanding of the nature of architectural communication the linguistic analogy must be based on a deeper conception of the nature of language and the relationship between language and culture - used superficially, the analogy serves only to distort our view of architecture as an art.157

Juhani Pallasmaa
Communication in Architecture

In conclusion, several points of a general nature must be made regarding Aalto's attitudes towards architecture which enabled this communicational aspect of his work to take place. Early on in his career Aalto was convinced that a building could not stand as an isolated object which disregarded its surroundings. Aalto realized that, as Preziosi puts it, "anything within view may serve as sign-formations in an ordered and culture-specific system of architectonic signs." Thus, his architecture incorporated and responded to the surrounding environment. The architectonic code is all-encompassing, or to use Preziosi's definition:

is a system of relationships manifested in material formations, and the medium of a given code is normally a mosaic of shapes, relative sizes, colors, textures, and materials - in other words anything drawn from the entire set of material resources potentially offered by the planetary biosphere, including our own and other bodies.\(^1\)

Therefore, in order for the code to be recognizable or comprehensible to a specific group of people - in this case primarily the Finns - the architect - in this case Aalto - had to limit the code to primarily a localized and culturally-specific palette of this medium. Thus "each system" of the code "employs only a selected portion of the potential resources of an ecology, and...the constraints upon the choice of materials are primarily semiotic and culture-specific."\(^2\)

Throughout the development of Finnish architecture there has been a direct relationship between form and materials, and to this tradition Aalto was no exception. In ways resembling the Finnish architects of the National Romantic period which proceeded his work, Aalto utilized a multiplicity of materials in order to assimilate his communicative aspects. In each case, these signs or symbols were incorporated within the forms and not merely applied as decoration. This was abstraction and development, not merely eclecticism. As Juhani Pallasmaa has pointed out:

Living abstract art...differs from empty ornament just as a significant scientific abstraction differs from a pointless generalization...The essence of abstraction is in condensing meanings on several levels, not
Also, the materials that these signs were incorporated within were used in conjunction with one another to best display the desired communicative message, such as: common materials versus noble materials; or strong materials versus fragile materials. In each case, in a culturally perceived way.

This idea of cultural perception also extended to Aalto’s vision of functionalism. Never was a function merely perceived as a physical function, but always as a culturally perceived and culturally rooted activity. “For Aalto the function itself should have a ritual basis so that the form which derives from that function can have a symbolic meaning.” Thus, the idea of ritual which is inherent in a function, was the generator for much of his communicative aspects, whether it be the ritual of entry, of rising up from one level to another, or the traditional ritual of gathering around a hearth. Aalto’s main tie with functionalism was that its new materials and techniques and the new conception of space, gave Aalto the freedom to develop his own conceptions.

One of these conceptions, the concept of evolution, greatly emphasizes the historical significance for Aalto’s work. Time is emphatically reflected “as a part of history” in his works, they are “as if” familiar in advance, members of that culture which embodies them. Aalto’s own output has its own evolutionary history, themes spring up, glide like a fugue from one work to another and become transformed into new themes.63

Kirmo Mikkola

This concept of evolution not only places Aalto’s individual works within his entire corpus, and within Finnish architecture as a whole, but also acts as an ordering element or syntactical code within particular buildings, such as the Villa Mairea. In examining Aalto’s architecture for this evolutionary aspect, whether it be the Villa Mairea or Finlandia hall, one might keep in mind the following comment by Herbert Read:

Greek temples are increasingly sophisticated developments of a basic form, and what began as a utilitarian structure was gradually refined until it became a symbol for spiritual values.64

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One might say that it is these 'spiritual values' which are embodied in Aalto's architecture, and that it is they which make the communicative act possible. However, one might also say that it is the communicative act which is embodied, and that it is this which makes the embodiment of 'spiritual values' possible. In any case, when one enters an Aalto building, to borrow a quotation from Colin St. John Wilson:

"It is as if I am being manipulated by some subliminal code, not to be translated into words, which acts directly on the nervous system and imagination, at the same time stirring intimations of meaning with vivid spatial experience as though they were one thing. It is my belief that the code acts so directly and vividly upon us because it is so strangely familiar; it is in fact the first language we ever learned, long before words, and which is now recalled to us through art, which alone holds the key to revive it." 165

Applications

A semiotic analysis is useful for determining the meaning of the built environment. While other forms of architectural analysis rely primarily on formal analysis and therefore are concerned with the elements of composition rather than their meanings, the semiotic analysis is concerned with the elements primarily because of their meaning. Because of this, the entire architectural composition can be analysed even to the smallest detail. Because of the diversity provided for in the model, all parts of the building can be analysed including those formal aspects, which would fall not only under the definition of syntax but also could be analysed for their semantic and pragmatic aspects.

