THE FUNDAMENTAL EXPRESSION OF AN ARCHITECTURAL MOTIF

by

CECILIA LEWIS KAUSEL

B. A. University of Massachusetts
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Certified by _____
Stanford Anderson
Professor of History and Architecture, thesis Supervisor

Accepted by _____
Stanford Anderson
Chairman, Departmental Committee for Graduate Students

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ABSTRACT

Important structural accomplishments in the past gave rise to stable archetypes which have been reproduced through the centuries. The principal constituents of construction such as Roman vaults whose form was influenced by structural considerations, have been endowed with substantial symbolic content. The classical vaults were used in all kinds of construction, and its form was adapted as an ornamental sheltering motif, e.g., in niches, baldachinos and miniaturized architectural craftwork. The transference of an architectural image from the original utilitarian structure into symbol suggests that architectural design is potentially important in the formation of a tradition of motifs in built form: it provides an imprint that may be replicated in other buildings. Furthermore, archetypes of structural origin can often be identified in objects that are unrelated to architecture, indicating that cultures readily recollect, adapt and use selected motifs to convey notions visually. Remarkable among these are the formal resemblances found between some head gear and buildings, a case in which an architectural image is used to adorn individual persons. These parallels exist in most cultures often found between ceremonial attire and an institution of significance. It is remarkable that vaulted architecture in miniaturized form (i.e., Gothic aedicules) and head gear coverge in their symbolic-morphological function: both of them shelter the human body from above the head. In sculptural and relief representations, the shape of the architectural-like concavity complements the contour of the head underneath it. In turn, with time, the form of the structural functional vaults was enhanced by the rich content of meaning acquired by its miniaturized and ritualized image. These cases of form replicaton reveal the influence of architecture on a culture's perception and identification of what constitutes shelter. On the other hand, the visual assimilation of architectural images as prevailing motifs is a critical factor providing the distinctive importance of buildings. A mutually reinforcing relationship between the provision of built form and the social evocation and re-interpretation of its image is the "life" of architecture.

The modernist age has witnessed a departure from traditional archetypes. Pro-futuristic attitudes arose as a social phenomenon reaching all levels of society and carried architecture to a detach-

ment from familiar forms and from cultural dependence. The designs produced faced some difficulty in being accepted and in the 1960's fell under criticism. By studying the implications of the perceptual involvement of the public in the development of archetypes and the degree of adaptation of these in objects carrying architectural symbol, the impediments posed to novel form could be understood. For example, the importance of the pace at which the promotion of a new form should take place can be considered. -- This pace needs to conform to the time it takes for the public to identify and select the architecture it prefers. There are other variables in addition to this which allow social meaning to develop around architectural images, thereby making them valuable for a culture.

Thesis Supervisor: Stanford Anderson
Title: Professor of History and Architecture

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PREFACE

A general objective in this study is to develop some concepts about the visual factors that motivate public preference for certain types of architecture. The aim of this inquiry is to examine what influences the taste of the layman can exert on design elements and motifs that dominate the built environment, especially on designs present in traditional long-term urban growth. The ultimate purpose is to bring into focus a sense for the nature of this public participation that is actually accomplished without any direct involvement in the creative and artistic task. A focus of this kind necessarily falls into generalizations of the public taste and must characterize complex design trends; but by doing this it may be possible to plumb the depth of the significance of preferences in built form; that is, to extract this posited public mediation by looking at records and material remains of the past and from an inquiry into collective perception.

These aims reflect the concerns in architecture for the problems faced by some twentieth-century design in satisfying the demands of the layman.[1] It can be anticipated that the future will look upon these objectives as appropriate for the questions arising from contemporary concerns, but under any circumstances, knowledge of the ways public opinion affects design holds valuable information for architecture. All factors affecting the ultimate appearance of urban forms resulting either from decisions internal to the profession or from social actions deserve our attention.

More specifically, this study intends to analyze iconological relationships involved in collective perception. This may provide a useful channel for visualizing the built environment

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[1] For a very complete discussion of the problems faced by the so-called modernist design trends, consult Collage City by C. Rowe and F. Koetter, 1978.

of the past, and in this sense, the relevance of an investigation of this kind goes beyond that of contemporary questions.

In pursuing our understanding of the collective perception of built form, we shall study the development of a motif which makes use of the image of architecture to evoke symbolic notions. Our investigation began as an inquiry into the social significance of motifs imitating architectural form that are found in most cultures around the world. This kind of imagery involves a transference of the global configuration of a structure into the shape of an artifact. The object is a miniature version of an architectural form (e.g., urns, reliquaries, etc.). This phenomenon soon reflected that societies make use of the image of buildings to convey something in the object shaped. Objective observation of the forms making up a symbolic theme rather than the allegory of the theme, indicated that the symbol pertains to the roles of architecture for people. In our understanding of the implications of the use of symbols, this phenomenon reflected an alternative cultural utilization of the image of architecture. Needless to say, this adapted built form could contain key information about how architecture has been perceived collectively. Hence, in our investigation of the formation of a motif, we seek understanding for the power of this public perception of built form, that is, the regard, or emotional attitude of people towards the forms.* This may hopefully illuminate our comprehension of the public's reticence in adopting novel designs that bear no familiarity with preferred images.

We expect, in addition, that a focus of this kind can help us visualize what we are critical aspects of the human familiarization with the schemes introduced by designers. This is clearly of interest to the architect who seeks an understanding of the reasons behind the layman's

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*We admit that although collective use of certain built form as symbolic elements exists, it remains a problematic notion to define.

aesthetic preferences.

We lack the means to scrutinize public opinion about aesthetic matters and will never be able to discover what was the attitude of the layman like, in the past. However, we do have what history has retained and we know what has been treasured. Furthermore, we can take account of contemporary social actions which are prone to defend culturally favored buildings whenever these are threatened by utilitarian interests. In this way, these records and the silent information contained in the shapes of both architecture and the artifacts depicting it can feed some information about the range of notions that concern this study.

Our data is the replicated form over time in many buildings and artifacts. It will allow us to trace the transformations that a structural image undergoes in the process of replication and re-interpretation of architecture. In order to accomplish this, it will be necessary to visualize each of these static built forms, which are familiar to one another, as having a formal factor in common underlying their resemblance -- a factor such as flexible model or image which may be gradually changed from one design to the next. When this image has reached replication in structurally non-functional forms and miniaturized objects, we shall refer to it as a "motif".

The issue we are dealing with then is the phenomenon of replication and re-interpretation in architecture. A series of similar buildings represents for our study the path of a form of structural origin -- a material tradition of built information adapted to the needs and aesthetic demands that arise in each period.

Nowdays it is common to encounter postulates anticipating a new era in the ideological development of society, an "age of information" that envisions phenomena within a mental attitude that supposedly is ahead of attitudes pervading during the area of industrial-technological expansion. Information factors underlie new technologies and are being deted in life at many different levels. Such proposed state of mind may or may not acquire universal dimensions in all fields; it is wise to refrain from spelling out this as a prophecy since the course of

collecting ideology follows chance circumstances; but it seems proper to identify that this study is a part of this mode of thinking. It is inevitable that this work's interpretations depend upon the knowledge of an "age". However, the relationships observed are factual and can be seen directly in the materials. Our translation of visual perception into words hopefully will deviate the least possible from the description of morphological cues per se.

Notwithstanding our effort at faithful description, these thoughts remain as preliminary observations and as such, they cannot provide exhaustive and scholarly interpretations. It is within the scope of our study to envision that our interpretations can be criticized and could receive a more complete treatment if additional points of views contribute to their development.

A. EPISTEMOLOGICAL CRITERIA

Epistemologically, these interpretations have been guided primarily by phenomenological thinking since it offers certain advantages in the investigation of social relationships as for instance, investigating ways in which people attach meaning* to forms created by technological advance. In examining the significance and circumstances underlining public aesthetic choices, it becomes necessary to resort to a conceptual understanding with notions and methods organized to deal with collective conduct. For the observation of these events, a phenomenological point of view can locate our questions in the frame of reference of essentials of communication and cognition. These two channels of interaction can hold the key to making the collective preferences of design explicit. By having an account within our grasp, it should be possible to develop reasonable explanations for the reaction of the public to novel designs.

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*By meaning we refer to the visual information given by the physiognomy of images which is representational and its representation is perceived collectively, that is, the image has a common underlining theme in the evocation of most persons.

The term "phenomenological" is used in reference to this approach rather than "scientific" -- although in either case one must resort to objective observation of records -- because the phenomena handled here is believed to be outside of scientific formulation. Various authors working with symbols have encountered the same problem in attempting to define perceptual manifestations within the confines of scientific discourse. Inevitably there are large discrepancies between an attempt to describe and an attempt to accommodate such description into definable laws. Our interest is focused on the mental reality of cultures that although immaterial in essence, leaves a palpable product in the transformation of the environment. This extends even to the cultural conduct which does not yield material products in a strict sense but where action affects the physical and the living world. It is possible to acknowledge this mental reality objectively and to identify the channels by which it becomes objectified. This is not to say that it is possible to plumb all complexities involved in the human transformation of materials . For example, in the factors motivating the generation of artistic form, there are ideological, personal and circumstancial movers as well as needs and communication factors. Whereas those aspects of the form linked to communication can be investigated -- since the channels of interaction are necessary for all social exchange -- it is not possible to do the same with personal and circumstancial factors.

Ideological, circumstancial and other movers change in space and time. Intrinsic cultural needs and modes of interaction tend to be the same in all epochs.* We usually miss to envision

*Repetitive aspects of culture are probably moved by these needs. These modes of interaction are a necessary consequence of life in association. From these, we have distinguished communication which is essential; there are other modes that although not essential, facilitate association, i.e., reciprocity. These modes must be present in all periods, under any ideologies. The features of culture that are not consciously caused, e.g., some levels of symbol, most likely originate in basic needs and modes, of both the person and the social condition.

these aspects and with them, many of the features that originate in them and are manifested culturally; this is mostly because conscious experience is not required for basic modes to operate hence nothing demands that we are aware of them, but also because our attitudes move us away from our pre-logical nature. Our minds struggle for rationality. To do this is normal and characteristically human. We have attitudes that favor order in our ideas and the things surrounding us. However, our attitudes, not rarely block our ability to identify what we are actually doing. It is to our intellectual advantage to attempt to distinguish what our values and interpretation are, in the light of our period's concerns, and what are results, i.e., what is actually left behind.

The above is crucial for furthering discussions about levels of symbolism. There is a multidimensional character in the way to interpret a single symbolic form. We need to identify what the conventional attributions of built form are, that vary from place to place -- a level of interpretation that might be helpful to see as allegorical[2] -- and to distinguish this kind of representation from the cognitive interplay that takes place between viewer (his/her spontaneous evocation) and visual cues (formal content).

The symbolic context of the pure form is difficult to describe. We often resort to the thought that it is a "silent" expression, meaning that formal content of artistic work exists independently from realized arguments on what its message is, and which nonetheless is still per-

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[2]This thought belongs to Carl G. Jung who equates intentional representation, often called "symbolic", with allegoric type of analogies. He attempts to clarify the various levels of symbolism. He proposes unconscious cultural types of concerns which he terms "archetypes". These are typical forms of behavior and dispositions common to all mankind (behavioral patterns in life sciences) that become projected in creative work in the form of symbolic content. Thus, for Jung, symbols are objectified effects of the archetypes instead of allegorical representations. In Outline of Jungian Aesthetics by Morris Philipson, Northwestern University Press, New York, 1963, p. 50.

ceived within its own level of meaningfulness. We understand that kindred forms in creative work represent phases of one process of artistic representation rather than individual cases unrelated to one another. In this process one image is replicated and transformed. A useful way to envision this process is by drawing a parallel between artistic continuity and generational continuity in life forms. Living forms occur in a continuum with ancestors and descendents. We visualize formal resemblance, within a lineage-like relationship. It is not the inevitable conditions necessary for life that we are comparing since inevitability is not present in artistic "lineages" of forms, but it is simply the condition of some forms of being continuous. Symbolic form of fundamental kind[3] seems to be continuous.

The images of vaults used as decorative motifs show advance towards clarity of representation as architecture increased in complexity (a gradual increase in lucidity of symbol does not always happen in the history of architectural form; sometimes the symbol becomes hidden as structural form gains in complexity). Our chosen image is much more explicit Gothic representation than in Romanesque, and clearer in this one than in earlier Carolingian, Byzantine and early Christian cases. However, the even earlier phase of Roman symbol seems quite explicit as reflected in some urns.

The architectural development of pre-historic times sometimes combined primordial (archetypal) symbols with forms generated by construction. In megalithic built form there are examples of architectural parts in which the symbolic image of an iconic kind of artifact (e.g., an idol) appears fused with the structural form. Such is the case with columns shaped with imagery. The

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[3]This sentence belongs to John Summerson and he uses it to remark the importance of the symbolic content of both the form of the vault of Gothic churches and their aedicules. In Summerson's conception, such symbolism has relationship with the manifestation in every individual's childhood of seeking shelter under an object and declaring it a "house".

carving of columnar stones with this imagery seems to be an element of the developmental stage of construction. In the more advanced levels, i.e., in historical times, the earlier practice seems to yield an expression of the original theme in which the primitive form has sublimated into a more sophisticated form.[4]

Symbolic imagery embodied in architecture faces gradual changes or adaptation in adjusting to the structural demands of form. The form of structure and the representational formal content can however reach morphological balance. Such is the case with the Gothic architectural imagery of statues and aedicules in cathedrals. In such representations a structural form is utilized to convey a fundamental message connected to the role of architecture and this is accomplished with an astonishing harmony between message and built form. Representation of vaulted built form and the representation of urban clusters are placed above the heads of human figures and from these, derive notions related to cover, shelter, protection and the like.

Our preface is an attempt to focus the attention of both artistically oriented readers and architects in the direction where the collective reception of design is to be found. We are conscious that due to the very nature of creative work, professional schooling is oriented to individual creativity rather than to public taste. Since our interest may appear somewhat unique we need to sustain the main basis of our interest. This work is not suggesting that readers should change their options for deriving theoretical views about architecture and enlist in phenomenological approaches that can help us understand the public. Although this alternative

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[4]This observation is in Kaschnitz' account of the symbolic content of ancient architectural form. The reference is to the transition undergone by the column from a proposed phallic form to a human body form (caryatids) and into the muscular Ionic column form. In Die Mittelmeerischen Grundlagen der Antiken Kunst by Guido Freiherr von Kaschnitz-Weinberg, Vittorio Klostermann Frankfurt am Main, 1944, pp. 14-27.

route can help, it would not be right to think that it can replace the usual epistemological views. It has been through these appropriate views that architectural analysis and history have been able to express the emotive content of artistic work and have been able to describe the richness of built forms. It would be deplorable to see design shifting from a refined method to a less imaginative one. We hope that no reader misunderstands our aims. In this study there is no blind favor of objective observation of facts per se. Our epistemological choice derives from our desire to understand the anonymous but sensitive social perception of design. Objective observation of the anonymous expressions examined here, and of the messages received from them, is simply a way to illuminate our knowledge.

It will be conceded beforehand that this work can be called "populist", and accept this as a description of our aims.* But behind a "popular instinct" it is crucial that we are correctly understood as expressing--in the interest of both, design and the public, that our "marriage" to phenomenology obeys a reason: to understand the layman's needs in terms of design.

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*Although the layman of the past who selected the building we see today was very likely part of an educated elite.

I. INTRODUCTION

In the architectural record inherited from the past, certain built forms achieved a great reputation and were represented extensively in later construction. The images of fine architecture were models for shaping subsequent structures. There was a predominance of buildings whose parts were readily identifiable as originating in earlier architecture. This is of interest because these exemplary structures have a morphological influence in the built environment by being ubiquitously represented in it. This overall effect arises from a special kind of adaptation of architecture which seems to be active when the public has some effect on choosing designs, or at least in participating through commonly held opinions, as it probably was more common prior to the twentieth century than during it.

The generation of architectural form in the whole urban fabric and its relationship to the renewal that follows it, entails some very interesting process. It is a very slow transformation of the morphology of the town whose chances generally go unappreciated. But if we stand on a hill with binoculars we can look at clusters of structures and picture how the areas might have formed. Using our imagination we can reproduce the changes by speeding up historical time; in the mature city we can detect the fact that urban transformations follow different rates in different parts of the town, and in many of these, of course, these changes are unidentifiable. Among these changing masses there are areas in which building activities do not alter architectural forms. These areas contain stable constructions and in these we observe only the process of repair and maintenance. These building clusters are important parts of the town or when located elsewhere, their grounds have been isolated for preservation. On the other hand, other urban areas reveal steady activities with a certain degree of change involving demolition and replacement, while others are never repaired and thus they stagnate rather than being maintained, show-

ing signs of social decay. In new areas we confront housing of rapid expansion (quite often) which sometimes displaces decayed sectors, and is occupied by the inhabitants of the poorer areas. While each of these cases is interesting enough for investigation, our attention is captured by the buildings showing stability and no change. We focus upon their characteristics and find that their predominance in the urban structure derives from the significance attributed by society to their images.

Progressive construction activities go on all the time, adapting the urban structure to the needs of each epoch. Yet, it is obvious that this adaptation reserves a different fate for different kinds of architecture. The preservation of major monuments is more likely a response of authorities to the public's valuation of buildings than an issue involving planning circumstances. The preservation of popular areas is subject to varying criteria which not rarely centers on deciding between destruction and protection. Preservation sometimes triumphs at the expense of other possible projects. Meanwhile, a great deal of buildings of less or no significance to the society may fall due to economic transformations being easy targets of utilitarian demand for their spaces. Finally a less significant group falls under a genuine wish of people to change the architectural scenery after a few decades of use. This latter public attitude is often adverse to the images of such buildings and the efforts once put in their design and construction. If the structure was meant to be a production of high quality design, it has failed to be appreciated. Problems of this kind might be avoided by finding out how a design has proved unsuccessful in capturing public respect.

A. PERPETUATION OF AN IMAGE: AN INTRODUCTION

The architectural phenomenon realized in a centuries-old city, one whose major development took place before the advent of the twentieth century, had a remarkable formal historical continuity

and not until our technological-industrial times produced results at an urban-scale, this formal quality was broken. Our era incorporated new design elements that moved away from the earlier urban formal nature. The formal quality we are making reference to is the condition often termed "organic" or "cultural".[5]

It could be argued that the many variables involved in providing such formal nature present problems that cannot be approached with clarity. This is only partially true, there are interconnected facets among the object and its interpretation that are complicated to present in coherent terms. For purposes of clarity it seems that these issues can be treated as if they existed separately. With an interest to narrow down the number of facets involved, those playing a minor role could in this way be eliminated. To begin with, one variable of this sort which could be given is the fact that the modernist forms are newer than the older ones. That is, the newer quality of the novel architecture could play a role in making the modern urban structure look distinct from the earlier one. It is not our aim to determine whether or not this is the case but observation of the twentieth-century buildings that have already been subject to weathering tells us that the forms aged, still look different to our perception in comparison with the "cultural" nature of old buildings. Nevertheless one must agree with the notion that modernist aesthetics have best exploited visual factors that give the impression of being "recently" built, i.e., use of smooth

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[5]These terms can be found in F. Choay's The Modern City: Planning in the 19th Century, New York, 1969. The first one is used in reference to the slow accretive growth of ancient and medieval cities and the second to contemporary planning activities that look at the patterns of the past. The two terms can be found used in colloquial conversation to contrast the differences in appearance between traditional and machine oriented design. The conceptual content of the term "cultural" is appropriate for our point of view. It does not simply refer to the transformation of environmental materials by life forms, as is implied in the term "organic", but is concerned with the specific urban forms realized through a cultural process.

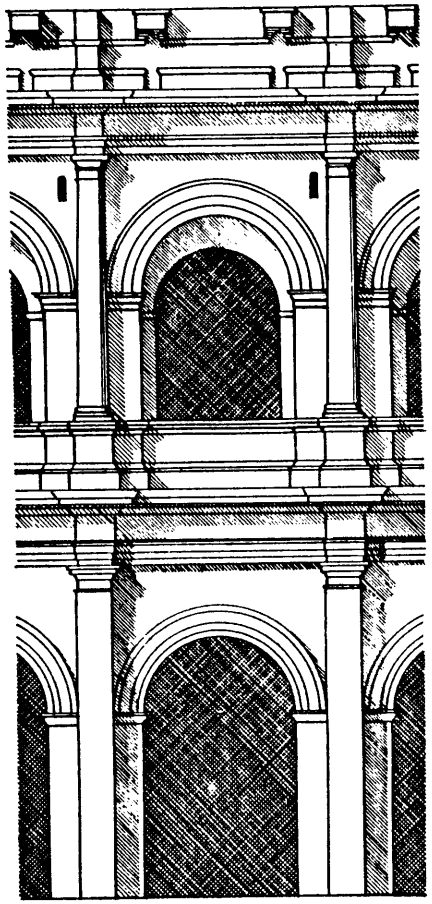
and angular visual elements (in fact, this quality is one of the most popular features of modernist styles but the role of a newer condition is certainly not dominant in the morphological break. To continue, we can focus upon the variable of development of new structural techniques, as leaving palpably distinct forms. But if this formal factor was responsible for the distinctive nature of twentieth-century design, we could compare this development with the revolutionary introduction of arcuated structures in ancient Roman cities. This comparison has been made by art historians,* and yet in terms of the influence this variable has on morphology, the Roman case is not comparable to the modern one since the Roman master builders did not attempt to free themselves from the earlier Greek character of built form, but instead, they managed an ingenious way to replicate the images. They respected known forms and kept representing them superimposed on the arch (see Fig. A). Hence the revolutionary exploitation of arches, offered morphological continuity with the earlier forms left to them by the Greek civilization. In terms of technical innovation, the twentieth century counted with introduction of considerable changes in machine equipment. The mechanical products of industrialization pose an interesting but complex source of morphological change. If on the one hand, the availability of this equipment made the people in the technical arts comprehend that there was a need for a new kind of aesthetics, on the other hand, there are today industrially-produced architectural parts that replicate historical forms, giving us instances of machine-producedcontinuity.** It is true that the development of Functionalism in Europe, had been expected ever since industrialization became a reality in construction. It enjoyed wide international acceptance in design spheres. Architecture had been striving more and

*The two are comparable in terms of economy of construction and functionality. W. MacDonald "Roman Architecture" in Spencer's Readings in Art History, Ch. 8, 1976.