An advantage of this composite model is that it provides both a structure for a specific analysis, of every detail, and a structure for a more general analysis which allows one to look at the relationships between different levels of articulation in the building. In the past, too many semioticians have tried to carry the linguistic analogy to architecture on too rigorous a level. They have been so concerned with structuring the process that they have forgotten the flexibility of language and the varieties of forms it can take. Instead, they have used only the most structured formats. Also, many
semioticians have, like Jencks, to a point, tried to define the aesthetic aspects of architecture in terms of semiotics. This does not seem possible. Although the meaning of architecture can be analysed or even created using semiotics, the aesthetic realm lies outside this definition. At the most, the communicative aspects can inform the aesthetic process, but never can they wholly determine it. A piece of Aalto's architecture, for example, could still have included all of the communicative aspects and still have been a terrible building in terms of beauty, or even function for that matter. Thus, it must be remembered that communicative aspects are only a part of architecture and do not determine it in its entirety. The value of semiotic analysis at both the level of analysis and at the level of design is twofold: not only, like other forms of analysis, does it tell us where certain elements came from, but more importantly, it also tells us why they are there in the architectural work.
APPENDIX

ICONOLOGY: unconscious symbols or symptoms
- Unconsciously embodied by architect
- Unconsciously responded to by interpreter

ICONOGRAPHY: intended and conventionalised meanings
- Intentionally embodied by architect
- Consciously responded to by interpreter

INTRINSIC: isomorphism
EXTRINSIC: stimuli from environment
- SCHEMATA: former expectations of individual
- Expectations created by object and context

EXPRESSION MODEL: artist/maker | intent | object
Expression based forms: ephemeral, change with time and place, cultural
Functionally based forms: fundamentally eternal and universal, international

Symbolic tectonic forms
Imitation vs. abstraction

Forms expressive of the meaning behind the forms
Artist: expresses himself through art
Work: radiates this expression
Public: to which this expression is conveyed

Language of art: communicates directly with man's inner sensitiveness.

Spiritual interrelationship between population and form-treatment of a community
new achievement is sequentially coherent with progress of tradition

INTERPRETATION
Object: must belong to the general human experience of the:
PERCIPIENT: must have the obvious or hidden key to the represented concept

selection of objects and interpretation of objects are both subjective processes

COMMUNICATION MODEL: intention, expression, medium, interpretation, response
coded signals: impinge on earlier impressions and become SIGNS

first hand experience: becoming aware of something
second hand experience: being made aware of something by a:
SURROGATE: mediates perception of percipiant
Conventional Surrogate: attached by convention
Non-conventional surrogates: projective or replicative
Surrogates of biological signals: orient and prepare individual for normal life.

Synthetic nature: groupings of disjunct components: ORGANIC ORDER of Aalto

THREE-PHASES-MODEL Kiemle
SELECTIVE PHASE: carving out environmental chunks the size of human channel capacity.
SYNTHETIC PHASE: information of supersigns reduced by recognition of their structural parts.
ANALYTICAL PHASE: construction of supersigns out of signs is analyzed.
Koenig: sender, codes and lexicons, signal, channel, physical signal, the noise, receiver, significant aspect of message, codes and lexicons of the receiver, semantic noise, the receiver as a collective, meaning of message.

**SEMIOTIC MODEL**

Gandelsonas and Morton: sender, receiver, channel, code, referent, message

**PRIMARY MEANING (Architectonic aspect):** Buildings (as messages): representing their use (referents) or their physical structure (channel)

- Architectonic aspect: provides possibility for structuring form
  - **CODE:** organization or system that interrelates the elements or units of message
  - **METAPHOR:** links a message by the selection or substitution of its elements through a code
  - **METONYMY:** interrelates the elements present in the message itself, by their internal combinations

**SECONDARY MEANING (Repository aspect):** represent and emphasize the areas related to sender, receiver, and code - rarely conscient and explicit parts of the architectural design

- Repository aspect: provides the sources of actual formal patterns

Peirce

**SIGN:** something which makes thought possible

**ICON:** A sign which refers to the object that it denotes by virtue of certain characters of its own... It reminds us of the object by some complex kind of resemblance.