**These forms have neither structural nor artistic sense. Hence, although these forms are popular in a commercial way, they are not so in the professional way to understand architectural parts.

INTRODUCTION

Fig. A. From F. Hart, Kunst und Technik der Wolbung, 1965.



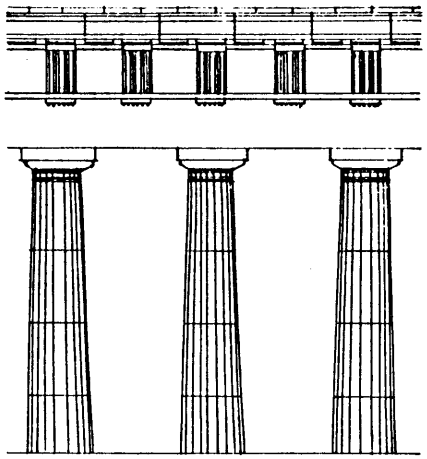
Römische Monumentalordnung (Nimes)

Left: The Roman monumental character arises from the combination of Roman arch and Greek trabeated system.

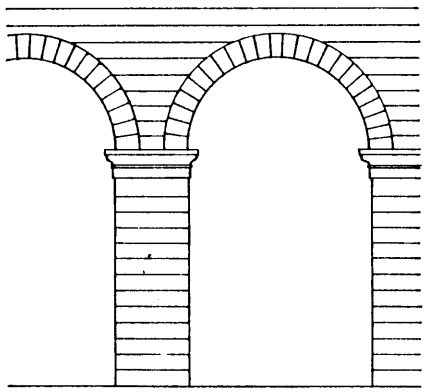
Right: Above, the Greek doric order;

Below, the plain Roman arcuated system.

In the Roman blending of Greek formal features with the structure of the arch, the trabeated image neither contradicts nor masks the function of the arch.



Griechisch-dorische Säulenstellung



Römische Bogenstellung

more towards rationalism in design from the nineteenth century until this turning point which happened in the decade of the nineteen twenties; and if this acceptance did not mean universal adherence of designers into Functionalism, it did mean a strong enough trend to cause changes in design education. However, to single out new machinery as a main source creating the morphological break is like pointing out to the "tool" used by the source. It leaves its characteristic mark in the forms produced, but it is not clear at all that it is a source. Finally, it is important to take into account social variables as agents causing the distinctive appearance of twentieth-century form. There are influencial pressures from the period's understanding of the role of design in terms of its artistic-versus-craft value. The masters of modernism have been considered artists and their designs, works of art. This kind of trend exerts influences over form production since there are expectations placed in the uniqueness of form. However, such expectations have been present in the past artistic spheres that understood uniqueness of art in a different way than modernism. For example, the humanism of the Italian Renaissance envisioned good architectural work as art work and famous architects were considered artists. Renaissance design was a very self conscious operation. As in the twentieth-century, architecture was marked by design shifts (in palaces and other buildings). Architects decided what forms to use and how to organize them. Hence, as a result, the architectural work did not enjoy public acceptance for some time (the reaction of the layman towards new introductions is not new in the twentieth century). Nevertheless, all the novel architectural introductions of the Renaissance contained familiar classical forms and thus whatever its artistic uniqueness, it provided familiarity in its shapes for viewers to perceive. Hence, the manner in which society evaluates the artistic importance of architecture is not quite the dominant factor in an instance of discontinuity.

Each of these variables (and others) are to some extent influential in built form, but not a source of morphological change. The source is the professional response to these variables. The

twentieth-century, motivated by socio-economic phenomena, broke the continuity with the past. In the response of designers to this event, there is a major identifiable attitude that affects directly form and gives it a different character: avoidance of replication at various levels. This attitude affected not only the continuity of traditional forms, but also the continuity of modernist forms. Although contempt and disregard for tradition had been manifested in the history of architecture to some degree, it had not before acquired the international scope, schooling, influence over its own productions, and large-scale manifestation that we see in modernism.

The challenge to perpetuation of images was rooted in socio-ideological change. The old forms did not offer favorable resolutions for the needs arising in twentieth century societies; they were not adapted to make use of newly available technologies. They demanded specialized crafts, that were not primary to the function of architecture, ornamentation was avoided and with it, an important variable in conveying continuity of morphology.[6]

To use the terms "organic" and "cultural" with respect to traditional and vernacular architecture is more than just using a description implying that the forms were not pragmatic or utilitarian in their design. This is not correct since traditional/vernacular architecture was also built for utility and structural safety. The "cultural nature" is largely provided by

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[6] In summarizing these issues, we do not wish to seem unfair to twentieth-century phenomena. In a few decades it brought about more utilitarian knowledge than all previous epochs put together. The twentieth century has seen important socio-economic changes and has been an era of population explosion. Many variables were involved in bringing about ideological changes steered by dominant ideological movements (first expansionism and then, environmental protectionism). Deep changes were brought about fast in our century and they directly affected the perspectives and values of the professionals responsible for providing the urban setting of the era. Awareness to social responsibility and economy of materials characterized modernist construction. While the former feature made the movements strongly ideological, the latter compromised them. Twentieth-century design around the world struggled between ideology and compromise like no other architectural development before.

replication of meaningful forms that are familiar. A systematic reproduction of forms in time allow the development of cognitive ties from the people towards architectural form. Hence, it is not surprising that a slow process of architectural reinterpretation is more accessible to the public in visual terms than fast developments with tendency to repeated radical changes in forms. The familiar content arises from social perceptual sources independent from construction needs. Meaning is likely attributed to those architectural images which the layman demands, or in other words, prefers. In this manner the public can guide age old architectural design towards its convergence with appropriate symbolism. But this fact cannot affect the structural concerns and minimal requirements of the form of architecture for function and utility. The formal differences making old and new processes distinct are not part of a form versus function problem as much as they are an issue of presence versus loss of systematic (repetitive) visual cues in the urban scene.

The insight that associates traditional urban growth with culture identifies visually in it a deeper stratum in the formal quality of its buildings. This is an underlying formal order in the images of the traditional city.

Modernism also offered symbolic potential but, no matter how intensely evocative is the modernist symbol, it seldom establishes itself as collective symbol because it rarely follows systematic, and coordinated, cultural paths. In this sense twentieth-century architecture has been a morphological phenomenon less accessible to the public than traditional movements. This statement is not a judgment about the "right" way to design. It simply means to clarify notions in the public reaction towards design and as such, its aim is to help understanding for any kind of applications to design.

All the artistic trends of our century have deplored imitation. A negative evaluation of imitation appears feasible in art, but the impact of twentieth-century urban growth upon the public's emotional-perceptual response shows that the alteration of the form of architecture can affect

society. This fact indeed makes design form a delicate and difficult issue.

II. WHAT IS THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY?

A. CONCEALED REPLICATION IN MODERNISM: INSPIRATION AND REMINISCENCE OF OTHER BUILDINGS

The resemblance that a building has to another can be viewed under various possibilities of creative endeavour, such as a "new version", a "concealed repetition" or an "overt imitation". Each of these terms has a connotative value that can be positive or negative in its attribution to art work. However, from a phenomenological point of view, that focuses upon the expression of replication, the words chosen do not change the fact that these cases all deal with varying intensitieies of repetition.

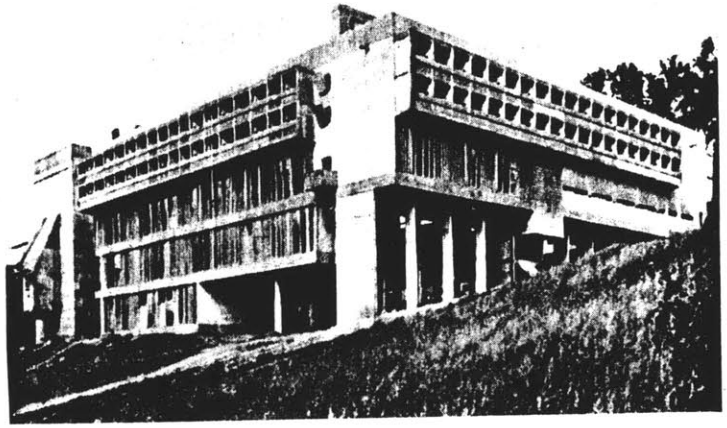
It is well known that our century has greatly valued originality in artistic work. From our earliest childhood, our educational system has taught us to learn through the imitation of what others do. However, each of us has also probably found that, although society rewards the imitation of social mores, it tends to condem the imitation of work, emphasizing as it does individual expression. Though this may have been the case in the past as well, our era, like no other before it, has sought educational channels that result in realizing the maximum potential of each individual, thereby making people sensitive to the mere thought of imitation in all facets of artistic and intellectual work. In our era positive associations have been attributed to novelty and negative ones to the idea of repreduction. This has been part of a progressivist ideology that strongly affected design during the first half of our century. Nonetheless, this powerful tendency did not fully eradicate the themes of repetition. The human inclination to repetition pushed from within the modernist designer to find expression in perhaps unconscious ways, and some designers generated architecture that evoked the image of respected schemes within the modern movement (see Figs. B (1)-(4)). Unlike the traditional morphological process, the instances of architectural resemblance that can be detected in modern buildings is not a direct replication of proportion and form but rather an overall reminiscence of composition.

In view of the fact that twentieth-century design deliberately avoided imitation or, at the very

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

Figs. B (1) and (2)

From R. Venturi's Learning from Las Vegas, 1972.



(1) Monastery of La Tourette, Evreux, France, 1956-60; Le Corbusier.

(2) Yale University Art and Architecture building, New Haven, 1962-63; Paul Rudolph.

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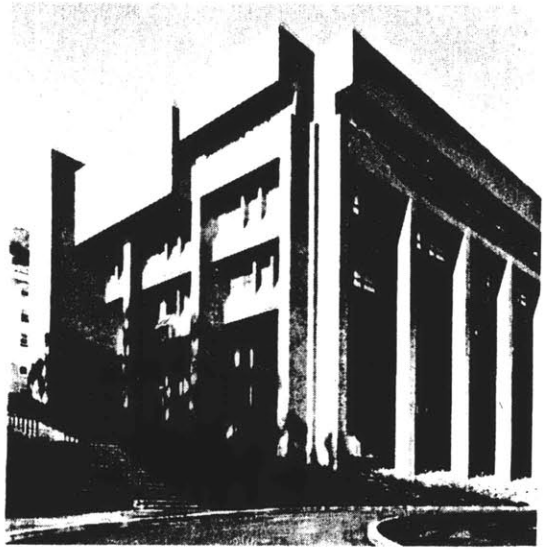
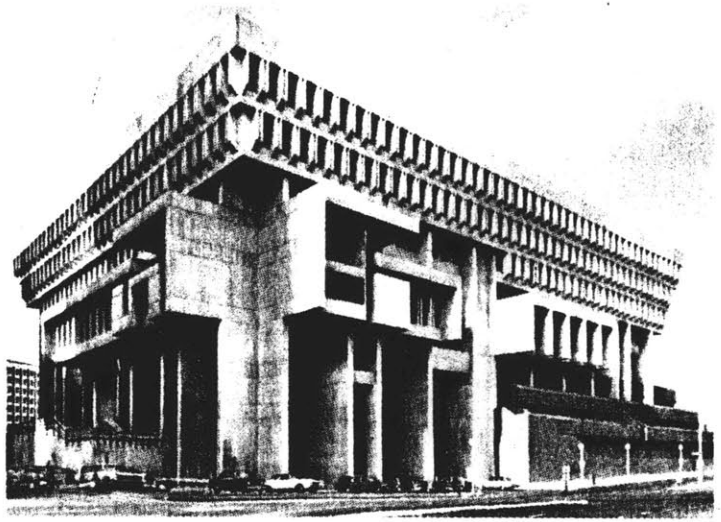
Figs. B (3) and (4)

From Venturi, 1972.



(3) Cornell University Agronomy building, Ithaca, New York, 1963-68; Ulrich Franzen.



(4) City Hall, Boston, 1963; Kallman, McKinnell Knowles.

least, did not promote it, it seems remarkable that some degree of replication would triumph. This manifestation is singular in its perseverance. It appears to indicate the presence of social variables in the reproduction of forms. On the one hand it adds to design since it incorporates some features of previous work with architectural status, and on the other, it seems to ensure that notable elements are not lost with new construction. In brief, human respect for design of quality favors its reinterpretation in new works.

B. REPLICATION IN THE PAST

1. On Social Preference, Reconstruction and the Transmission of Critical Accomplishments

If it is true that by the standards of creativity a repetive undertaking can be judged as undesirable, the same activity evaluated as a social instrument of tradition, presents quite a different picture, one with information of a concrete nature expressed in the urban context. It conveys a sense of uniformity in the stylistic currents that have marked past epochs, and reveals a visual history insofar as the reproduction of built form tell us about a lineage of architectural development, as in the case of the succession of structures that were shaped with classical forms. Thus replication of forms is prevalent in the urban scene. It seems that its expression provides information about preceeding buildings and cultural historical developments that are related to them. The public is the agent that gives meaning to most built form, or, at the very least, is the agent that keeps that meaning alive. Public support contributes most importantly in the maintenance of buildings after the generating stylistic movements have elapsed. Social adjustment to architectural forms and the attachment to the styles that may derive from them are critical for the success of design and a prime motivation for its preservation.

All design, replicated or not, is ultimately the creative work of the architect. Societies have entrusted the creative task to artists and craftsmen from times immemorable, and the layman's participation is not creative. The public can accept and select design, but cannot impose it. Nonetheless,

through this channel the public does find a means of expressing its preferences. The layman's desire for the replication of certain forms constitutes a tool for expressing taste and, in a way, is a measure of the success of design since only reproduced images can reflect such choice. Thus, replication of architecture can be judged to serve a social purpose. It is clear that such social purposes cannot be viewed as caused by individuals since their scope has the collective dimension of a cultural "mechanism", as we explained, one with informational quality. For example, in the adaptation of built form as imagery in non-architectural objects, the image of architecture is used as a collective symbol. Upon stating this one must face the questions implied the statement: "What is such a symbol communicating?" How is it possible that we are not conscious of its meaning?" The formulation of these questions is welcome here. Nevertheless, it is not possible to answer them by a single statement. The way in which visual communication operates is not simple to put in words because it involves a range of perceptual responses that is wider than those of aural-verbal communication. In our response to evocative form there are internal reactions that are not subject to rational thought. Images are more likely to impact the emotional sphere of perception that words, and they reach more than one of the perceptual levels of our cognition. For instance, images can awaken pre-logical modes of cognizing. Furthermore the image of an object that is socially significant, such as a building associated with events of history, does much more to perception than just recalling other familiar forms. Built form carries the levels of meaning of shelter and the services offered to people. These perceptual reactions are spontaneously caused by vision; they occur side-by-side with perceptual levels of allegory and the logical thought that images may elicit.

Verbal-aural rationalization -- following codes of logic -- is inculcated in every individual with education. Since this channel of communication is not as closely linked to emotion as the direct sensing of experience is, it has a greater chance of following a prescribed logic than vision. However, because of this, the less rational interpretations that can be evoked by vision are difficult to admit with words. Verbal arguments instead, show sometimes independence from visual evocation, and

descritptions of forms can be constructed to form opinions and hence to educate taste.

Among all artifacts, traditional architectural forms enjoy a certain notability attributed to their image that is rarely attributed to other objects. This is especially marked on ceremonially significant buildings such as temples and churches. People expect a certain degree of seriousness, awe and ceremony to be conveyed by the design. This is brought here because many cultural objects, whose form has remained unchanged through time, have become common symbols, however, they do not seem to enjoy a similar reputation. The shape of an object of utility does not require a sensitive design in order to be symbolic. The utilitarian images of hand tools, e.g., torches and sickles, are meaningful, but somehow, this fact does not seem to impart a sense of dignity to them as it occurs with architectural images. Beyond being of utility, architecture is meaningful too as shelter, protection, residence, cover, security, shield, shade, and so on; it appears that it is this kind of significance, what provides the notability of architecture. In this context, it seems important to identify that the form of buildings must always show structural sense and stability if it is to impart visually a feeling for its sheltering qualities. The thought that these meanings are primary in architectural form, can be supported by the presense of objects that have been shaped with the form of buildings apparently as a way to recall sheltering associations (see Figs. C (1) and (2)).

Meaning is attributed to objects, often according to the primary qualities by which they are identified. For example, the utilitarian hand tool is commonly identified by its form in relationship to the function served by such form.* In other objects, the primary qualities may not be as tightly.

*The torch has a basic symbolism that relies on its portability and its illuminative quality. It is often found as a symbol of knowledge and education. In this instance, an old person hands the source of illumination (enlightment) to a young person, symbolizing that knowledge is passed from one generation to the next. The torch is also used allegorically in Olympic games in memory of the ancient Greek gymnastic events. Identification of this instance needs to be acquired by learning. The symbol of the sickle relies on its technical appropriateness. As an object that cuts wheat, it symbolizes death when it is represented in association with a skeleton. Severed wheat symbolizes severed lives in representations that have both the sickle and the image of the skelton. The sickle can also be used allegorically as a conventional symbol such as in the emblem of the Communist party.

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Fig. C (1) Reliquaries are built for keeping valuables. This example has been shaped with architectural form. It has the form of a church surmounted by a dome. Its image evokes the real sheltering structure.

Made for the Head of Gregory, it was brought to Braunschweig from Constantinople by Henry the Lion in 1172. A closely related reliquary is in the Victoria and Albert Museum.

From Monuments of Romanesque Art. The Art of Church Treasures in Northwester Europe by H. Swarzenski, 1967. (Plate 213)

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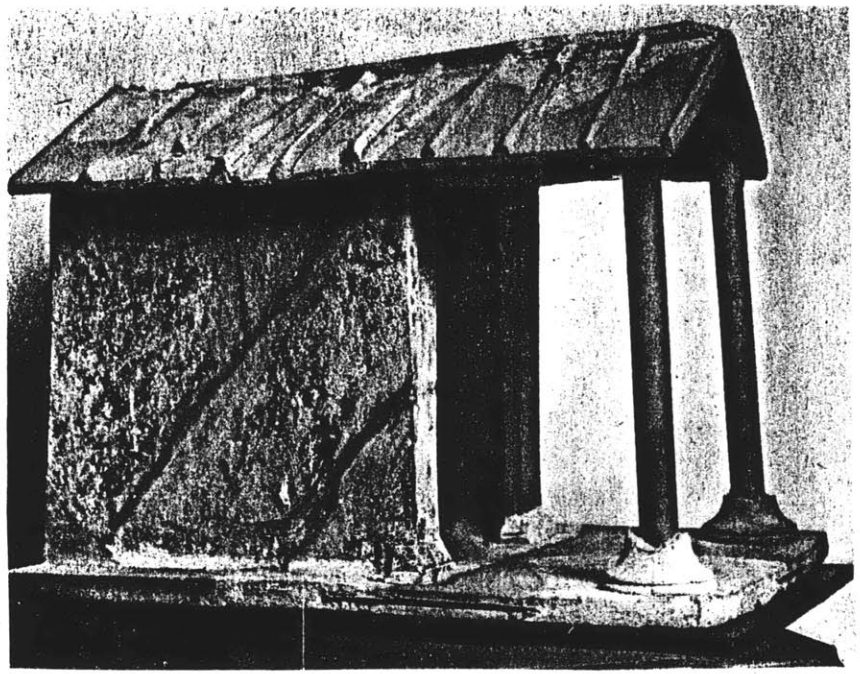
Fig. C (2) Miniaturized architectural form dating from Roman times. These small temples are thought to have been given as presents for consecration and inaguration rites. The material is terra cota.



This particular form was found in the ruins of the Satricum temple, south of Rome. Others have been found in Chiusa. It is believed to be a model of a temple built in 400 B.C. identified as Alatri by Kaschnitz. This temple is so deteriorated however, that it is impossible to verify this opinion. (The form is very simple; it is also possible that it does not represent any particular temple, but that basically uses the general image of many temples for symbolic purposes.)

Weigeschenke, From G. Kaschnitz von Weinberg's Die Grundlagen der republikanischer Baukunst, Römische Kunst III, May 1962.

associated to form and function as they are in tools. For example, the ideas of a house, an aedicule or a container for valuables are not fixed to one kind of image but instead, their conception can be satisfied by a variety of forms. These ideas are thus conceptual categories that identify forms by flexible morphological features, such as typology, sheltering nature of the form, scale, and so on.

In direct opposition to architectural form with structural sense, replication of common images in the form of a building such as animal forms, have a totally different impact. No matter how familiar the form chosen is to everyone, something about its non-sherlting quality cannot harmonize with its architectural function. Examples of this are given by commercializing aims in construction where facilities are built in the caricature of known forms (an example of a building shaped as a duck can be found in Venturi's Learning from Las Vegas, 1972, and another one used in an exposition, shaped as a fish, as shown in the appendix section of this work). The success of these buildings is possibly related to the alluring effect of cariacatures. These forms attract young customers and their parents mostly because their forms exist around and are popular to children. This success, however, is commercial. It does not form part of the notable morphology of the process that we are analyzing.

We have indicated that the collective demand for known designs is an agent favoring the repetition of architectural images. There are nevertheless circumstances external to the influence of cultural perception that favor replication. Because replication of built form is one of the various ways by which a tradition is made manifest, its sources are complex and variable. The philosophic though of Karl Popper and other analysts of tradition in the gathering of knowledge may be referred to for a discussion of these issues.

The circumstances causing discontinuity of form are of interest here as clues in the discovery of the power replication. We have already linked the twentieth-century break in urban form to the ideological shift that helped to develop technological expansion. Apart from a social phenomenon such as this in which a search for explaining change gets lost in a multiplicity of possible answers, there are other examples of discontinuity in history from which we can learn. In the past, there have been technical variables that favor or hinder the continuity of motifs. This is exemplified by the dis-

covery of an efficient system, such as the Roman exploitation of the arch, and the consequent introduction of technical change which tends to cause discontinuity (the original motif being maintained through ornamental means). But this raises the question: What happens if a motif causes some sacrifice to the structure? Does the ornamental tradition impose its form over the efficiency of the structure? One such example is given by a motif used to decorate domes in medieval cairo.[7] The traditional motif was created originally for brick construction and it constituted of convex ribs rising vertically. In time stone replaced brick and the motif was replicated in stone. The final effect of the jointing of the stones caused the ribs to look irregular. No matter how many domes were built through time the conjoining did not prove appropriate for the stone. The early motif failed to coexist in aesthetic harmony with the structure indicating that structural sacrifice does not yield satisfactory architecture. This exerted pressure for a necessary change in motif. A solution properly coordinating the motif morphology with the pattern given by stone and plastering was then devised: a zig-zag pattern that replaced the rising ribs. The angle of zig-zaging was located at each vertical joint and thus caused no irregularity. It replaced the earlier motif because of its superior balance between structural form and surface decoration.

This example illustrates the primacy of structural features over motif continuity whenever the two conflict with one another. In this case the priority of construction appropriateness can be understood visually by any observer, thus we speculate that a situation of this kind would not cause sustained public reactions in demand for a motif tradition. The observer can understand that a stone-based construction offers great durability and security and thus can see that it is more advantageous

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[7] For an interesting description of this contradition between ornamental tradition and structural form, see The Carved Masonry Domes of Mediaeval Cairo by Chrystel Kessler, Art and Archaeology Research Papers, The American University in Cairo Press, London, 1976.

than going back to brick, only to maintain a motif. Identifiable factors providing a sense of protection and stability in both materials and forms employed, would allow the adaptation of new forms and the starting point of a new motif tradition. The supremacy of structural integrity seems important for common perception if it is understood visually as a supremacy of secure shelter. Collective vision will adapt to features that are beneficial. This is not to imply that no opportunities remain for the culture to select traditional ways. Whenever there is more than one structural possibility there is choice and people can select form in the direction of the motif desired. There is mutual reciprocity between the constributions of sound structures and culturally preferred forms.

2. Cultural Archetypes

What produces archetypes of built form?

This clear, short and straightforward question lacks unequivocal answers. The creation of archetypal kind of forms however, should at least indicate that symbolic form is necessarily culturally meaningful. Such a question cannot be traced without concerning ourselves with the collective aspects of symbolism. This means that a focus on the meaning of symbolic images in not enough to grasp the reasons for archetypes to exist. Knowledge about the purposiveness of the phenomenon must be obtained.

Carl G. Jung theorized that archetypes that can be identified as human universals are produced spontaneously by all persons because they arise from concerns shared collectively by all mankind in a (mythological)substratum of the mind. There are expressions of belief and imagery that exist behind actual experience and constitute archetypes of this kind. In Jungian thought a central theme which does not vary underlies these archetypes although their immediate representation can take different forms. Since some of Jung's records on archetypal forms were obtained from the dreams and fantasies

of patients without access to the tradition surrounding the Imagery, they are thought to be empirically significant by his followers.[8]

Jung mentions the existence of other archetypes which are not basic mythological imagery but they are well known forms that have been culturally derived. He leaves these kind of archetypes without analysis. This is a pity since architectural forms offer instances of archetypal images of this kind. For example, the image of a Greek temple is an archetype of built form. Its form appears to have been derived structurally. In it, there are shapes that have been hypothesized to be rudiments of earlier structural systems based on wood construction. It is a form culturally favored and maintained for centuries. Thus, it is an archetype. Jung believes that such cultural archetypes are ultimately related to the basic production of the collective unconscious and that they have undergone many transformations in their representations; hence their occurrence is not isolated from the natural archetypes. His words on this matter are:

> Such cultural symbols nevertheless retain much of their original numinosity or "spell". One is aware that they can evoke a deep emotional response in some individuals, and this psychic charge makes them function in much the same way as prejudices [....]. They are important constituents of our mental make-up and vital forces in the building up of human society; and they cannot be eradicated without a serious loss.
>
> "The Role of Symbols", in Man and His Symbols by C.G. Jung et al, 1964, P. 93.

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[8] There are good accounts of what these archetypes are in Modern Masters: "C.G. Jung" by Anthony Storr, edited by Frank Kermode, New York, The Viking Press, 1973 (especially pp. 35-55); and in Man and His Symbols by Carl G. Jung et al, Aldus Books Limited, London, 1964.

Distinctive Jungian archetypes, those of compelling myths of all mankind, can be found in carved megalithic stone columns. These forms have been studied by Kaschnitz von Weinberg (in his book entitled Mittelmeerischen Grundlagen der Antiken Kunst, 1944). The motifs show imagery that in a way looks satanic-like and are somewhat reminiscent of the medieval gargoyles. Kaschnitz believes this is phallic imagery (see these figures in appendix section). His photographs show forms that have a general incompleteness and the overall proportions of pre-natal morphogenesis. His belief is very feasible. The images are demonic-like because they are most likely meant to be threatening in its symbolic intent, and such purpose in very frequently linked to phallic symbols.[9]

Kaschnitz traces the origin of the Greek Ionic column back to the image of the human body and before this, to the megalithic cylindrical stones said to bear phallic symbolism. He believes that the Ionic column of Greece is a sublimated form in which the original recollection is still present. His thought, written in 1944, would be in agreement with Jung's vision of cultural archetypes being ultimately related to natural human archetypes. The form of the Ionic column, however, makes clear to any viewer that the early form has greatly changed in its evolution and transformations through time, and the aesthetic priorities of the classical mind, have transformed it to an unrecognizable degree. This, as if the early concerns related to fear have been left behind and new concerns for the "right" form of structures reflect symbolically an intellectualization of the construction task. There seems to be a considerable degree of symbolic shift that hides the early recollection in the Ionic column. Formal

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[9]There is little doubt about the archetypal character (in a Jungian sense) of these symbols. It is interesting, and must be mentioned here, that there are reports of comparable threat in non-human primates. See for example, some observations in The Evolution of Primate Behavior by Alison Joylly, MacMillan, New York, 1972, p. 209 and a chapter dedicated to mankind in Ethology, Eibl-eibesfeldt, Holt, Rinehart and Winston, 1970. In this latter description there are observations reported about objects of culture, e.g., totem poles and others.

sublimation is thus a sophistication of symbolism united to elegance in solving structural problems; and this sublimation must not be seen as purely architectural. It must be identified as well as a manifestation of the mental cultural advance. A level of greater sophistication in knowledge had been reached, and this was reflected in the advanced quality of the evolved forms.

Built form that becomes cultural archetype is undoubtedly a familiar image. There seems to be a remarkable tendency in people to translate architectural spaces and forms into symbols. However, it is also evident in the forms of architecture of the past that their construction is related to geographical and climatic necessities; and that they are results of a search by the master builder for the provision of efficient shelter. It is then clear that in the tendency to add symbol to architectural form there is psychic surrender to the shapes accomplished structurally, and a human effort for identifying symbol in it. This represents a phenomenon of visual adaptation to the forms of technology, a collective perceptual-receptive attitude and attempt to associate the forms given by advancement in knowledge.

Once the visual cues of a structural image multiply in the urban context, more and more persons learn about it and its benefits. The image, part of a culture, may diffuse to other areas as its qualities become known in other regions. The image of architecture may be imported by travellers who learn about the utility of the structure and can understand it and reproduce it in other lands. Influential persons and master builders who come into contact with the structure carry the information and adapt the image of the structural archetype to new geographical and cultural demands. The form is reinterpreted in a new society and perhaps combined with local images. The importation of foreign structural images is chosen or imposed.

The attribution of symbolism to an architectural image gives it an ideological facet. The readiness to adopt structural form as cultural archetype indicates that architectural form plays a role in the cultural perception of shelter. It also holds interesting information on means and relationships of human familiarization with technological images. On the whole, the replication of images that leads to the formation of cultural archetypes seems to be a cognitive affair helping to

favor the identification of technological-created forms as elements of the man-made environment.

3. Success of the Archetype and the Integrity of Structure Exemplified by Replication of Vaults. A Historical Synopsis

The great significance of vaulted architecture began in the Roman Empire; but vaults as symbol-carrying sheltering forms, are pre-Roman and can be found elsewhere. There are vaulted galleries and chambers from early Paleolithic times in Sardinia, Cyprus and Sicily*. Later in history, there are material records of domed huts in areas with little wood. They are found in Jericho (ancient Jordanian city) after 1300 B.C.; in Nineveh (capital of Assyria on the Tigris) dating from 4000 B.C., and in Palestine from megalithic Dolmen culture Teleilat Ghassul of 3000 B.C. These huts belong in the Copper Neolithic age; their plans are cylindrical and the dome roofs are conical[10] (Kaschnitz von Weinberg, 1965, p. 124). Thus, lesser domes and vaulted chambers are very ancient. In 1944, Kaschnitz established (in Kaschnitz, 1965, p. 123) that the ideas needed by the Romans for building vaulted roofs were already developed in underground stone constructions consisting of tombs (Grabholen) and holy baths (Brunnenheiligtum). The ritual nature of these vaulted caves indicates the likelihood that they are symbolic and perhaps even archetypal. They are shrines and have been dedicated to a material godd ess. Kaschnitz sees this as symbol of maternal pre-natal shelter. (see "Corbelled layering of materials", Fig. D (2), p. 41). Kaschnitz is not concerned with identifying Jungian

*The Mediterranian Paleolithic age extends from 15,000 to 10,000 B.C.

[10]These huts are based upon materials such as mud combined with branches, grass, and any usable environmental debris that proved suitable for giving a rather permanent crust. The shape of these huts is interestingly conical (kaschnitz calls this construction Kegeldach, literally cone roofs from Kegal: cone and Dach : roof). Their form more closely approximates the catenary shape proposed by Hook in the seventeenth century as the ideal domed form, than the Roman arches and domes did. This reflects a way in which Roman Stylistic form had a basis in Euclidean knowledge. The thought that circularity enbues geometrical perfection to vaults had been inherited from Hellenistic knowledge.

archetypes in these constructions (we need to clarify) but instead he researched the symbolic structure of early architecture as a source for understanding the "urge" to create and to generate form. This then was the great philosophical concern of nineteenth-century thought in Germany especially in art history. Kaschnitz' work has received important influences from this thought and thus in early imagery and construction he sees a "primitive" (pre-literate) instinct (perception and sense) of the artistic form (Chapter II, Band I, 1968).

Kaschnitz von Weinberg categorizes the development of vault construction into four distinct historical phases (1965, p. 137). The first phase, he locates in the ancient Neolithic age, and exemplifies it by ancient underground tunnels usually intersecting in a cross form. The construction is irregular and the extremes of the tunnel widens into cylindrically walled chambers. The second phase occurs in the late Neolithic when a change in the plan of these chambers takes place: they become orthogonal.* The ensuing phase, the third one, he denotes by the construction of cylindrical-spherical vaults above ground level. The technique, as Kaschnitz writes, is still megalithic. It is necessary to start vaulted works from a previous laying out of the materials forming a solid form that must be excavated in vaulted shape.[11] Finally, there is a fourth construction phase which begins with

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*The Neolithic age is a reference to a cultural and technological development based on advanced work in stone, thus, it varies in different cultural areas. In the Roman case it took place around 500 B.C., in Etruria, around 700 B.C. and in the Middle East, the earliest known, around 10000 B.C.

[11]Kaschnitz supports this technique with reference to a document in Italian which described the mausoleum of Constantine's daughter S. Constanza as being conceived as a monolithic solid piece excavated interiorly. The reference is exactly the "cupola concepita come un enorme monolite scavato nell' interno". He cites various Italian references and a congress in which this was discussed. Current work on the history of architecture locates S. Constanza within early Christian architecture and it has been dated in A.D. 350! During this period there were methods of laying a building brick by brick in practice for centuries.

the Roman development of techniques to work metals and utilize motar.[12] In this phase, states Kaschnitz, the creative force of Roman Formungswille (the human urge to form objects*) becomes expressed in circularity in almost all structures. It is no longer necessary to start vaulted works from large-scale solids that need to be excavated, but the construction can begin with minor works. This phase corresponds to the Republic.

The earliest known example of above-ground vault construction** is an Egyptian arch based on corbelled layering of materials. It dates from 2500 B.C. (Cowan, 1977)***. The so-called "true" vaults were adopted by Roman construction from the Etruscans around 300 B.C. (Janson, 1977). Its development is later than that of the corbelled system, and in fact it derived from this one (Cowan, 1977). It is structurally much more resourceful due to the form and alignment of its stones (voussoirs). These are wedge-shaped and are arranged perpendicularly to the curvature of the vault; thus, the system distributes loads by compression from one wedged element to the next. There is practically no bending in the true vault system as compared to the corbelled system. It is very efficient in masonry-based vaults, whose weight and poor elasticity behave well under compression but not under tension. The true vault permits great spans in masonry construction. It is also known that in China bridges based on "true" vaults were constructed sometime during the Han dynasty, extending from 206 B.C. to A.D. 220 (Boyd, 1962).

The ancient underground vaults were faced by cantilevering stones or corbels. The resourcefulness of this system is very limited. When comparing the two techniques and judging their respective production of forms, resourcefulness of the true arch is a feature of importance. In terms of form replication it may be responsible for beginning the phenomenon and may explain the absence of vaults

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*This is Kaschnitz'more precise reference to Alois Riegl's idea of Kunstwollen.

**The reference "vault construction" includes here construction of arches and domes.

***The corbelled system of vault construction is illustrated by the arch in Fig. D (1).

[12]Mortar was known from earlier times. The Romans called it opus caementa.

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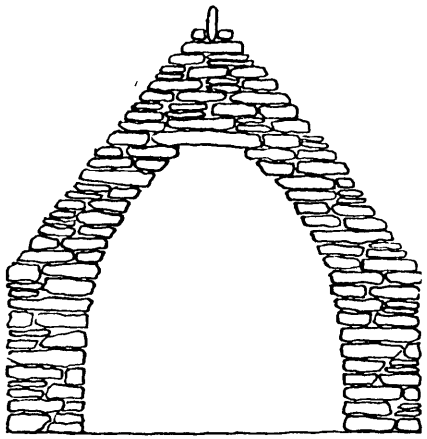
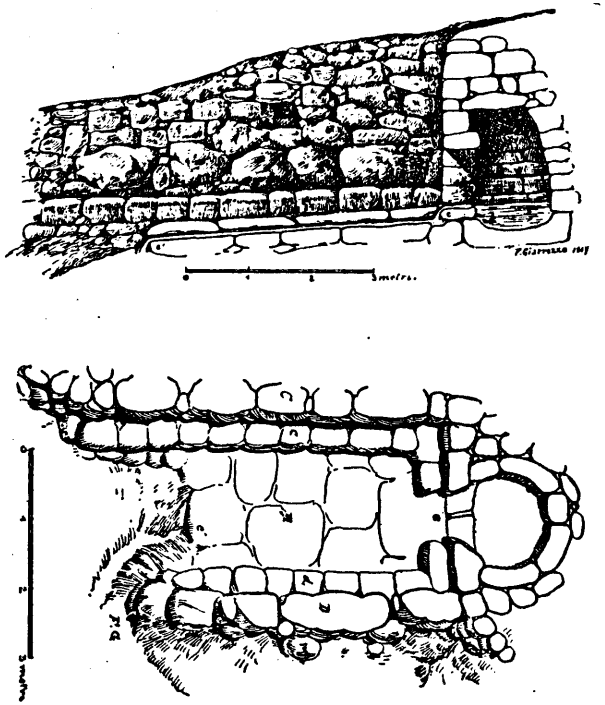
Figs. D (1) and (2) Vaulting based on corbelled layering of materials.



(1) Cross section of cantilever vault masonry arch (Hart, 1965).



Lûmarzû. Sardinien

(2) Plan and elevation of early vaulted chamber in Sardinia (Kaschnitz, 1965).

in civilizations that didn't know the true arch. The poor resourcefulness of the corbels explains the lack of interest in building vaults above ground. Such was the case in ancient Greece and Egypt. Their architectural archetype was the image of the local post-and-beam-based facade. For both these cultures a trabeated archetype proved durable and acquired considerable symbolic value. (The archetypal character of the post-and-beam image was so well rooted that the Romans later kept on replicating it over the structure of vaults.)

The Roman arch was characteristically semi-circular and its generative force was the curve. The circle was critical in Roman form due to the influence of Euclidean geometry. However, we have known since the seventeenth century that the most efficient arcuated form is not circular. The structural integrity of vaults depends on the line of thrust that is situated at mid-depth of the arched row of stones. The curvature of this line is a catenary shape (from Latin catena, chain) and is so called because in the mid-seventeenth century Hook equated the perfect arch with a mirror image of the shape of a suspended chain hanging limp from two points. By supporting its own dead load, in theory this shape should not need abutment. For loaded arches the best shape is a parabola: thus, a curvature between a catenary and a parabolic shape should be the best way to achieve minimum abutment. The Roman admiration for classic Greek geometry had oriented the curvature of their arches towards semi-circularity since in Hellenistic knowledge, both circle and sphere were considered perfect forms. Because of this Kaschnitz wrote (Romische Kunst II 1961, p. 103) that the Roman construction process is one at the service of ideas (.... "die Form vollkommen zur Dienerin der Ideen herabgesunken"). In Kaschnitz' view Roman form had a center of gravity in spirituality.[13] One must clarify here a subtle distinction. In Kaschnitz' statement, form appears subjugated to ideology, and from his statement one might jump to the conclusion that structure is subjugated to ideology. But Kaschnitz is saying that form is nothing else but a material frontier in which ideas are visible. He means that materials are merely something

[13] In his statement, form is a slave of ideas.

like a skeleton that carries form and this implies that form has an existence of its own independent of materials (Römische Kunst I, September, 1961, P. 37). He says that Roman form is influenced by cosmology and conceptions about the universe that were present already in Greek ideology. We feel that if this must be seen as a subservience of form to something, it is one to knowledge as there could be too a subservience of forms to other type of knowledge such as physical laws and response of materials to different forms. But this is not a subservience of structure to ideologically originated imagery (i.e.,mythic-archetypal imagery). Structure will do such thing only if the forms in demand can be adapted to it, and such an adaptation occurs coincidentally. As stated earlier, structural form can adapt to desired shapes by two means. One is a slow process that channels cases offering more than one possible form into a given direction (the arch's thickness of the semi-circular form admits the catenary-shaped distribution of loads); the other involves the public's habituation to interpret a certain form in a given way, and the development of the necessary associations between structural forms and symbolic needs. The vaults and post-and-beam systems provide examples of this. While vaults and domed forms can be adapted fortuitously as Jungian archetypes related to maternal shelter (among other symbols carried by rounded forms, of equivalent transcendence) the trabeated image cannot unless this is done by indirect association in an allegorical type of interpretation. We can see that structural form needs to be worked towards such end, be this effort materially or imaginatively accomplished. The critical point however, is that we cannot call this a subservience of structural form to mental imagery. Before this can be argued, one must admit that there are strong reasons inclining the balance in the opposite direction: that people adapt their mental outlook to structure, or they work out the plasticity of structure towards a desired solution in time. In effect, what Kaschnitz has noted is that form is a vehicle for the visual expression of information. This is in fact the central notion of concern in this study (a thought that must have been derived by many minds trying to understand the workings of creative processes, however, the implications of this observation have not been clear until today).

It appears that this view is obscured by concluding that, because knowledge is a mental thing, there must be subservience of structural form to ideas. The term "idea" holds a variety of meanings that extend from empirical knowledge to beliefs and myths.

Since both an ideologically-based search for spherical spaces of great size, and a concern for structural supportive and spanning advantages, are inseparable in the actual creative task, a statement of the priority of one over the other can only reflect subjective opinions.

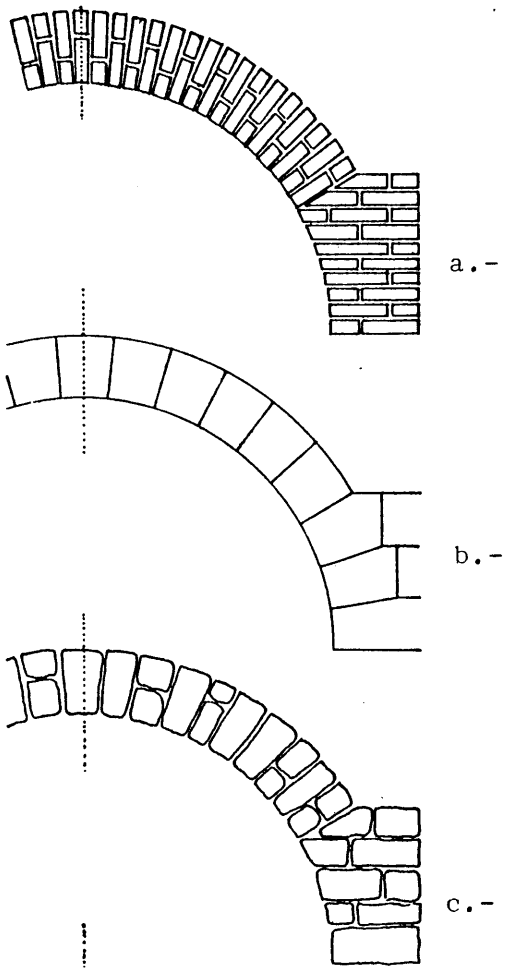
Unless one of the terms can be shown to be indispensable the dilemma has no solution. Our own view that structural integrity is important arises from the thought that structure is subject to physical laws which are inherently independent from the human ability to adapt. The conceptual context of the living mind instead, seeks adaptation and adjustment in its familiarity with visual cues. All this does not imply that this study adheres exactly to the view that function determines form, as in the prevailing trend of twentieth-century design. The structural nature of the form is a critical variable in all architecture, and most particularly in the buildings of the past, since the techniques then available were less resourceful, resulting in limitations on morphological accomplishment. In addition the certitude that a building offers to its society about its structural stability and integrity is crucial to the adoption of its image as a symbol of shelter (as seems to happen in the utilization of architectural forms in other artifacts).