**SYMBOL:** A sign which refers to the object it denotes by virtue of law. Must be learned.

**INDEX:** A sign which refers to the object it denotes by virtue of some physical relationship.

Morris

**SYMBOL or SIGN-VEHICLE:**
  - refers indirectly to a **DENOTATUM:** object of reference where what is referred to actually exists as referred to.
  - refers directly to a **SIGNIFICATUM:** what the sign refers to.

**SIGN:** a property or set of properties of an object.

**SIGN-VEHICLE:** all the properties of an object, not all of which are used for the sign.

**PRAGMATICS:** the relationship between signs and their users: origins, effects, ...

**SEMANTICS:** the relationships between signs and their meanings.

**SYNTACTICS:** the relationships between signs and other signs: in combinations

Saussure

**SOCIAL CONTRACT**

**SIGNIFIER:** some material representation

**SIGNIFIED:** concept to which the signifier refers

Barthes

**City as text**

Three relations of signs:

- **SYMBOLIC ASPECT:** unites signifier and signified
- **SYSTEMATIC or PARADIGMATIC ASPECT:** unites the sign to a specific reservoir of other signs from which it might be drawn for insertion into a discourse
- **SYNTAGMATIC ASPECT:** unites the sign to other signs preceding or following it in a discourse

Ogden and Richards (Broadbent)
The document discusses the concept of a semiotic triangle and the relationship between signifiers (symbols), signifieds (concepts, thoughts, or contents), and referents (things, objects, or actual functions). It further elaborates on the distinctions between connotative and denotative levels of meaning.

Jencks' Thought:
- Concept: Signified
- Thing: Denotatum
- Word: Signifier

Formemes; Funchemes; Techemes
Multivalence vs. Univalence
Hjelmslev

Plane of Content / Form / Substance
- Signified: Referent / Thought
- Signifier: Reference / Symbol

A sign or semiotic coupling \( (C_f/E_f) \) of the two planes can itself form the expression of a more elaborate semiotic or metasemiotic: \( C_f/E(C_f/E_f) \) connotative semiotic.

Connotative Level

Denotative Level

Umberto Eco
Architectural sign (significant) (object) is itself a stimulus whose meaning (significat) is the function it represents.

Significat: denotes function
Primary Function: denoted function
Secondary Function: connotated function or symbolic function
Referent: an abstract entity which is a cultural convention

Sememes: cultural units
Morphemes: architectural sign vehicles

Architecture is a system of sign-vehicles (a plane of expression) coupled with semantic systems (of cultural units) on the plane of content lying outside it.

Three existing varieties of codes:
- Technical codes: engineering, structural logic, etc.
- Syntactic codes: typological codes concerning articulation into spatial types
- Semantic codes: the significant units of architecture - relations between sign-vehicles and their denotative and connotative meanings
  - A. Unites denote primary functions
  - B. Units have connotative secondary functions
  - C. Units connote ideologies of inhabitation (kitchen, dining, etc.)
  - D. Units at a larger scale have typological meaning under certain functional and sociological types (hospital, villa, school, etc.)

Charles Jencks
Architecture: the use of formal signifiers (materials and enclosures) to articulate signifieds (ways of life, values, functions) making use of certain means (structural, economic, technical, and mechanical).

Signifier: plane of expression: use expressive codes: are made up of forms, spaces, surfaces, and volumes: which have suprasegmental properties: rhythm, color, texture, density, etc.

Second Level Signifier: noise, heat, smell, tactility, kinaesthetic qualities, etc.
SIGNIFIEDS: plane of content: use content codes: are made up of iconography, intended meanings, aesthetic meanings, architectural ideas, space concepts, social/religious beliefs, functions, activities, commercial goals,...
SECOND LEVEL SIGNIFIEDS: iconology, betrayed meanings, latent symbols, anthropological data, implicit functions, proxemetics,...

PHYSICAL FUNCTIONS not as important as:
SYMBOLIC FUNCTIONS

Plane of 'connotators' (style, etc.)