The development of architectural images comprises the development of essential structural systems. Historical accounts reveal a preoccupation of Roman master builders with structural spanning. The accomplishment of huge covered spaces and cavities by the use of the true vault, which the Romans learned from the Etruscans (see Figs. E (1) and (2)), must have had great significance for their construction activities. It must have impelled the proliferation of arcuated structures in the urban environment and thus begun their path of replication.

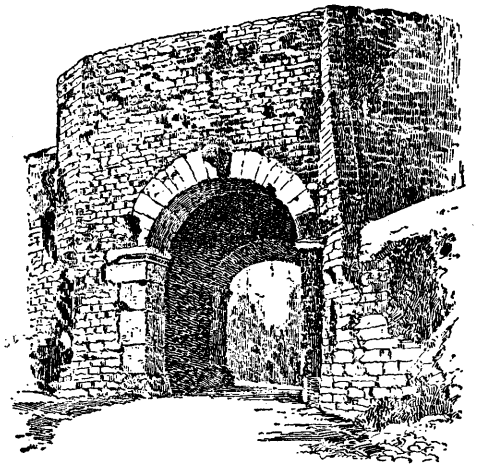
The development of vaults started from cylindrical forms or barrel vaults. This structure is

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

The True Arch Figs. E (1) and (2)



(1) The alighnment of voussoirs in the true arch. a. bricks; b. wedged cut stone; c. coarse stone arranged as wedged stones.



AN ETRUSCAN ARCH

The Italian city of Volterra still preserves in the Porta dell' Arco an interesting relic of Etruscan times. The archway, one of the original gates of the ancient town, is about twenty feet in height and twelve feet in width. On the keystone and imposts are three curious heads, probably representing the guardian deities of the place.

(2) An Etruscan arched gate based on voussoirs and keystone.

basically an elogated arch resting on its edges along its length. There is a continuous plane of thrust along the spring of the vault which must be resisted. This influences its final image (see Figs. F (1) to (5)). The way the barrel vault rests restricts the possibilities in forming different volumes (Hart, 1965, P. 12). For this reason barrel vaults are generally utilized in galleries, tunnels, cellars and other places where walls are closed all along and light comes only from its front and end openings. By building tranverse strong arches at intervals, the barrel vault can be given ribs that absorb most of the loads and allow areas of thinner constitution which in addition can be opened as windows. These are the interval areas whose thinner shell can permit illumination along the sides. The cylindrical space of a barrel vault can be intersected by another cylinder of equal or smaller size (see Fig. F (3)).This offers aesthetic advantages for the roof which can be exploited architecturally as openings under the arches and it offers structural reinforcement of the lateral rigidity of the vault.

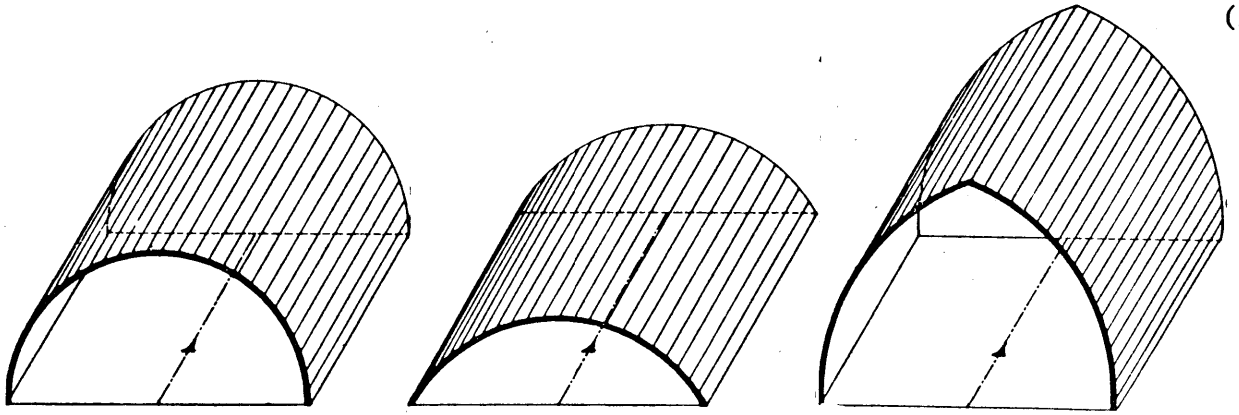
A dome is a figure that is obtained by rotation of an arch. Roman construction developed techniques to build a variety of domical shapes. One of these is the dome with concave sides (see Fig. G). Roman construction left several examples of all kinds of vaulted niches. During the early Byzantine age Roman domes served to inspire new developments. The domes left by Roman construction were mostly parts of palaces and funeral architecture, a few in other utilitarian structures. These served as models for early Christian and Byzantine developments.*

Domed spaces that have orthogonal plans require transition structures between the cupola and the supporting elements. Examples of these structures are pendentives and squinches (see Figs. H (1)

*Starting with early Christian architecture church design becomes a main preoccupation in construction. It is an important focus in the further development of architectural knowledge and a center of gravity of vaulted motifs. From this moment onwards, this study will deal with churches only.

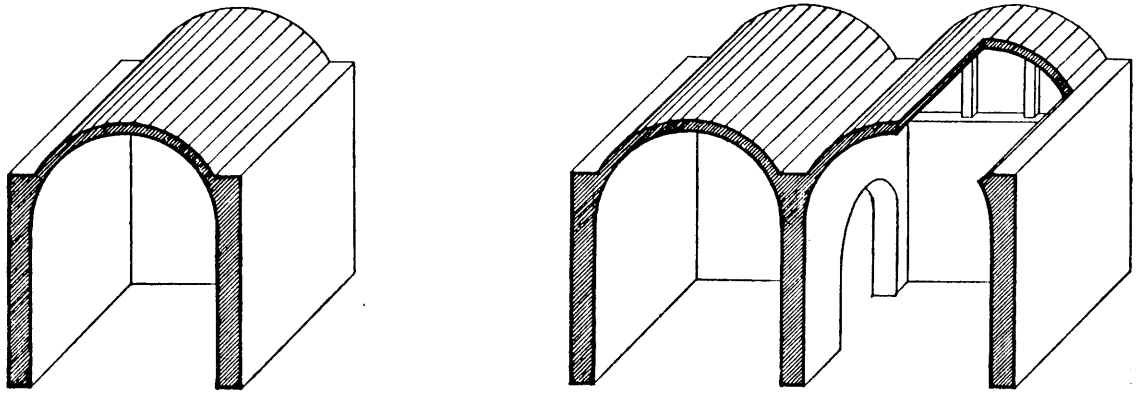
THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

The Barrel Vault Figs. F (1) and (2) From Hart, 1965.



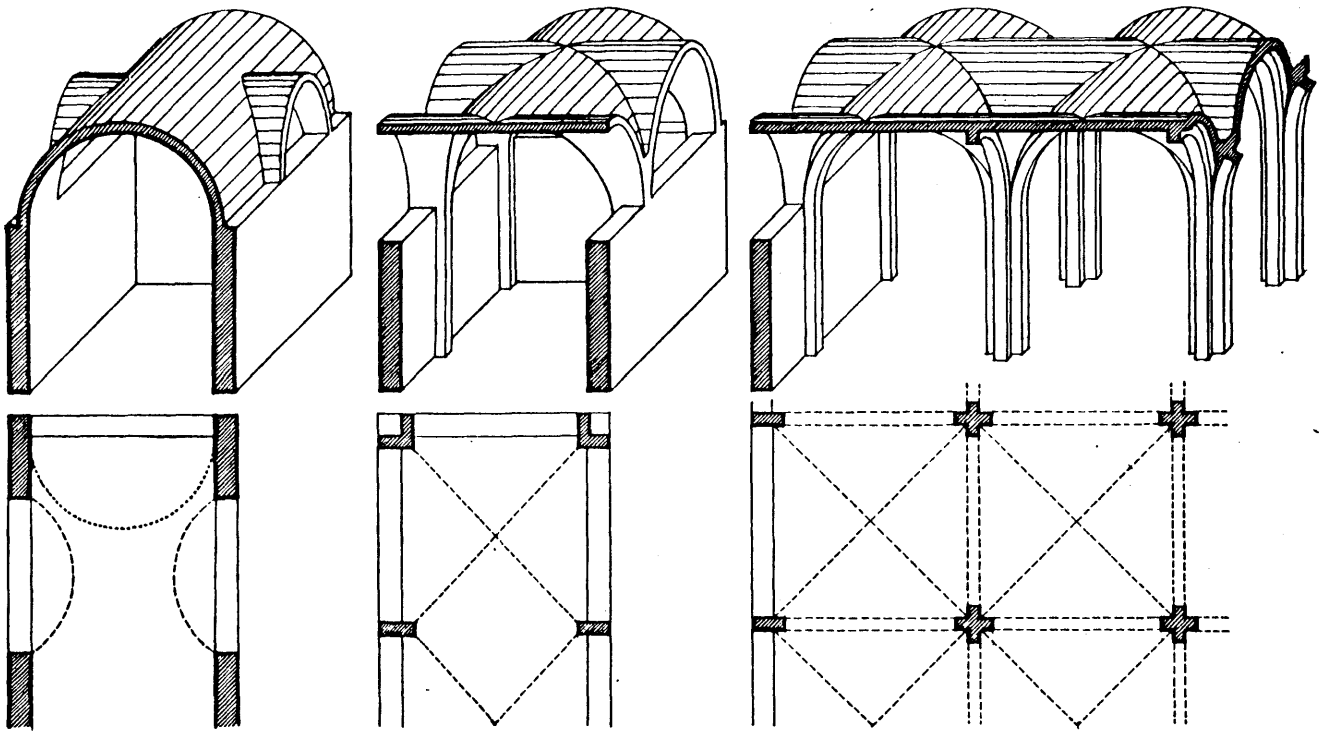
(1) Barrell vaults can be built with various curvatures, e.g., semicircular, shallow, tall, pointed, etc.

(2) The continuous thrust of a barrel vault must be resisted all along its extension.
   a. Continuous closed walls restrict the form and the reception of light.
   b. Vaults can be built at the side of one another so that the thrust of the arching of one, is compensated by the arching of the other. The restriction described in a. can be solved by arched openings. These arches strengthen the lateral rigidity of the vault.



THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

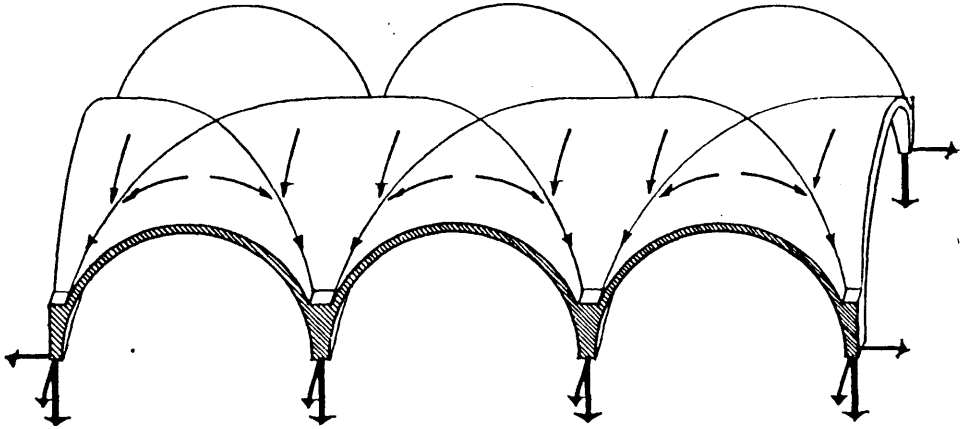
The Barrel Vault Fig. F (3) From Hart, 1965.



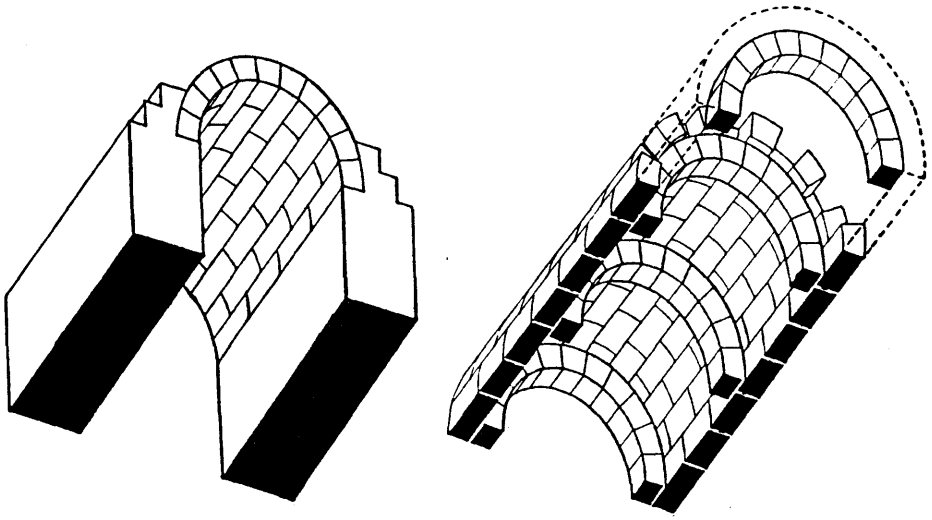
(3) Above: Intersection of barrel vaults of different and equal sizes and multiple intersection.
Below: The plans of these vaults showing the points receiving the loads.

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

The Barrel Vault Figs. F (4) and (5)



(4) The direction in which the loads are transmitted. Shown by the arrows. (From Hart, 1965).



(5) a. Simple Barrel Vault seen from below.

b. Ribbed Barrel Vault from below.

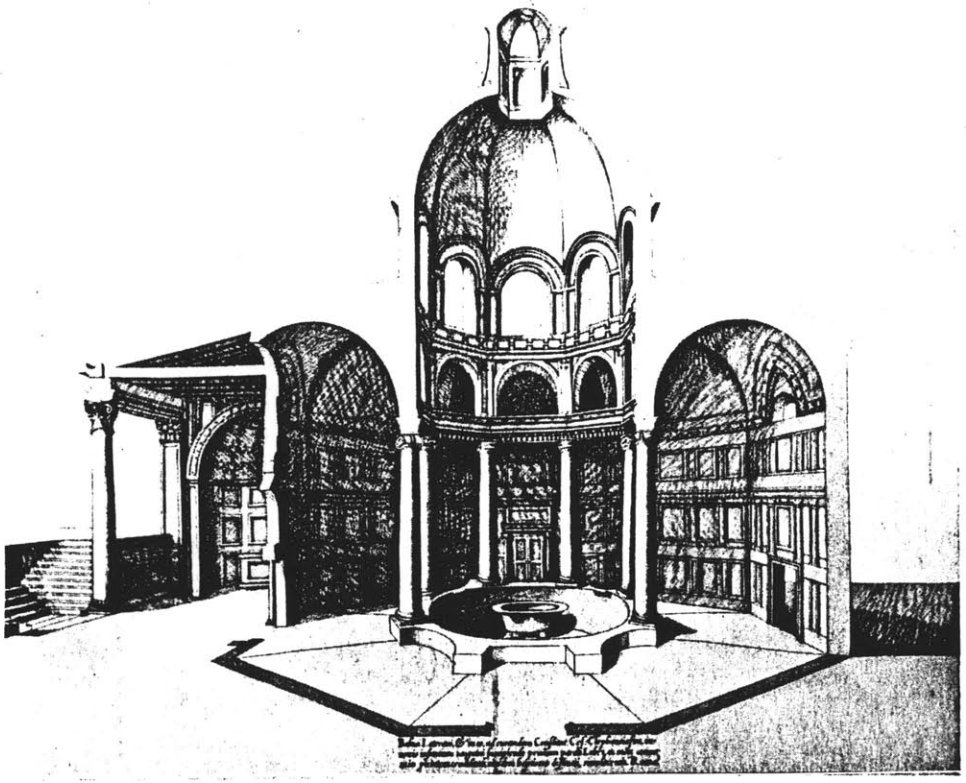
The building of strong transverse arches at intervals provides "ribs" along the vault which absorb most of the loads. In this case abutment is necessary only at the spring of the ribs. The system frees the interval segments which can be built thinner. (From Nelson, Structural Principles Behind the Failure of Gothic Cathedrals, 1971)

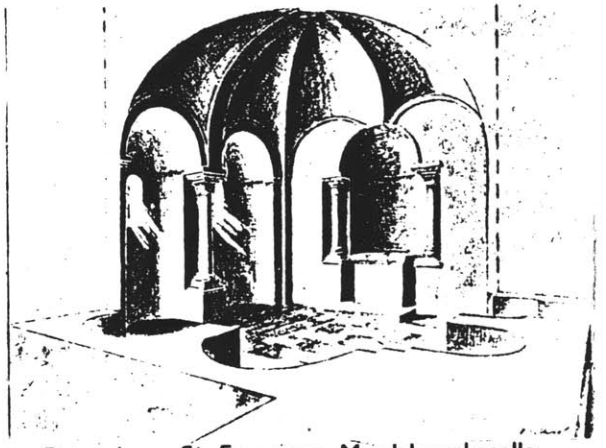
THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

Figs. G (1) and (2)

(1) Left. From R. Krautheimer, Early Christian and Byzantine Architecture, 1965.

(2) Below. From E. Lehman, Der Fruehe Deutsche Kirchen Bau, 1959.





Regensburg, St. Emmeram, Magdalenenkapelle

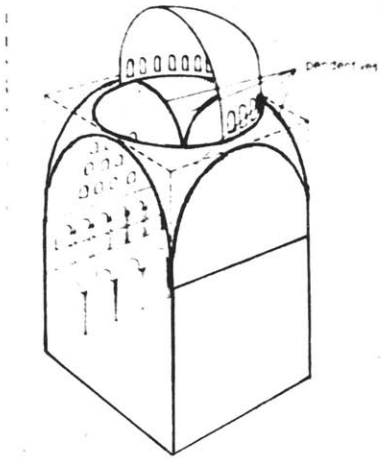
(1) Rome, Lateran Baptistery, c. 315 and 432-40. Section; engraving by A. Lafréri.

Roman construction developed techniques to build domes with concave sides such as the one depicted in (1) above. This pumpkin or umbrella dome (proposed to have been built as shown in the Lateran Baptistry) is composed of curvilinear segments. It is supported by a surrounding barrel vault on an octagonal plan, and eight columns arranged around a font. On top of the columns, a trabeated order is surmounted by eight clerestory windows. Fig. (2) shows a dome of this kind in the Rhine region built during the reign of Konrad the Salian in the tenth century. Earlier, a Salian tribe settled in the Rhine region of the Netherlands in the fourth century A.D. (This dome may have been built as a revival of the construction types of those times from which there are no records: fourth century onwards.)

THE SIGNIFICANCE OF A CHITECTURAL CONTINUITY

Transition Structures Between a Cupola and an Orthogonal Plan Figs. H (1) and (2), From Krautheimer, 1965.

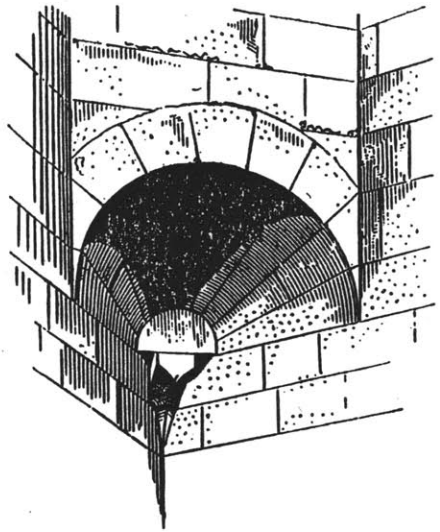
Pendentive



(1) Pendentive

A triangular piece of a sphere resulting from the interpenetration of a cubic space (a room or a bay of square plan) and a hemisphere. Each pendentive occupies the space between a round dome and its square supporting structure. The four pendentives thus form a base on top of which a dome can be placed, either directly or raised on a drum, a dome on pendentives. If, on the other hand the hemisphere constructed is continued from the pendentives to its apex, the buildt system is a "pendentive dome".

Squinch



(2) Squinch

A corbelling small arch or half conical niche, which acts as a corner filler of masonry that translates the geometry of an orthogonal plan, by steps or stages, into that of a dome. It uses arches to support each tier of change, i.e., from a square to an octagon and from octagon to sixteen sides (almost a circle).

and (2)) In the era of Constantine, around the fourth and fifth centuries A.D., domes on pendentives became a stereotype in architectural construction. Built on thin brick shells, the Constantinian domes replaced the earlier stone work. The system of a dome on pendentives is a free-standing compound of a dome and its supporting vaulted units. The vaulted spaces surrounding the dome are subsidiary units required structurally by both domes on pendentives and pendative domes (Krautheimer, 1965, p. 362). Hence a pattern of a central square bay surmounted by a dome and a cross-shaped space covered by four barrel vaults arose as a standard architectural unit of the early Byzantine age. To the best of our knowledge, this unit gives an image that has been replicated only in buildings; that is, it does not seem to have been used to shape miniatures, but it would not surprise us to encounter objects shaped with this formal model.

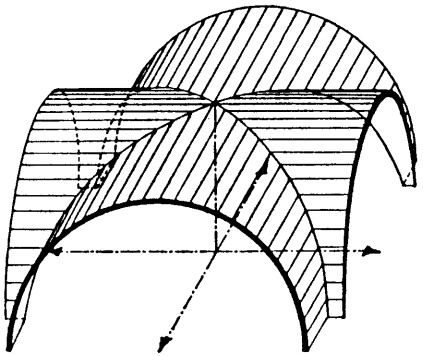
Constantinian construction also incorporated other changes, such as accentuating the central space of the traditional basilica as a processional nave. The nave became the focus of the design of churches in medieval times. Both nave and enveloping aisles developed vaulted forms that yielded archetypal church interiors.

The intersection of barrel vaults can give a form known as cloister vault. This results from closing (rather an opening) the arched spaces formed at the intersection. The closing must be at the roof level (see Fig. I).

In the second century A.D., a structural system topped by a cloister vault was developed in Roman Byzantine Near East, in the Camp Mousmieh in Syria. It consists of five bays forming a cross, inscribed in a square area. It has nine bays in total and the central space is topped by a cloister vault. This structural prototype was built in A.D. 778 in the church of S. Maria delle cinque torri at S. Germano. In the West the system is known as "quincunx" or as "cross-in-square". The square is called Naos. The four corner bays of the Naos containing the cross are topped by small domes or barrel vaults (see Fig. J). The western quincux of the middle Byzantine became a universlly accepted pattern from the tenth century on (Krautheimer, 1965, p. 246). Again, a system which being an architectural model seems to have been replicated only in buildings.

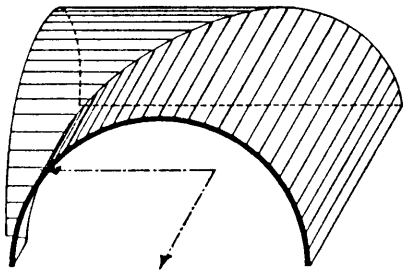
THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

The Cloister Vault Figs. I (1), (2), (3) and (4). From Hart, 1965.



(1)

(2)

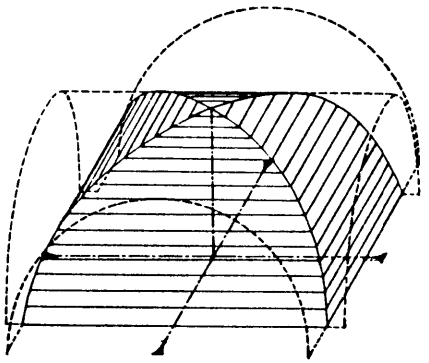


(1) The groin vault is one of the two architectural forms that result from cross connection of two barrel vaults of equal sizes (the alternative form is shown in (3)).

(2) In the same kind of intersection, the parts removed in (1) can be put together. The arches are thus closed.

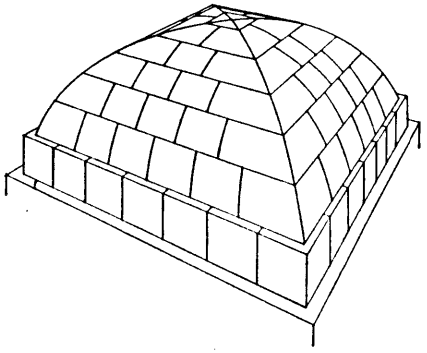
(3) The resulting image is a cloister vault. In this figure, the removed parts are those present in (1).

(4) The cloister vault in stone.



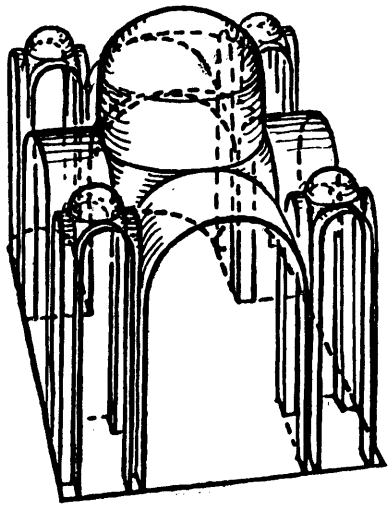
(3)

(4)

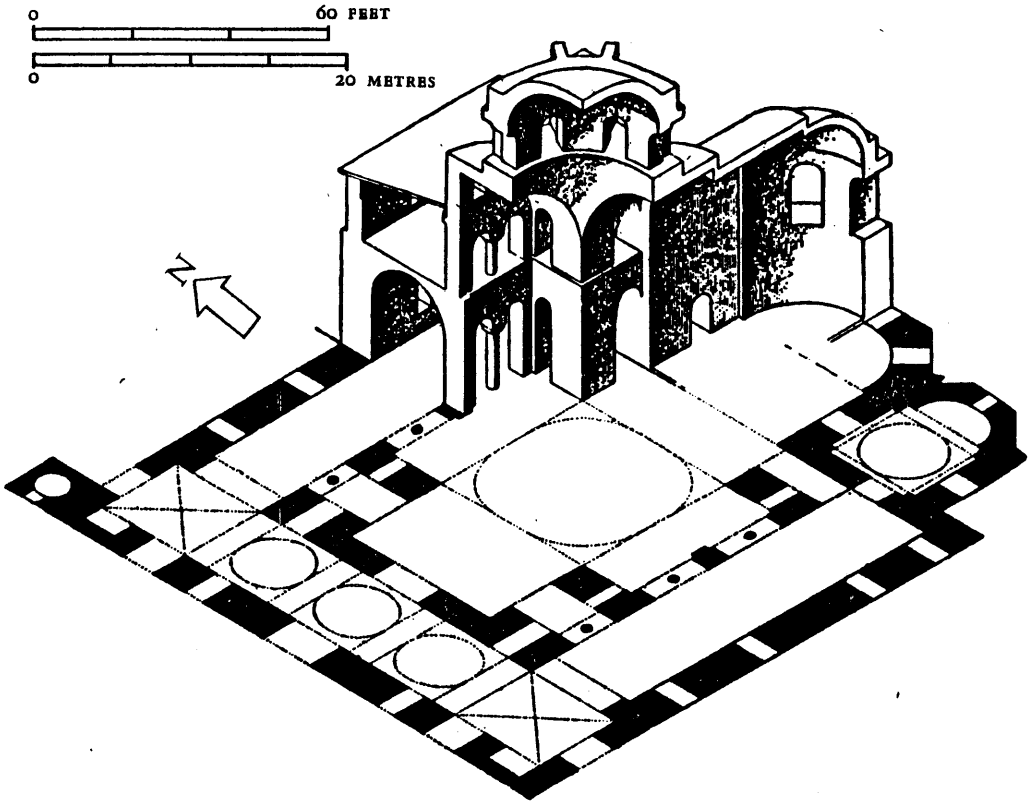


THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

The Quincunx and the Cross-domed church. Figs. J (1) and (2). From Krautheimer, 1965.



(1) A quincunx.



(2) Salonica, H. Sophia, early eighth century (?). Isometric view.

(2) The cross-domed church of H. Sophia in Salonica.

The Justinian era basically worked simple Roman prototypes. From the seventh to the ninth century, after Justinian, another domical model arose in church construction: the cross-domed church An example is H. Sophía in Salónica. The formal type consists of four strong piers marking the corners of a center square area. The same piers support the dome and the barrel vaults of four cross arms. This system uses small groin-vaulted bays to articulate spaces. The dome is high on pendentives and rises from the apices of the barrel vaults (Krautheimer, 1965, P. 204).

By this time, in the occidental West north of the Alps, a new architectural process began with the Carolingian age. This was the time of the area's Christianization that took place from the eighth century onwards. Before Charlemagne (in his capital city Aachen called Karl der Grosse), the populations occupying the occidental West, or earlier "The Roman Rhineland", had not been unified. The unification of the barbarian* cultures was accompanied by a process of architectural development in direct ancestral relationship with the later-occurring Romanesque and Gothic developments, and thus, with the iconographic equilibrium between architectural sculpture and architectural setting that arises in these periods.

Since the people of the Rhineland were just being Christianized there was no local tradition of church construction. Hence architectural patterns were taken from other geographical areas. At the beginning their contribution in the design was the way they combined and interpreted foreign models in their own land. This was not a usual case of adaptation of foreign forms to native forms in which alien motifs fuse with local styles (E. Lehmann, 1949, p. 16). At the onset of the process, a search for organizing the different spaces** was absent. Thus, the Carolingian development is thought to have used fully foreign forms. There were two buildings in the territory that today is Germany, the Imperial basilica of Constantine built ca. 380 in Trier and the church of S. Gereon in Köln, which was the residential city of Julian the Apostate at the time (also ca. 380, Krautheimer, 1965). The two buildings underwent extensive transformation and enlargement in the eleventh century; only their core is original and Lehmann (1949) believes that it is not possible to establish their external appearance from these

*Used here as the Romans did, a reference to foreign (non-Roman, non-Greek) people.
**Edgar Lehmann's reference is exactly Willen zur Raumanordnung or attitude towards ordering.

remains. These are Roman-built structures and hence it is unlikely that they were built in the image of any native Rhineland tradition.

The main influence among these foreign patterns was Roman. Because Christianity was Roman, there was no better place for the Carolingian cultures to look for church models, than Rome (Lehmann, 1949). One of these primary models was the uni-apsidal scheme* in which the only apse is connected to the nave. Janson (1977) adds another reason explaining the importance of Roman influences: namely Charlemagne's ambition to restore the grandeur of the ancient Empire in his own reign. By implanting the formal cultural traditions of a glorious past in the minds of people he was to fuse Celtic-Germanic cultures to the Mediterranean world. Krautheimer (1965 pp. 60-62) remarks that another influencial source from the Italian world came to the Rhineland from Lombardian architecture between the sixth and eight centuries A.D., Early Carolingian construction shows analogies of technique with Milan and Krautheimer feels that this fact shows a considerable contact between the two areas. Among these analogies indicated he mentions the use of blind arches in the articulation of walls. This technique is of great interest to us because the image of these blind arches used externally, seems to have provided an archetypal motif that was replicated in miniaturized scale and used both as decoration and for subsidiary architectural functions, i.e., as part of eaves or cornices (see Figs. K (1) to (8). This motif is present later in areas outside of the Carolingian domain but in no other place it acquired the cultural character that it developed in the occidental West; in fact, the area in which posterior development brought about extensive multiplicaton of arches as an aesthetic and structural device, namely, Romanesque and Gothic architecture.

Although the main influence inspiring the Carolingians was the architecture left by the Romans we cannot leave aside the role of other foreign architecture. The Carolingian process was new then, and as such it sought to optimize its architectural development by resorting to various accessible models.

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*A translation from Lehmann's "Einapsiden-Schema" (1949, P. 16).

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

Fig. K(1) St. Johan, Münster, early Carolingian

From E. Lehmann, Der Frühe Deutsche Kirchen Bau, 1949, plate 1.

"Lombard bands" (identified as Comacine bands)

The use of blind arches such as these on the wall of St. Johan is common in Carolingian and Ottonian construction. These arches were first identified as a Lombardian pattern, from here their name. In Ravenna similar arches are much earlier than the time when the Germanic tribe of the same name invaded north Italy and established a capital city in Milan (A.D. 568 to 774). An example is given in Fig. K (3) in the exterior walls of the Orthodox Baptistry built in A.D. 458.

Fig. K (2) Marienkapelle, Würzburg, early Carolingian

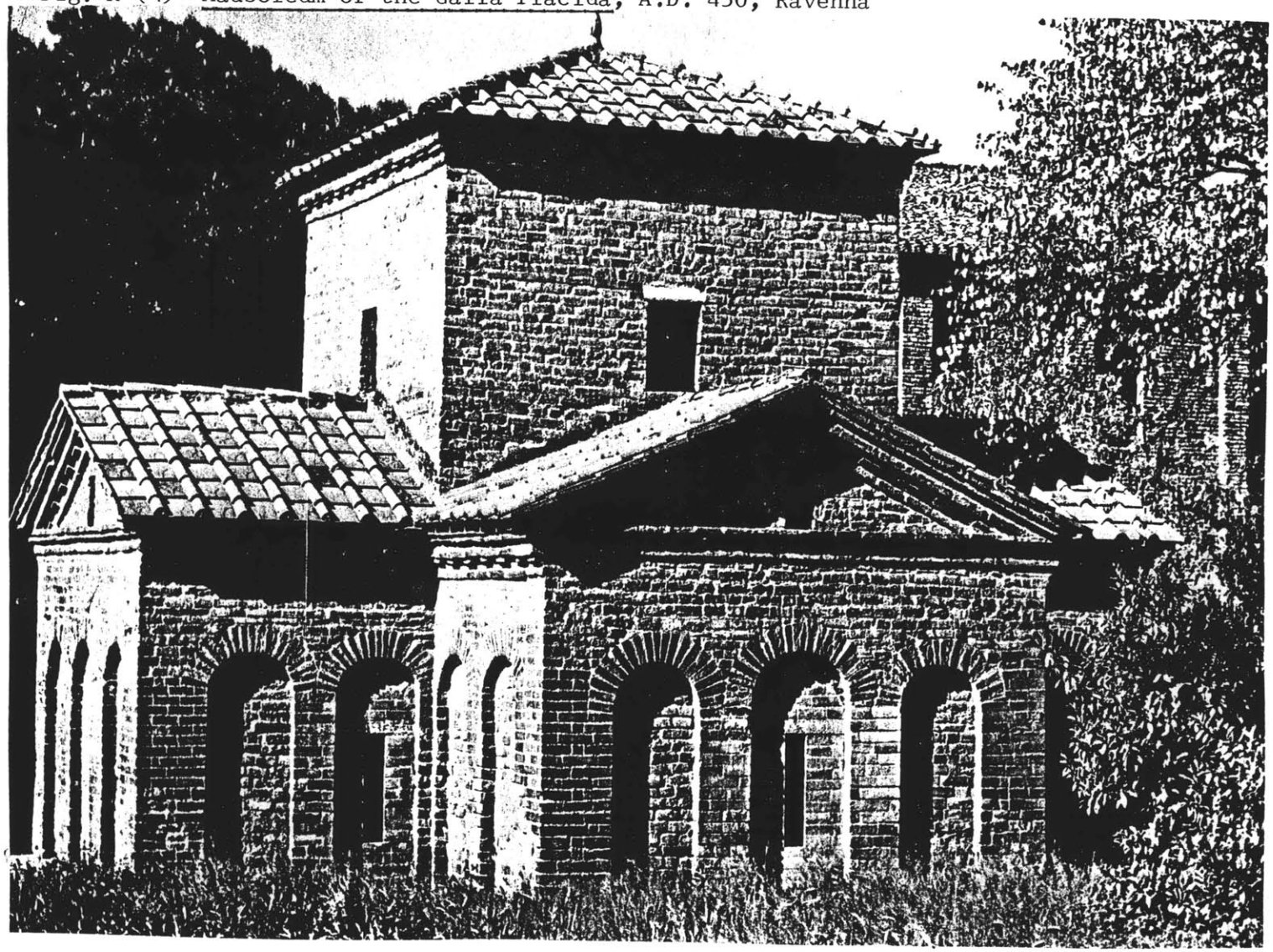
Fig. K(3) Battisterio Neoniano (Orthodox Baptistry), Ravenna, A.D. 458. From W. Wolbach, Early Christian Art, 1962, plate 139.

In this baptistry the "Lombard bands" are used exactly as the arches found in Lombardian architecture of a later date. In them, there is a clear aesthetic intent, the central arcuation is devoid of the image of a supporting column as it is the case in Marienkapelle (Fig. K(2)).

Fig. K(4) (next page) Mausoleun of the Galla Placida, Ravenna, A.D. 450. From Busch and Lohse, Vorromanische Kunst und ihre Wurzeln, 1965, plate 14.

Built eight years earlier than the Orthodox Baptistry, this mausoleum shows structurally alive arching in which there is a secondary aesthetic intention: the arches have been given a relief perspective relative to the infill. Structural arches in series that have been closed or filled later can be found at least from the times of ancient Rome. Likewise, aesthetic use of the arch is early as well. There are pre-Roman arches used aesthetically on the walls of Porta Augusta and Porta Marzia in Perugia. Such arches are Etruscan from the second century A.D. (see W.Bombe's Perugia, 1914, Abb. 3 and 4)

Fig. K (4) Mausoleum of the Galla Placida, A.D. 450, Ravenna



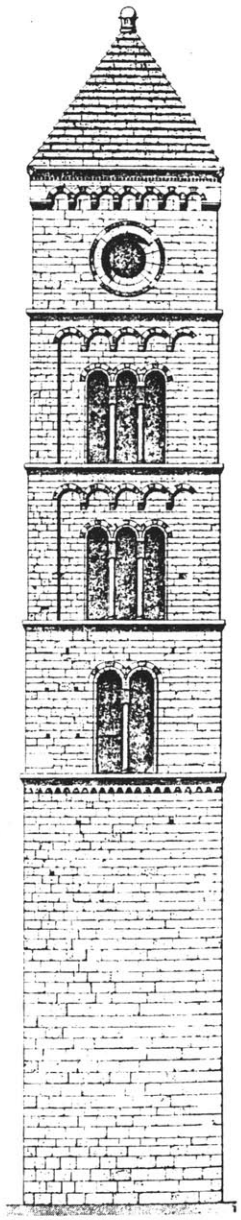


Fig. K (5) The Comacine tower, Puissalicon:
Church. Square bell-tower. From R. Oursel et al, 1967, p. 134.

In the Alps, north of Milan the 'maestri comacini' experimented with vaulting. Italian archaeologists have thrown considerable light on their individual activity.

"In the Isola Comacina in Lake Como (near the Swiss border) and the Isola S. Giulio in Lake Orta, a practical technique of stone building was reborn. Interiors and exteriors were austere. Outside, bell-towers and campanilles. These towers were usually square but sometimes round. They were the work of patient artisans disciplined by practice and imitation. Exteriors were animated by a rhythm of alternate projecting bands and hollow rectangular panels, their upper portions scalloped into little carved arches grouped in twos and threes or in a series. They are also hollowed out in the exterior walls of apses where they develop into a series of niches: these are the origins of the beautiful galleries or "loggie" which encircle the chevets of Romanesque churches in Southern Europe and were enthusiastically adopted by German builders".

Extracted from Oursel, et al, 1967, pp. 134 and 135 : "The Architects of Como".

Fig. K(6) Theodoric's Palace, Ravenna. This building was started in the sixth century, Theodoric ruled from 423 to 524. From W. Volbach, 1965, plate 212.

At the base of the blind arches of this structure, there are added columns whose length is stopped without a visual supportive element connecting them to the ground.

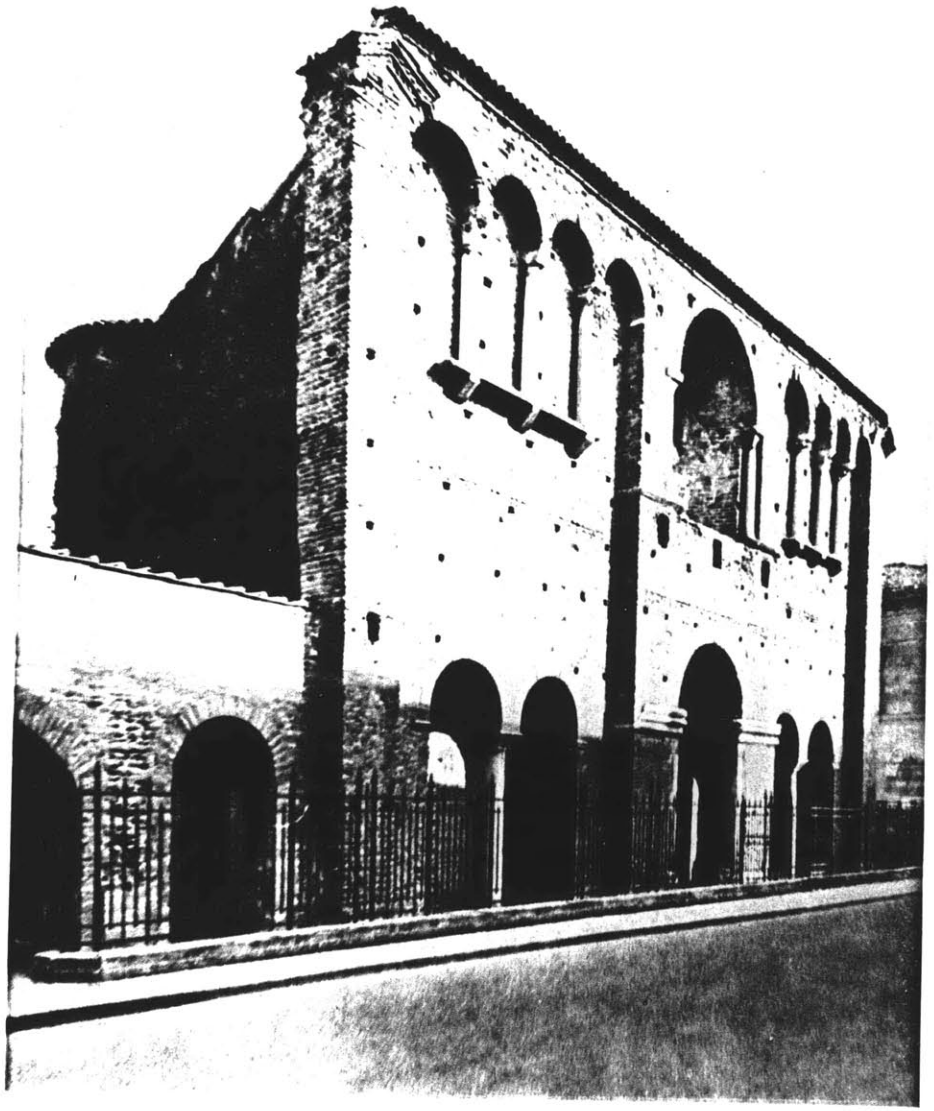
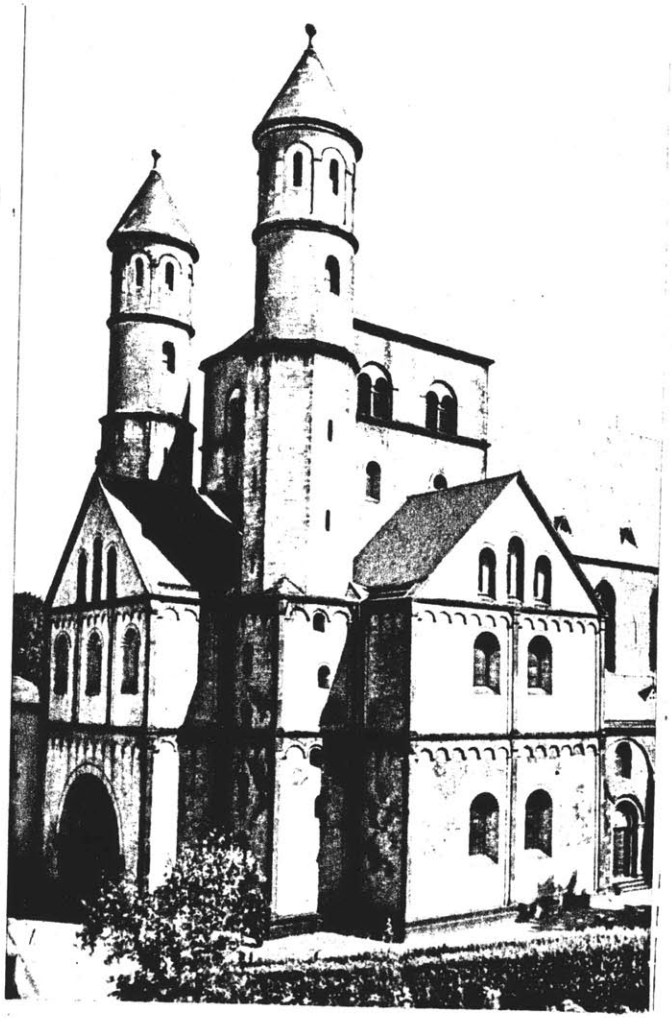


Fig. K(7) The Benedictine Abbey of S. Pantaleón
From Janson, History of Art, 1977, p. 257.