Tectonics (basic function) (1st. level) $E^{C_f/E_f}$

Dramitization of aesthetic codes:
- Fetishism and self-reflection of the aesthetic code. (internal world)
- Distortion and disruption of the aesthetic code.
- Redundancy and miniaturization in the aesthetic text.
- Imaginative transformation or other aspects of the aesthetic text can be hermenuetic, esoteric and even completely private.

It is continually open to new interpretation, multivalent and plural in its range of meanings

The architectural sign $S$ is a combination of coded elements from the planes of expression ($E$) and content ($C$) which have further articulation at a second level (figurae and monemes) which are coded, and even articulation at a third level, which is uncoded.

A. The total sense experience of the five senses is unified at $E$ under the encompassing guidance of visual expression, which is to say visual elements guide, for instance, the smell of architecture rather than vice versa, and that smell only articulates the prevailing visual code. - The predominance of the visual code under normal conditions.

B. The sememe is constructed from second level monemes, or semiotic features which are further divisible at a third level...

Theoretically the subdivisions are infinite and we have an unlimited semiosis but practically speaking any sign articulates only a limited, highly structured semantic field. In this case the plane of expression cuts out pertinent features which find their counterpart on the level of content, and we have a series of morphological markers which are further subdivisible into visual figurae and into the articulae of the five senses.

-All of this is quite laborious, but it allows us to see what parts, or else suprasegmental elements of the expression, are are articulating which connotations, and thereby see certain areas of great signification.

C. Main differences from Eco's model:

1. Function and denotation do not take precedence over connotation, they are reversible...
2. The syntactic, or morphological, or content markers are thus appreciably enhanced for constructing the stem diagram.
3. Non-visual articulae are included at the base level of the sign although guided and unified by the visual code at a higher level.

D. The level at which we take an architectural sign is thus partially dependent on previous coding and the present context. ...depending on one's interest and experience.
indicators indicate; signals communicate.

INDICATOR: directly perceptible fact(a form) whose meaning is an indirectly perceptible fact(another form).

SIGNAL: indicators which are deliberately used for the purpose of communication and are recognized by the interpreter as such.

INTENTIONAL INDICATOR: deliberately used for communication but not recognized as such by the interpreter.

EFFECTIVE and NON-EFFECTIVE INTENTIONAL INDICATORS.

PHYSICAL FORM: all features which are perceptible

SIGNIFICANT FORM: abstraction of physical form which includes those features which determine the meaning.

POLYSEMY: the ability of physical forms to acquire different meanings

AMBIGUITY: (multivalence) ability of significant form to take on different meanings

FORM: composed of features which are the set of values that affect meaning

MEANING: the set of values susceptible to being modified by changes taking place in the form

ARTICULATION: when each feature of form affects a single value of meaning.

ARTICULATED SYSTEMS: articulated by:

ARTICULATING SYSTEMS:

Language: Articulated System - Sentences
Articulating System - Monemes (words)
Second System - Letters (phonemes)

(articulating system of words)

SEGMENTAL ARTICULATION: (spatial articulation): articulating elements correspond to physical, spatial components of the articulated form

NON-SEGMENTAL ARTICULATION: the articulating elements are identified with different attributes of the same spatial component

CONTEXT: set of factors independent of the physical form changes in which are capable of changing the meaning of the form

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<tr>
<th>Written text</th>
<th>Architecture</th>
<th>Villa Mairea</th>
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<tbody>
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<td>Wood slats</td>
</tr>
</tbody>
</table>

In each case, the unit below is an element of the articulating system which articulates the element of the articulated system above. The process can be extended in both directions, for example, the site of the Villa Mairea would be part of an articulating system which articulates the Gullichson's estate, while the wood slats might be articulated by the system which includes their fasteners to the column.

DeVentos

CODE TRANSFORMATION MODEL

From the creative point of view:

C₁ ——> U ——> C₂

C₁ - The code: Stylistic, literary, or theoretical tradition.

U₁ - Repetitive use of the code -> 'usage' or degradation of the code.

U₂ - 'Eccentric' use -> inefficiency and marginality of the message.
U₃ - Pertinent creative use -> renovation or transformation of the preceding code.
C₂ - New code

From the consumers point of view:

C₁ - System of expectations, such as tonality for music, verisimilitude for literature.
U - Reaction against a non-orthodox work that breaks those expectations
C₂ - Enlarged system of expectations - new code of reception.

Gillo Dorfles
TYPOLOGY

ORGANIC ORDER
FOOTNOTES


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120 Ibid.
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