Later in time, a new version of the same formal phenomenon maintains the archetype in more miniaturized conditions, and, at the same time, it seems to fuse with the functional form of cornices and eaves. The arched series becomes a part of the top element that shields the wall from the rain. This provides this arcueted motif with a structural logic.

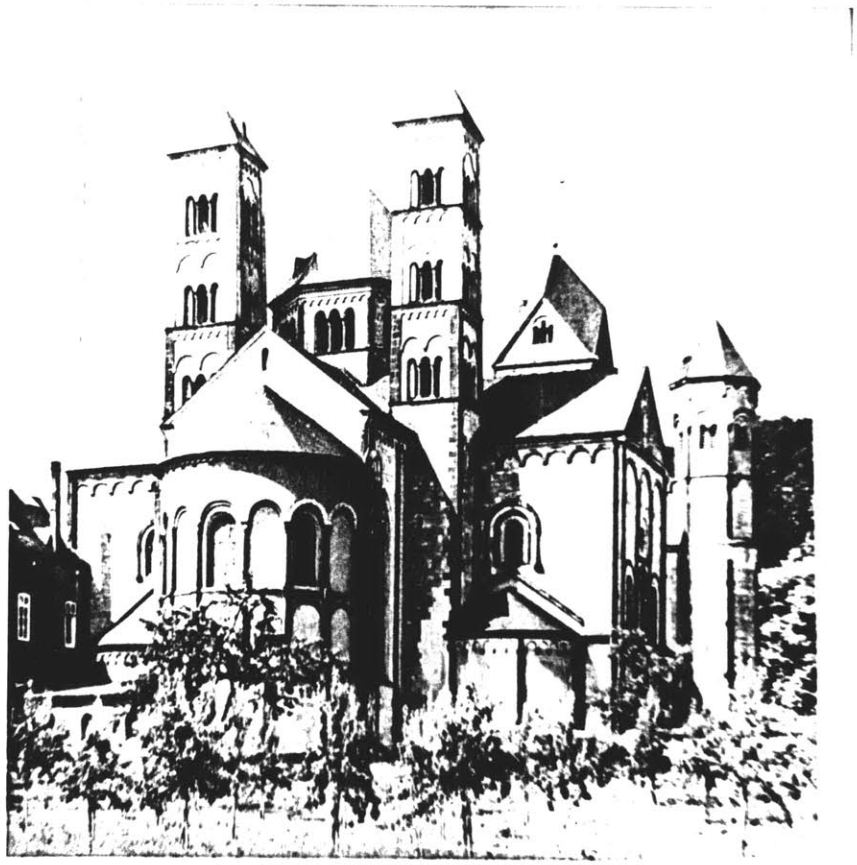
Although in northern Europe Ottonian themes, similar to this, pervaded into the Romanesque era, especially in the German Rhineland, in the south, i.e., France, these images of multiple arches develop into the Romanesque style.



342. Westwork, St. Pantaleon, Cologne. Consecrated 980. A.D.

Fig. K (8) Benedictine Abbey church Maria Laach, 1156 (end of German Romanesque), in Laacher See. From R. Oursel, et al, 1967, plate 121.

The Ottonian descended German Romanesque. There are many other churches like this one in this region, they follow the same style. Examples are Allerheiligenkapelle in Regensburg from 1150 and Speyer cathedral from 1030. In these churches the arcuated motif is represented both as part of cornices and as blind arching.



E. Lehmann states that important oriental influences were adopted by way of two fundamental routes. One arrived through the oriental Mediterranean (Dalmatia, Byzantium, Venice and Ravenna) and the other through the French side, from Spain (ultimately carrying features from north Africa). In Lehmann's view those influences coming through France should not be overlooked since Charlemagne dominated this area. For example, the tripartite transept such as the type present in Dompeter in Elsatz (early Carolingian) comes from Spain. (The evidence of this contact is given by its lateral rooms flanking the semi-circular apse.*)

The development of architecture slowed down during the century following the death of Charlemagne and recovered under Otto in the tenth century. Ottonoian forms basically exploited Carolingian features. For example, they replicated extensively the type of West towers that the pre-Ottonian (Carolingian) Abbey of Centula had.** These towers or bell turrets, were always built at the western side of the church. In Germany this construction became known as "Turmwestbau" and constitutes a model for Ottonian construction. The towers offer a characteristic feature that interests us, namely their rhythmical series of arched windows. Though the feature did not originate in Ottonian architecture, its development adopted this formal character and replicated it as a characteristic of the architecture north of the Alps. The earliest towers in this area, showing both rythmical arches and superimposed storeys of increasingly smaller size is the Abbey of Centula (see Figs. L (1) and (2)). Although evidently

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*These flanking spaces are known as pastophoria and have origin in Syria (Lehmann, 1949, P. 17). Lehmann studied the typology of plans to detect these influences. Little is known about the construction of vaults. The Carolingian construction, he states, was characterized by round-plan chapels (Centralbauten), as in the Mediterranean world, reserved for baptismal and memorial functions; and also by a steady increment in the complexity of the plans. The peak of round baptistries and memorial chapels flourised under Charlemagne and disappeared after his death in Aachen, A.D. 814.

**Lehman states that it is not known that towers of this type existed before in the Rhineland area.

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

Fig. L(1) S. Kastor, Koblenz, end of tenth century
From P. Frankl, Handbuch der Kunstwissenschaft, 1926, plate 86.

The Ottonian "Turmwestbau". The pattern arose from the Carolingian Abbey of Centula (next page) and the rhythmical arching of the early Comacine style.

Fig. L(2) The form of the pre-Ottonian towers in Centula . Note that there is in this model for Ottonian churches a rhythmical reduction of the various storeys of the towers. This effect is also a characteristic feature of the Romanesque (see Fig. L (3)).

From Lehman, 1959.

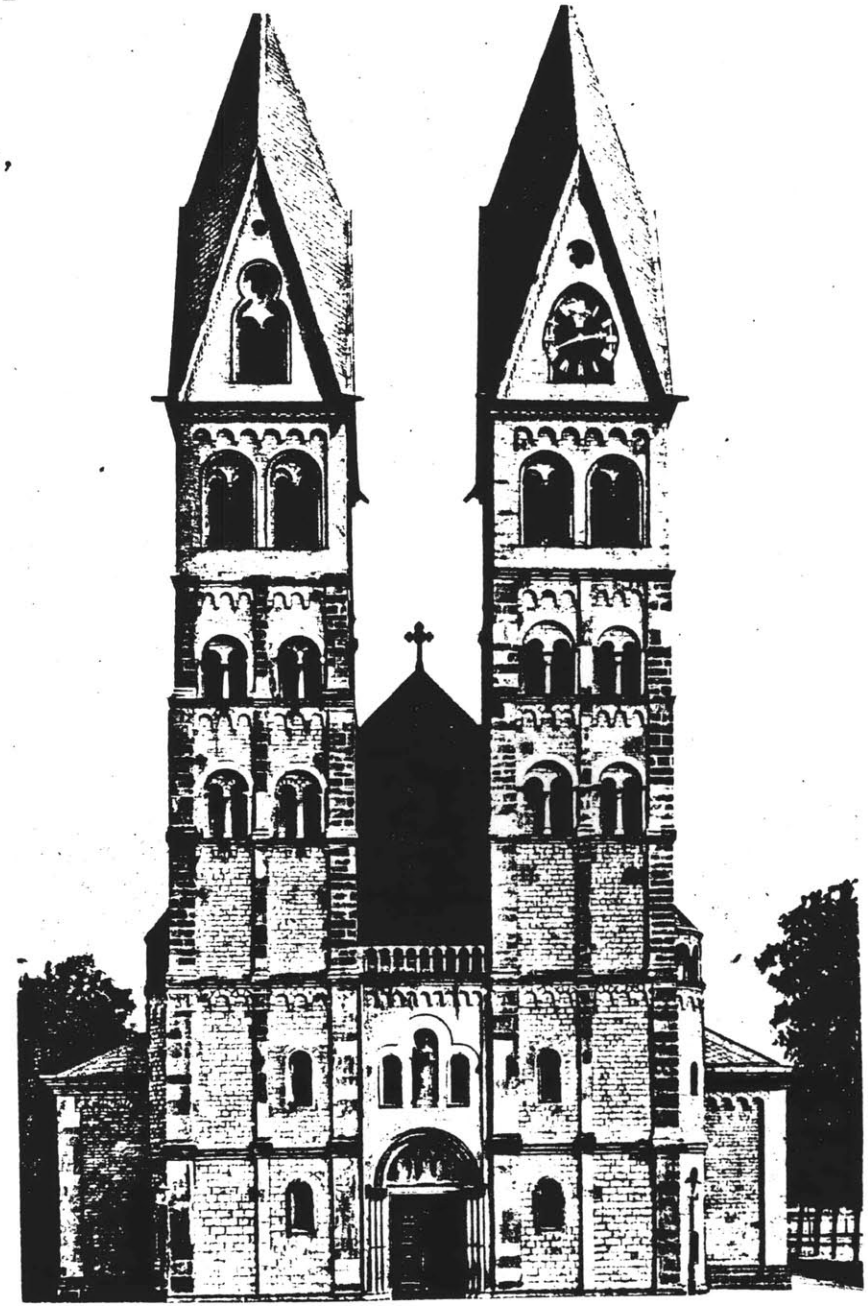
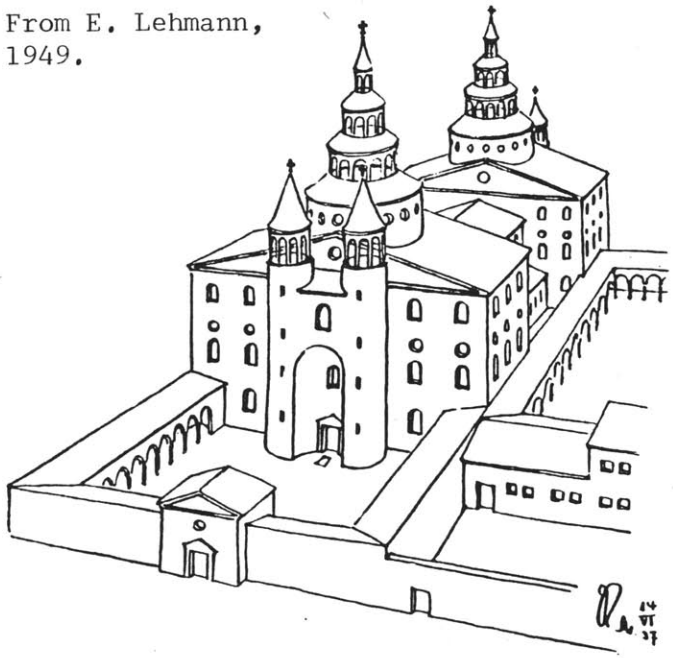


Fig. L (2) a and b. Centula Abbey. Carolingian.

b.- Right

a.- Below

From E. Lehmann, 1949.



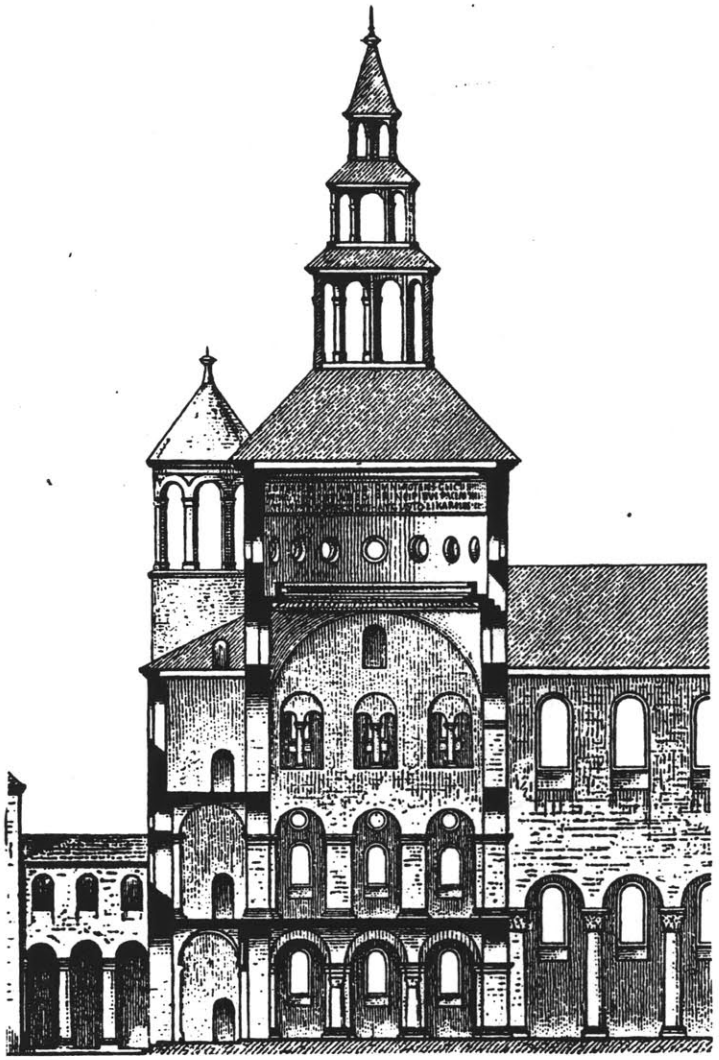
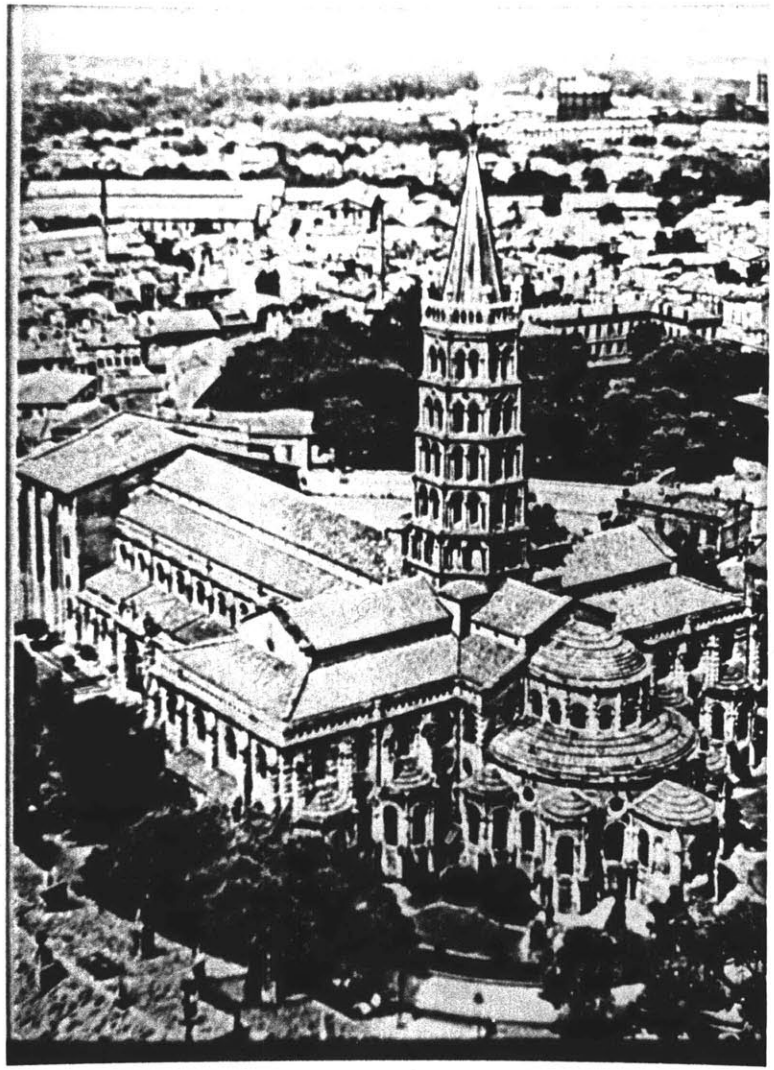


Fig. L (3) St. Sernain in Toulouse, 1080 to 1120. From Janson, 1977.

French Romanesque style shows the developed series of tower storeys and arches everywhere.

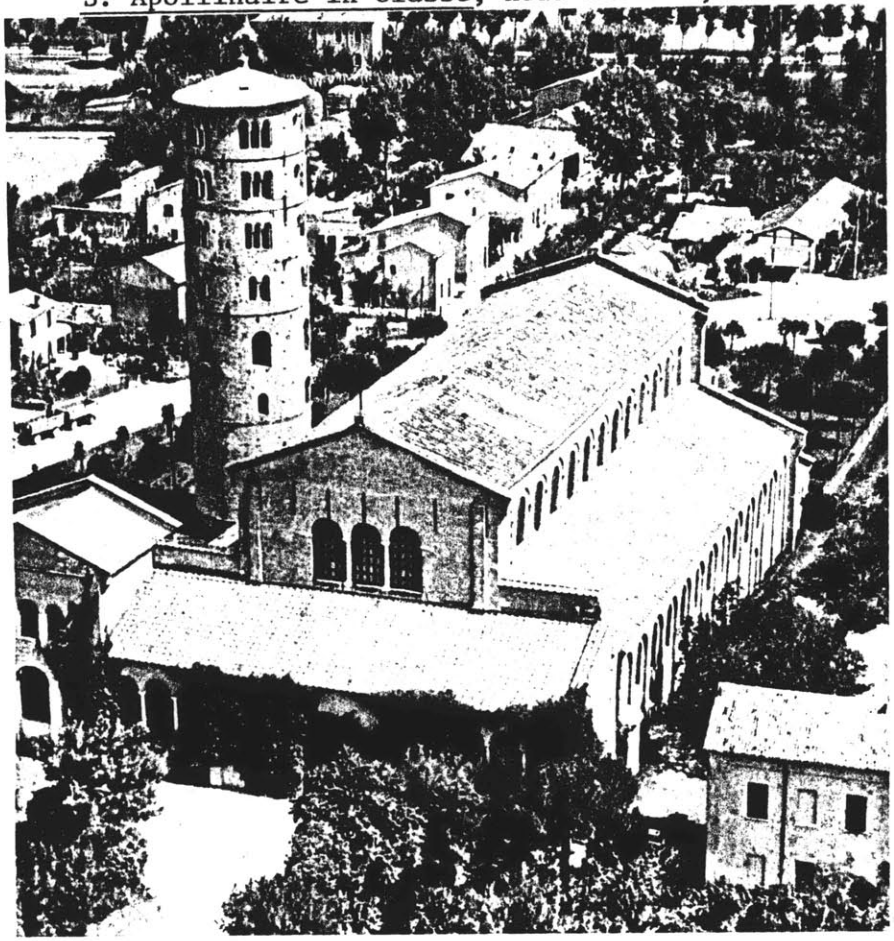


Figs. L(4) and L(5) (next page). In Ravenna, S. Apollinaire en Classe (549) and S. Giovanni Evangelista (424-34) show rhythmical reduction of arched windows in single towers, similar to those of S. Kastor (Ottonian) and those of the Comacine tower. L (4) from Janson, 1977; L (5) from Busch and Lohse, 1965.

REPLICATION IN THE PAST

Fig. L (4) below and L (5) right

S. Apollinaire in Classe, near Ravenna, A.D. 549

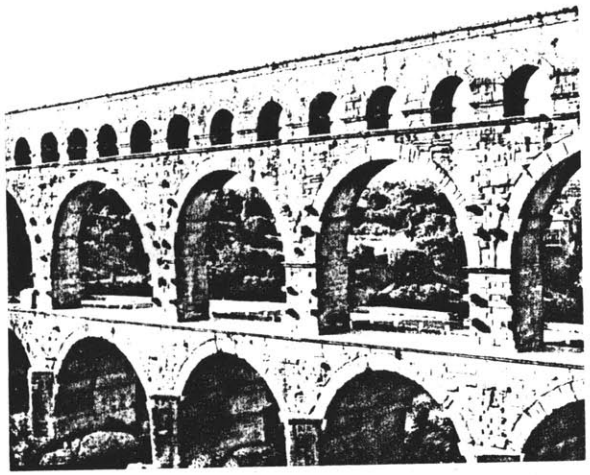


S. Giovanni Evangelista in Ravenna, A.D. 424-34.

Fig. L (6) a and b. The emblem of a Roman aqueduct.

The ancestral images of the rhythmical arched motifs are the structures left by ancient Roman rule in the European areas of our concern. For example, aqueducts and bridges offer a long linear arrangement of arches in series which reduce rhythmically towards the top part. The replication of these structural forms in various places in Europe resulted from the services they lent to Roman urbanism. Later in time, they stand as monuments of the glorious past from which many European cities derived. Their images become emblems.

a.- Below. A utilitarian Roman aqueduct in Nimes France: Pont du Gard. (today a viaduct). From W. H. Janson, 1977, plate 217.



Pont du Gard, Nimes, Fr. Early first century A. D.

b.- The image of a Roman aqueduct in Segovia, used as an emblem of the structure. These are cylindrically hewn stones that were placed in the seventeenth century at the ends of the walls of the aqueduct. From Fernandez Casado, 1972.

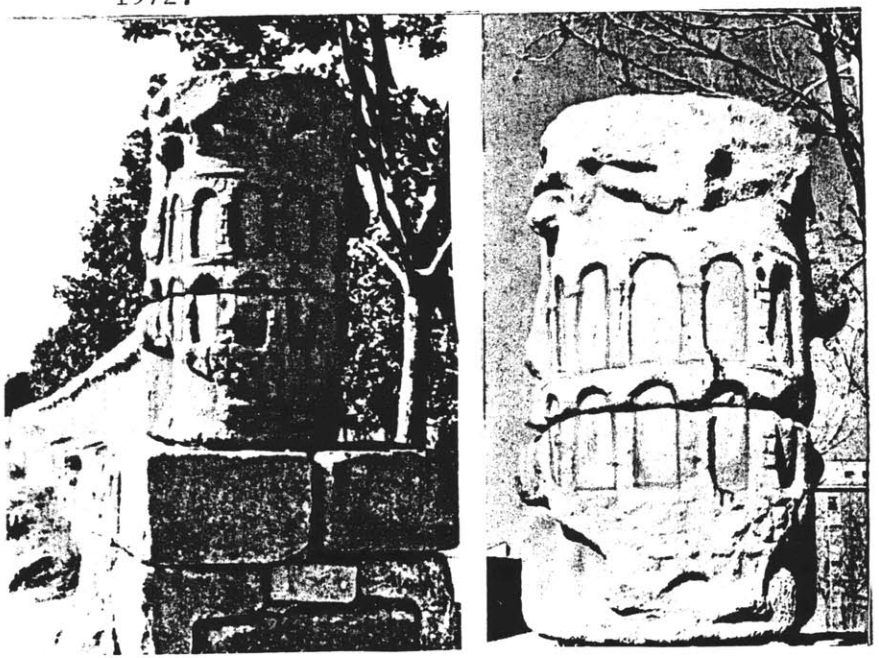
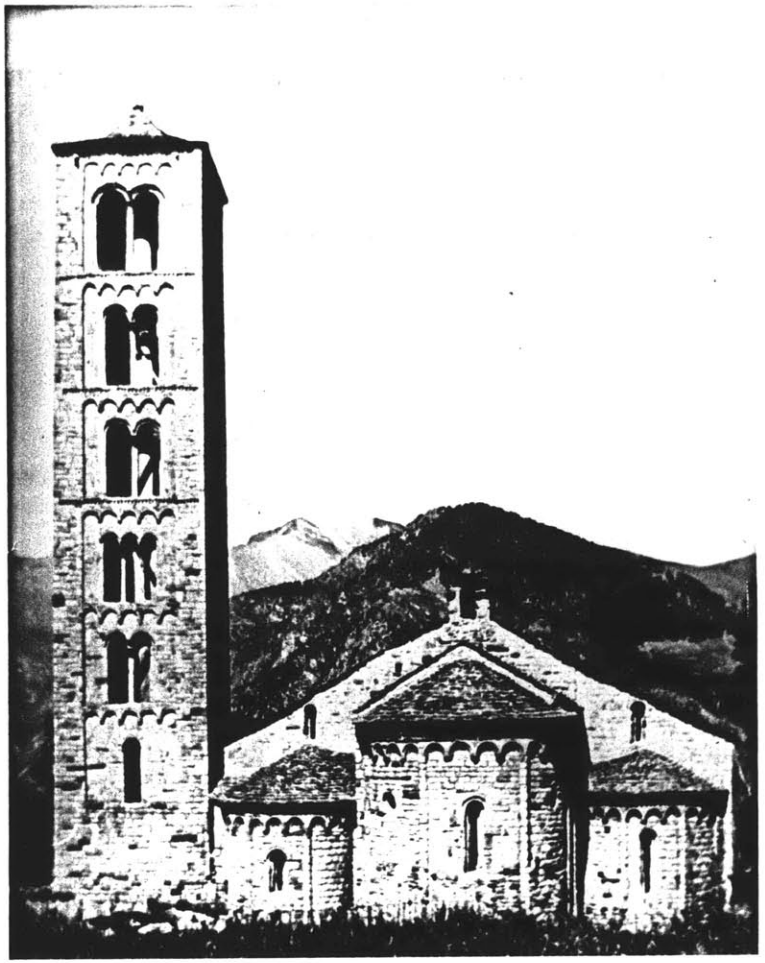


Fig. L (7) S. Clemente, Cataluña, Spain, consecrated 1123. From R. Oursel, et al, 1967, p. 160.

The "Lombard bands" in Tahull, the heart of Cataluña. This style, loyal to the early Comacine construction, is the Romanesque style in this area. It is located mostly along the northern road to the pilgrimage shrine located in Santiago, Galicia. The route was actively used while the south of Spain was under Moslem domination. It was called "the triumphal road to Santiago. It basically kept the construction patterns for churches similar to those of central Europe.



this image is not Carolingian-Ottonian in origin (see earlier single towers in Ravenna, Figs. L (4) and (5) with similar formal principles) the Rhineland development gave it a status that influenced Romanesque images.[14] Probably the earliest (hypothetical) form of this kind in the West existed in St. Peter's basilica. The restoration of old S. Peter's as drawn in MacDonald (1979, P . 55) has a tower with rows of arched windows. Their arrangement is not rhythmical however; it was built ca. 333. A single tower of similar forms to each of the Ottomian "turmwestbau" developed later as a common pattern of medieval churches in Mediterranean Europe (see Fig. L (7)).

In the Romanesque period the structural components of churches are not detectable as patterns that visually can exist separate from the whole of the church. There were no models of plan, and structural systems equivalent to the Byzantine dome on pendentives and the cross-dome church. The external image of Romanesque churches gives a rich arrangement of arches related to the forms found north of the Alps. Romanesque architects concerned themselves with researching how to vault the nave in stone and to devise the kind of abutment needed to support it (Focillon, 1976; in Spencer edition, Chapter 12). Such was the main preoccupation of eleventh century architecture and continued onwards (1976, p. 227). This concern for vaulting is perhaps influential for the rich imagery that begins with this movement.

The characteristic appearance of churches in this period consists of a combination of main supporting arched systems and lesser structural arching in windows, galleries, balconies, gates, etc., in a rhythmical and harmonious morphological succession. The structural quality of live arching of all sizes, blends visually with kindred forms that play a minor or no structural role, but they en-

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[14] Ottonian architecture develops other innovative elements such as a subterranean chapel or crypt, mostly under the choir. It usually has ambulatories surrounding it. It is meant to house the tomb of a saint. The crypt already existed in Carolingian times but it became common in Ottonian development. There is also a change in the disposition of the altar at this time. (Lehmann, 1949).

frame and indicate spaces in which persons or statues (a projection of the human figure) are to stand.

The Romanesque period begins a sculptural movement in which the human figure often appears sheltered by structural parts in the church. This sculptural movement is in Focillon's view, dominated by the laws of architecture (1976, p. 229). In our understanding, it reveals the meaning of architecture for the human body in its morphological dependence with structural parts. The primacy of architecture, Focillon writes, imposes a logic and profound harmony on the sculpture. The level of this domination of architecture we can sense as arising in the special kind of visual impact that the nave can cause in a viewer. Judging from the way in which the main structural forms of nave and altar space were reproduced in miniature forms such spaces seem to have moved the sensitivity of craftsmen and sculptors. Aedicules, baldachinos and other subsidiary forms of church architecture have their own tradition of construction which comes from earlier kindred forms. Starting with the Romanesque and reaching a culminating point with the Gothic crafts, the space of the nave and its arches seem to have served as a source of inspiration in the sculpturing of subsidiary vaulted spaces. Thus the intensely aesthetic vision of Romanesque naves, which is too preponderant in its morphological significance, appears to have "imposed" its own form on the craftwork, or as Focillon states this, the sculptural elements have been dominated by the laws of architecture. It appears that the form of the nave of the time developed intense symbolic content that was sensed strongly by the craftsmen. The significance of these vaults was somehow "indicated" by the form to the artist who was attentively trying to comprehend its impact, and this visual exercise may have compelled a starting point for carving human figures under architecture. In the Romanesque this took place in capitals that represent formally persons sheltered by concavities. Thus, this development in which form flows from structural nave to sculpture is what we sense as a domination of architecture on the imagery. However, there is another level in this craft at which architecture shows dependence with the statues. Aside of the domination of the functional structure over the sculptured imagery, in the realm of this imagery itself, there are two parts to a motif, a human figure (the statue) and an architectural-like cover. The cover, is

usually miniaturized to a scale as small as an umbrella for a person, especially in the later Gothic representation of sculpture, in which a statue is crowned by an aedicule. In this motif representation itself, architecture does not dominate the sculpture. Both architectural and human images show a mutual relationship of dependence from one another. That is, the morphological message of this arrangement in which sometimes a human figure is crowned by an aedicule shaped like an urban complex, seems to reveal the sheltering meaning of the structural form for the human body. But since the architectural top part has been miniaturized too much to be a proportional shelter for the statue, it seems rather clear that the human figure dominates construction, although it also depends upon it for protection since it stands under its cover. Thus, this study envisions this morphological information as indicative of a mutual dependence between mankind and architecture. This thought may be further supported by other kinds of motifs as ancient as Imperial Roman times in which the human figure fits tightly in architectural spaces and fuses in part with the building spaces (see appendix). On the whole, in these motifs, persons appear to depend upon the cover, the enframing and staging (i.e., some are placed on platforms) roles of architecture; but on the other hand, it is the human individual who creates architecture. In the Gothic motif of aedicule and statue, the facial expression given to the human projection is confident and profoundly serene. Perhaps indicating that the mind is the source that generates these forms and has accomplished understanding of what is that the functional vault provides to people. The meaning of the structural vault is expressed in the morphological symbol of these sculptures.

The Romanesque "ornament"* is built about the doorways in a novel way. The movement incoporates other innovations beyond our topic such as a new column in its French interpretations. This column de-

*The term ornament does not account for the full implications of the development of architectural imagery as a setting for human figures. Romanesque art is very rich in meaning, very elaborated in its techniques and above all, very important visually.

scends from classic images and is used as a member of a compound pier. Focillon sees the formal prototypes characteristic of the Romanesque as being basically reinterpreting the forms which were already present in the Carolingian age (Focillon, 1976, p. 227) (see Fig. L (3)).

The gothic age begins with structural advances applied to the reconstruction of the Romanesque Abbey of St. Denis. The master builder of this reconstruction devised (probably aided by geometry) ways to solve the problems associated with the different heights of the three kinds of arches of a rectangular bay. Avoiding arch-height variation in a single bay obviates building a complicated infill which warps at the vault level (Nelson, 1971, Fig. 15). The geometrical relationships of arch heights for a semi-circular arch and for a pointed arch are shown in the next illustration (see Fig. M). Thus, the Gothic incorporation of the pointed arch solved the problem of height by being narrower and taller in proportion to the semi-circular arch. This means that the narrow side of the rectangular bay will have parabolic : rather than circular curvature. The cross groined arches can be semi-circular. However, the sharp point of the tall arch was not necessary. This choice is aesthetic and is said to derive from the form of the Saracen arch[15] (i.e., Cowan, 1977), although such a statement does not account for pointed arches in Etruria (see Fig. M (2)).The need for greater height and slenderness, relative to semi-circular forms, was derived structurally. This same benefit would have been obtained from a parabolic arch, which in fact would have been structurally superior. Because the pointed tip of the gothic arch is located a little above the uppermost part of the catenary-shaped line of thrust, (see Fig. N) the arch tends to break as shown (same figure). A weight on top of this angular tip of the gothic arch, helps its rigidity. None of these relationships were written at the time, or at least no records remain. As Krautheimer states, "Evidently the design of an edifice or for that matter the construction were not within the realm of theoretical discussion." (Krautheimer, 1942).

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[15]The contact with Moslem dominated Spain and its architecture could have had an influence in the Western adoption of the Saracen arch.

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

Fig. M (1) The Advantages of the Pointed Arch

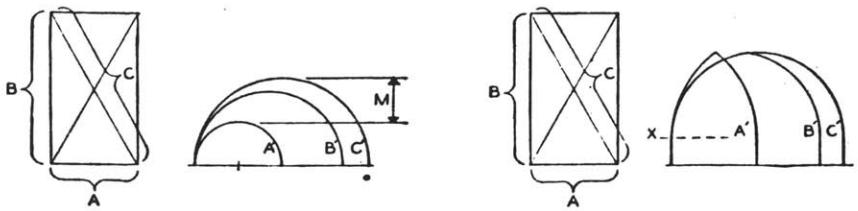


Fig . M (1). Diagrams of the relative heights of groin, cross, and wall arches in a rectangular bay.

Left: With semicircular arches.
Right: The Gothic solution.

(1) The geometrical relationships of height in round and pointed arches. The intermediate sized arch on the right hand diagram, is the arch spanning the nave. From Nelson, 1971.

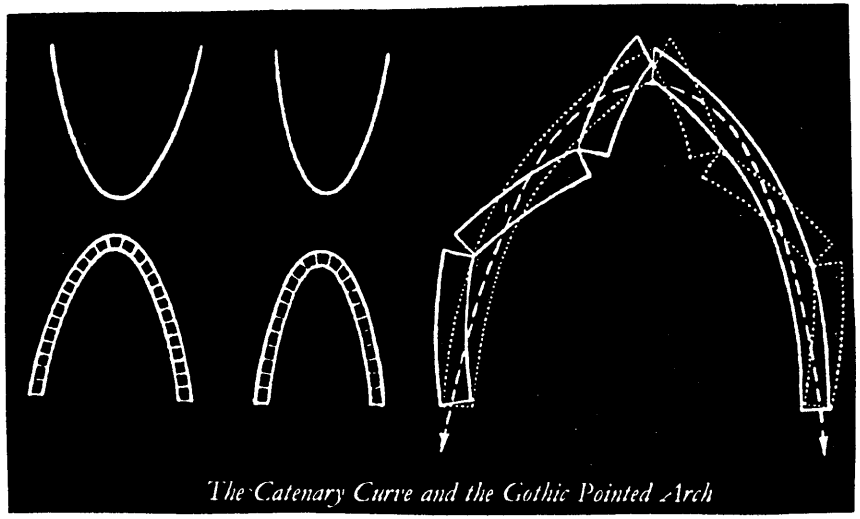
Fig. M (2) Ancient Origin of the Pointed Arch

Porta della Mandola (porta Eburnea).

(2) An Etruscan pointed arch. From W. Bombe, Perugia, 1914, plate 7.

THE SIGNIFICANCE OF ARCHITECTURAL CONTINUITY

Fig. N and Fig. O



N. The crease at the groin where the panels of the vault abut each other, above the back of the ribs, provides stiffening for the shell (just as folds in a piece of paper increase its rigidity as a spanning element).

Both figures obtained from B. Nelson, 1971.

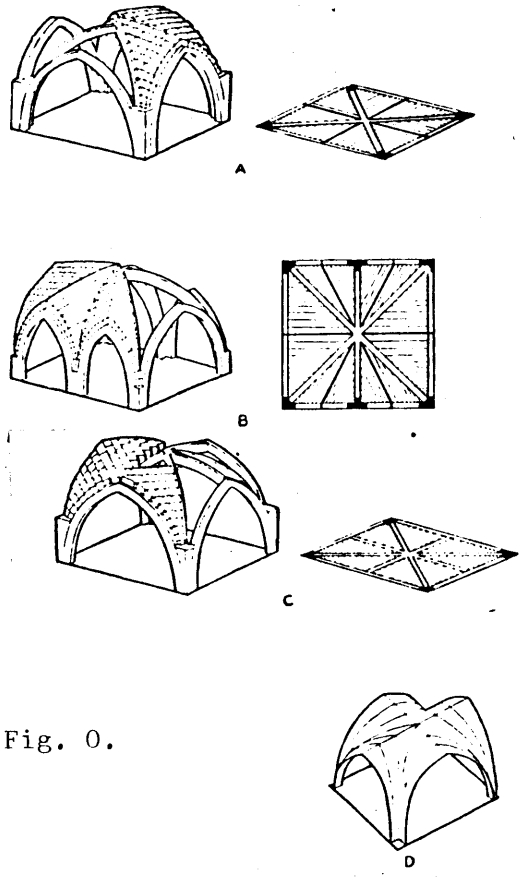


Fig. O.

DIAGRAM SHOWING GOTHIC RIBBED VAULT TYPES

Fig.O:
A. Four-part vault, with filling of French type;
B. Six-part vault, of French type;
C. Four-part vault, English type with ridge ribs and English filling;
D. English vault with ridge ribs and tierccrons.

Today we know about these problems from the extensive structural studies that have been performed on Gothic cathedrals.

Abbot Suger, the man who ordered the reconstruction of a Romanesque Abbey that became the first Gothic accomplishment, the church of St. Denis, left important writings on this work; however, he did not make any reference to the solving of the problems of vaulting with which he must have had direct involvement. Instead he emphasized the religious implications of the forms built (Krautheimer, 1942). The Gothic vault facilitated construction by having all arches of the same height. This advance requires to be acknowledged for the benefits it brought to church construction. The vault could be built as a system of ribs on top of which a thin shell was constructed. This vault could be either quadripartite (four-part vaulting) or sexpartite (six-part vaulting). Quadripartite vaulting brought uniformity of piers. Before its construction, churches required vaulted side aisles at the level of the spring of the nave vault in order to support it. In the internal space thick piers needed to alternate with thinner columns among which the piers supported both nave and side vault thrusts, and the columns just the aisle vaulting-loads. Structural abutment was devised resulting from uniform piers. A desire of Gothic architects to make these elements slender and light took them to find ways to bring the loads of the vaults to the exterior. They devised weight-absorbing buttresses which arch form the spring of the nave to the externally located buttress proper. The weight-absorbing buttress is called a "flying buttress" when its form crosses empty space. The buttress proper receives the loads from the flying buttress and if its shape is to have great stability, it steps outwards towards the ground because this form follows the line of stress (Nelson, 1971).

There were other methods available to Gothic construction for the solving of the thrust of arched elements. One such technique was the connection of the two springs of each arch by a tension rod which could be made of iron or wood. This method was known since Imperial Roman times. The rod could be hidden by covering it with masonry. Another was the addition of a great enough mass to the sides of arches, i.e., towers and pinnacles at the two ends of an arch. This technique is known as

inert resistance (Nelson, 1971). And yet another technique also present since Roman construction is the use of arches in a series. This system provides a structural way to counteract the thrust of each arch against another, except at either one of the ends of the series. Series of arches are also used as an aesthetic device in Romanesque and Gothic cathedrals. There are many instances of miniaturized arches in series inside and outside Romanesque and Gothic churches.

The ancient construction of arches in series left arcades in viaducts and bridges in many places of Europe to posterior generations. These images remind of the past grandeur of Rome and express visually the presence of Roman urbanism and rule in the area. This is also a way of conveying visually the origins of a tradition of construction that used variations on classical themes over and over again. Thus, architectural forms containing aligned arches had well established status as an ancient urban image of the West all during Carolingian, Romanesque and Gothic eras. This kind of theme is most likely a cultural archetype present in the background of later architectural imagery, with all the Jungian connotations that a socially treasured symbol can have (see quotation on page 30 of this work).

In a way aesthetic trends that replicate the arches of the Roman architectural system incorporate, by the mere use of such a form, some of the status of the Roman image. The same can be expressed about later Roman-derived images -- in Kaschnitz' sense these are a kind of sublimation of the ancient theme -- that give weight to their appearance by evoking important forms in their past.

We know from the accounts of Abbot Suger that the symbolic aspects of structural form were critical to the Gothic cathedral. Every structural feature that seemed meaningful was represented in miniaturized form. As Krautheimer wrote, the specific dedication of structural forms received enormous attention in writing, as manifested in Abbot Suger's work (Krautheimer, 1942).

The structural understanding of these forms plays a role in the designer's knowledge but to a lesser degree in the layman's. The public pays attention to the formal configuration offered by the form, and that is, its image. The non-professional eye distinguishes these forms by their visual

components. They are urban patterns in their cultural setting. In time, it is possible to use these images to shape sculptured objects, hence incorporating the meaning of the image in these artifacts.

III. A SYMBOL OF A FUNDAMENTAL KIND*

The tenacity of replication in design has been brought to attention in this study. Throughout history, sound structures which have been repeated for the advantages they offer technically and otherwise, have provided a material source for the cultural expression of tradition. Architectural images have been repeated for visual purposes as well, basically because some forms have been socially favored. Replication of this kind is a manifestation of positive opinions towards given designs.

The multiplication of similar forms in the urban environment intensify the degree of familiarity of the society with given architectural models and styles. In this affair stereotypes become eventually generated, and these, in time, may develop into culturally significant forms. That is simply, the architectural images that becomes important for many people. Some of these stereotyped forms recur consistently in time to the extent that they can be considered universally present themes. These cases are identified as archetypes by definition, whether the forms involved are primordial images or they have been derived structurally and adopted (e.g., see Encyclopedia Britannica).

A. REPLICATION OF ARCHITECTURAL FORM IN OBJECTS

When the image of architecture is reproduced as a motif**, we are certain to be dealing with the kind of replication that obeys visual purposes. In this phenomenon we can distinguish various motivational aims that seem useful to identify in order to understand the power that design images

*The phrase belongs to John Summerson, Heavenly Mansions and Other Essays, 1963.
**Motif is a reference to a design used and repeated decoratively.

can exert. To begin with, there are cases of replication of the image of a famous building in miniature objects that have no clear utility or artistic value. They are just little replicas of a famous building meant to remind the city where it is located. Today we call these objects souvenirs. Most of them are mass-produced and their purpose is commercial. The image of a significant building is used because many people identify it. The little terra cotta temple shown in Fig. C (2) is perhaps a fitting Roman example of this kind of replication.

A different kind of replication of architecture in objects is given by some urns, reliquaries and other fine containers of treasured things. In this case, the function of the treasure box resembles the most important function of architecture: to shelter and protect. The architecture that a craftsman has seen may indicate visually, by its symbolic meaning, its appropriateness as a sheltering form to give shape to a container. This is to say, that the thoughts of a craftsman who is considering building a sheltering box go towards the silent "indication" that efficient shelter transmits. The material form of architecture is grasped in this way because the person has experienced the spatial protection of similar buildings.

Thus a reliquary is given the form of a house in a way different from the earlier case. Here, to find morphological appropriateness (to produce a kind form that conveys the sheltering role of the box) seems to be primary to the intent to produce a replica as a souvenir. This distinction is necessary because with it, we are implying something about a quality of the form itself that acts as a power that informs its adequacy as an object of shelter. Such power is certainly its meaningfulness.

Finally, there are yet even deeper levels of morphological appropriateness in architectural images in which their form has evolved to such a refined and sublimated degree that artists and craftsmen may wish to crystallize them in miniatures basically out of being moved to re-create aesthetic form; and it is this artistic desire what moves this case of replication. The main aim

is to reproduce a profoundly aesthetic shape, and this goal overshadows other intents. The beauty of a form previously created by other minds -- the form cannot have a value without a perceiging mind -- touches the sensitivity of the craftsman who reinterprets it. Development of sensitivity-awakening forms (beauty) can favor the continuation of whatever message content is carried in its morphology; and it seems that in this affair an intended production of such content is secondary. In the architecture of the past, the glory of this kind of form resulted from generations of slow transformations.

The greater the refinement and sophistication of architectural form (Kaschnitz' idea of sublimation) the more hidden its symbolic content seems to be. Therefore, for very complex perfected morphology, we would expect it to be more difficult for the mind to see the configuration that carries symbol; however, this is not to say that our inability to extract symbol (from one immediate sample form) hinders our sensitivity to feel that it evokes something. A good example of this effect is given by Summerson's work in Heavenly Mansions (1963). In it, he reveals that he senses that the nave of a cathedral and its associated aedicules carry a symbolism of a "fundamental kind". His essay develops excellence of thinking by looking for this symbol in the origins of the aedicule and in the early conceptions of shelter in childhood.

B. THE CONCEPT OF AEDICULA* AND THE IMAGE IT CARRIES

John Summerson theorized (Heavenly Mansions, 1963) that the concept of aedicule includes, small canopies, balachins, altar shelters and pavillions. These are all basically one type of shelter which date from immemorable times.

He observed that a notion of aedicular artifacts can be compared to a manifestation of symbolic shelter present in the play of children involving "make-believe" situations. In this shelter-seeking activity a cover is improvised from artifacts of furniture found at hand; a child places himself or a doll in a setting he identifies as a residence by stating this is his "house". It seems important to distinguish that Summerson's reference is not about a child's search for surrogate maternal arms but to the notions of serenity and ceremony within, in contrast with notions of wildness and absence of protection without.

Conceptual relationships can be matched between this behavior in children and the construction of architectural forms with ceremonial role such as aedicules. Such relationships elucidated much to Summerson about the origins of architecture. He believes that aedicules are earlier than structural form and that they in fact gave rise to it. He own words on this matter are: ".... the aedicule has been enlarged to human scale and then beyond" (Heavenly Mansions, 1963 p. 4), and

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*Aedicula is the Latin term for small buildings with ceremonial function; diminuative of aedes, building.

he refers to Gothic architecture as "aedicular architecture of the grand order."[16]

Summerson's invitation to direct our attention to the potential implications to ideas of this sort, opens a major door for further investigation in his views. This value in his work is useful even to professionals that may have other interests in architecture and different opinions. A concept on architecture of the kind that Summerson has revealed, is important if we are to understand the development of the field.

Summerson studied the aedicule as a conceptual artifact. It appears to us that it was

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[16]The aedicule, as a shrine cover, many be more ancient than we could imagine, as Summerson has thought; especially if we are flexible in our conception of its structural form. It may be as old as the identification of a site in which deities are worshipped. Likewise, the identification of sheltering forms by children as a kind of residence, could be observed to date from the times a need developed in people to recognize elements that protect from hazards, and to arrange these for greater benefits. It seems important to see that, the development of technical knowledge is necessarily independent from the manifestation of a compelling notion. A primordial notion such as this one cannot envision shelter beyond vague conceptual terms. We bring this into attention because we see a possibility that some thinking may lead to derive that Summerson's work implies this. This would misrepresent the true merit of his observations. He does not discuss such conclusion, but since at one point he states that "the structure of architecture is a slave to the image of the aedicule" (Heavenly Mansions, 1963, P. 14), this idea could indirectly favor a thought of such kind. It seems that because Gothic aedicules use imagery that has originated structurally, he perceives the architecture of the period to be evocative of this "aedicular" imagery. In addition, it is easy to see why he envisioned structure as a slave of the aedicule after obtaining records of aedicular artefacts that are more ancient than architecture. On the other hand, by reading the entire essay, the reference "slave to the image of the aedicule" seems to be more an instance of linguistic emphases for what Summerson considers to be underestimated, than a belief of total structural dependence upon symbolic imagery. In the rest of his references he seems to admit that the form of architecture is affected by different influences; by stating for instance, that the vaulting ribs are not just a reinforcement of the angles of the vault, but they are an aesthetic intention, his use of the thought "not just" reflects that the structural features of the Gothic form are well recognized by him, and that what he is implying is that this form is an aesthetic as well as a structural triumph.

the actual form of the Goth aedicule what attracted his attention, however, by relating it to all kinds of canopies he necessarily causes us to confront a mental concept rather than a type of form or perhaps expressed better, an idea rather than an image. The aedicule as a concept is not tied to a fixed formal image; though an image necessarily arises as these artifacts are identified; but being a conceptual category, the aedicule is basically an idea, cognitive nevertheless, into which a variety of shapes can conform as long as they fulfill aedicular-artefactual features: We identify aedicules by its miniaturized scale, its ceremonial function, and formally by its open typology which is a vague or imprecise morphological definition that does not have a single image.

Once we have discussed that a mental category or concept does not need to carry a formal image beyond general typological demands (something true only for categories of objects since immaterial concepts do not have typology at all), we can turn to a discussion in which we identify images by themselves, with hopes to understand their emotional power once we have perceived them.*

Images** are elements of past perceptions, imagination is the synthesis of new forms and ideas from past experience, and imagery is usually what is understood by formal symbols arising from, or related to, unconscious archetypal recollections. By looking at the ocean, the movement of clouds or flames until we see forms in them, we see what the imagery of archetypes can be like. Symbolic images are somewhere in our mind, they may vary between one person or another in specific form but not in thematical features. But not all images are symbolic, and furthermore, images do not need to be symbolic to carry our emotions towards them when we perceive them. Images that "live" in our minds are an element of memory; they are re-created when we remember and associate. The mind depends upon images as well as on ideas to develop coordinated representation of what has been

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*Conceptual separations of this kind are useful to our work in as much they allow us to clarify some views, but in our mind they are intertwined.

**An image is a discrete picture in our mind, sometimes with a character or value associated to it.

cognized.

Perhaps there is no better account for the power of memory than the illustration of a situation in which an image is recalled with emotional intensity when the material counterpart to it has been lost. We have found a sensitive understanding in an account by Panofsky about the topic of death and memory of the deceased. This intense case of emotional recollection illustrates well the power of an image. The person who recalls, experiences repeated evocations of a person who is "somewhere" detached from material form. Panofsky tells us in his book entitled Tomb Sculpture (1965), that people who face the death of a loved one confront clearly a distinct perception between "that which perishes" (the material body which is devoid of its soul, its vitality and pacing energy) and "that which persists" (the memory of the person, shared events, smiles activities, visions of the person in various moods and so on). The mourner who confronts a change in his/her relationship with the person lost keeps on experiencing evocations from the earlier living person but these are just images without materiality. The insubstantial image is not a part of the dead body, it is a part of those who remember, irrespective of their belief in spiritual life. It lives, if we can use this word for these intense recollections affecting our emotions almost as actual sensing (and perhaps more), in the minds of those who recall it. It is carried with them wherever they go. Pictorial art immortalizes images becoming perhaps maintained socially through time. "La Gioconda" is an image for all of us and many generations before us, of a person we have never met but who once existed. The sensitivity of its artistic expression is passed by means of a visual act, to memories who carry its image and provide it with traditional value. We can use in this case Panofsky's phrase "that which persists", because this is exactly what is going on with the much treasured image of this woman. It best illustrates the transcendence of human memory, and helps us comprehend the power its image-elements can have through their capacity of eliciting emotional responses. These impressions in one's memory act as flashes coming back when we may not be even

thinking of them. Involuntary recollection is probably the result of the symbolic or emotional power of certain images that lie in our unconscious. The changes that this causes in our disposition and emotionality should not be underestimated.

We must admit that it is not always possible to ignore modes of viewing and reacting to forms that are akin to persons. Images outlive time by occupying the minds of more than one generation, they are visual information kept within memory and in representational materials. Replication usually changes images in time; this transformation requires that images exist in human minds, that they are carried to different places. When the image becomes a phenomenon of this sort, we have in them the expression of many minds.

C. CLARIFICATION OF THE DISCREPANCIES THAT ARISES IN THE VERBAL EXPRESSION OF VISION

The significance of symbolic form can be seen by exercising sensitive attention to form itself and what it recalls. The ability to envision this information may vary according to personal willingness to dedicate time and energy to this exercise and it may be clouded by a variety of associative situations, i.e., negation of formal recollections. Notwithstanding the archetypal morphology of built form should potentially be perceived by all.

Collective inclinations for given architectural prototypes can in fact be detected in people. However, these manifestations are unfortunately undefinable and incommensurable. The field of architecture invariably touches these issues but this fact makes it very difficult to gather knowledge about public preferences. A major difficulty in observing convergence of public taste is that,where there is agreement in visual preferences, there is divergence in personal explanations for the choice. Verbal disagreements arise from the fact that we have individual points of view. Widespread visual preferences are based on cognitive habituations on traditional conduct -- which inclines people to regard the forms with cultural significance -- and of course on common

sense. But preference on the basis of common sense is always applicable to explain any architectural taste. In this context a style is accounted for by the advantages it offers, and since all objects of utility offer expedient attributes, any kind of architecture is likely to be one of these.

Traditional buildings have an advantage over novel architecture whenever the two types face comparison. They are familiar forms. This factor of familiarity incorporates bias in evaluations.

The psyche associates familiarity with a cognitive sense of acquaintance and relates it to notions of understanding and even friendliness. Thus one would expect that a condition of familiarity is psychologically favored. Absence of familiarity is emphasized in some novel forms by absence of physiognomic cues. Vision is organized (physiologically) in a way that allows individuals to identify the environment and its stability correctly; cognitive hierarchies organize objects in view by distinguishing in them discrete cues that identify them. For example, our attention is hierarchically driven to specific areas such as the top of the object, its front and enframing cues. Flanks, rear, details and lower areas, are usually secondary. In buildings we tend to identify roof, facade and enframing elements. This is physiognomic seeing.[17] Rarely people would focus first upon parts such as articulations of members. A specialist trained to see these details for whatever reason may do so, that is true; his/her aim in this case is to pay attention to morphological relationships that reveal particular information; for most people, nevertheless, physiognomic seeing is the usual mode.

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[17] Langer, in Mind: An Essay on Human Feeling, 1972, talks about physiognomic seeing. She defines it as the immediate reception of expressive value in visual forms (P. 294). For her, the finding of semblance of gesture in the configuration of objects is an intuition. An further ahead (on P. 294), she talks about symbolic content of physiognomic seeing. The forms seen in clouds, trees, rocks are a manifestation of physiognomic seeing. Probably earlier than conceptual use of symbols, this is a phase of symbolic appreciation that goes beyond a functional perception of forms.

The values by which the development of design advances can shift from emphasizing the traditional and familiar visual character in built form, a physiognomically oriented trend, to the more intellectual visual aspects derived from attention to abstract elements.

Apart from design shifts that in the search for novel aesthetic maxims may leave behind physiognomic appreciation, there are ideologically based reasonings that can confuse the physiognomic perception of forms. There are historical examples that illustrate the development of ideological ties in design. The design for St. Peter's based a Greek cross plan done by Donato Bramante in 1506 is a case in point. The expectations of the clergy, operating within the sphere of known images, rejected Bramante's design and requested a Latin cross plan which had well established significance.

Although centuries before, during early Christian times, architects designed churches with all types of cross forms while searching for a suitable plan, this was not the case during the Renaissance. Such freedom could not be exercised if the church was nothing less than the seat of Catholicism.

There are numerous historical examples of an educated public as a power elite exerting ideologically-based demands on the form of critical designs. The layman may interpret a chosen form of architecture within his own ideological frame of reference. He may seek to match spiritual values with material form; something that contributes notability to built form. But because values and views vary so much, the effect of different ideologies on architectural interpretation has caused multiplicity in allegorical explanations of meaning, thus clouding the symbol inherent in the form.

The multiplicity of ideologies associated with architectural forms complicates evaluation of symbol, which, on the one hand is viewed physiognomically and on the other is understood by value judgments. Obviously this multiple evaluation is involved to a large extent in the various rational foundations of different persons in opinions of taste, that cause even the convergent choices to

appear to vary. People thus feel they like the same thing, i.e., traditonal built forms, out of coincidence.

Diversity of argumentation in circumstances of convergent taste illustrates two points: at one level, verbalizations are variable since their conceptual basis is backed by personal value sources; and, at another, information conveyed through this means of communication has a different effect than the information perceived by vision. A certain notion communicated by different channels of understanding acquire different dimension and potential. Dealing only with these two means, verbal-aural decoding and visual understanding, it can be stated that for any given message, the spectrum of informative notions conveyed by one mode is not equivalent to that conveyed by the other. In addition a verbal statement can rarely reproduce the feelings associated with actual experience, and in this sense it is imperfect and incomplete. Thus, in our study, it becomes necessary to somewhat illuminate the problems created by the discrepancies in the two modes, and how these interferences can negatively affect the sensitivity of a viewer upon being presented with descriptions of forms under view.

1. Visual and Verbal-Aural Reception of Information

The quality of information and its content is affected by the form in which it is presented to the mind. Whereas speech codes convey primarily ideas, visual cues do not always or necessarily take the form of ideas when perceived. Vision can impact emotions, as when something is considered meaningful by the viewer. It will accomplish this with much greater depth than a verbalization. Vision is usually a more direct reception of information*

We need to resort to words in visual analysis because these are essential to ensure the com-

*Unless a message is trasmitted by an object whose form bears no relationship with it. For example, a flag whose image we identify with an abstract concept such as a nation.

munication of abstract ideas, and it is only through aural-verbal expression that we can express the significance of the development of archetypes of built form, and beyond these, of the use of these as motifs. But we face difficulties in the fact that the perception of aesthetic form affects us tacitly, silently and internally; it causes a type of change which we cannot recreate in words. For example, what strikes us as beautiful moves us in a certain perceptual way; if, instead, we read or hear about it without having the aesthetic context available to our vision, we simply learn that something is beautiful; but its beauty has not touched us. It has not made us vulnerable to its power in any way.

2. Verbal Problems

As we have said, verbal descriptions of built form account poorly for the way in which it is perceived. A statement, that describes objectively physiognomic seeing, can be verbally (and perhaps logically) ineffective and thus incline a reader to ignore its content irrespective of the authenticity of the impact described. We provide next an example of a statement and the problem it faces. Then we shall present the morphological context in which the visual cues are found. The observation has been derived from the forms of Gothic naves and bishops' head-gear. The statement is the following:

> The contour of some head gear of high priests celebrates the contour of the form of the nave of the cathedrals in which they officiate.
>
> (See Figs. P (1) and (2))

The statement does not account for the ceremonial context and majesty evoked by the event in which these forms are found. Vision, instead, does account for these. This limitation can bring corresponding criticism. Nor does it say anything about the impact of the architectural space

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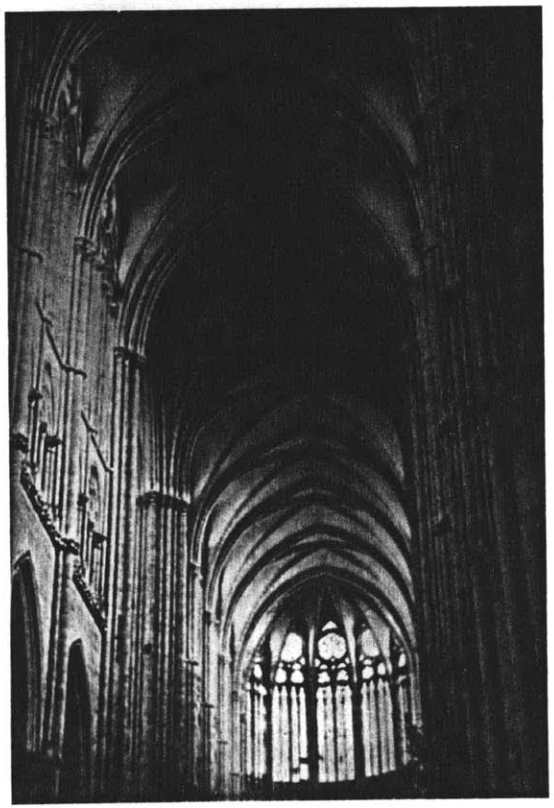
Fig. P. Formal complementarity between a Gothic nave and a bishop's head gear.

(1)



Amiens Cathedral, interior of nave, view toward apse, French Gothic, begun 1220 (Marburg-Art Reference Bureau).

From P. Frankl (in Spencer, 1976), P. 333).

(2)

"The Bishop" Florentine School ca. 1300. Detail from an art print: Athena Reproductions London. (Alternative views provided in appendix).

of the nave or about the significance of the Pope or Bishop on earth (the representative of God and the head of the Church). The view contained in the statement thus shows a simplicity that, in effect, grotesquely misrepresents the complex character of the formal elements involved in officiation. Many people would not associate these ceremonial forms with anything that would bring them into analogy with earthly themes. There are feelings of respect and ceremony involved that make people distrust what appears at first sight an imaginative system of "primitive" symbols, especially if these are attributed to this kind of form of the Gothic development which is characteristically mystical and refined. On the other hand, for a reader who is informed about the origins of the cathedral nave and the head attire of high priests, this statement may appear to disregard the history of the forms. The two forms occur separately and in different ages and cultures. A sense of "disregard" for origins in the statement is nevertheless a connotative value attributed to accounts of this kind.[18]

Arguments such as the above show the penalty imposed to a brief account by verbal inadequacy. If we compare the contour of the head gear of high priests and the naves of Gothic cathedrals (see Figs. P (1) and (2)) we can clearly visualize the analogy of the statement. A complete understanding of symbolic form needs knowledge about both its background and its present visual

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[18]This ecclesiastical head gear developed its form around the eleventh century from the early medieval papal tiara (Britannica, 1974). It has a tall pointed form whith peaks in front and back. It received the name "miter" which is a term coming from the Latin (and Greek) mitra. This word is used in the Septuagint (a Greek translation of the Old Testament dating from the third century B.C.) as a reference to an oriental turban thought to be the headdress of ancient Jewish high priests. The various miters worn by the Pope today, in different officiations and public appearances, show slight variations in proportions, contour, height and width. Both, the angle of vision of an object of this kind and each instance of replication seem to be responsible for these differences. The object is flexible for adopting evolved shapes. However, throughout time and multiple replication, a general image has been maintained.

effect. Whereas one criterion of investigation provides necessary and correct information about the form, the other helps to understand the actual impact of the form in the public.

During the middle ages, extensive replication of contour-form was practiced so as to create visual rhythm; this is present in architecture and in the miniatures associated with it. It is not unlikely that ceremonially associated objects and forms may be influenced by this phenomenon. The miter, although earlier than the Gothic vault, offered some resemblance to it, that is it was appropriate to generate the match. The different origin of the two components actually does not inhibit this possibility. The design of clothing can match the rhythm of architectual form.

One of the problems revealed by the critical treatment of the statement presented is the variety of connotative values that can be attributed to sentences. Words are symbolic in themselves and may always incorporate the idea that they hide intentions. The nature of all symbolic communication has this multiplicity of meaning. The pure evocation elicited by the form is a reminiscence, subtle in explicitness that is independent from the connotations contained in its verbal description.

Parallelism of form of the kind we are studying is perceived by viewers in a way we can best define as "semi-conscious". A viewer may be aware only of seeing an intensely harmonious organization of forms, and although he/she senses that the form carries a greater substance than is evident, this substance remains unknown without further analysis. In our example, the morphological symbolism uses complementarity of shape between the nave and the bishop's head, probably as a reference to conceptual complementarity between the heavenly space of the nave and the sanctity of the priest's image. Such morphological match of interlocking quality intensifies the grandeur of the ceremonial context as a silent message.

It is on the whole interesting that just as there is a common sheltering function, between

architecture and miniature containers, so too in this case both the nave and a personal individual head cover are sheltering objects. The form of architecture indicating its fundamental function is appropriate for some head-gear too.

To a large extent this study unwittingly parallels views that Kaschnitz developed earlier. We have described a set of forms that involve morphological analogues in a ceremonial context. Just as he recommends in his views about the structure of art forms, we have observed the configurations objectively and have focused on the intrinsic organization of the form. Then, as Kaschnitz would have done, we have observed its symbolism (that is, the morphological meaning rather than the allegories attached to it) and, have also thought about the effect of the forms upon the observer. All of these views on structuralism are found in his book Kleine Schriften zur Struktur, Band I, 1965, P. 198.

3. Example Involving the Structural Vault in Symbolic Relationship with the Human Head

There are other instances in the history of architecture where the vaulted or domed space of a building and the forms associated to it, evoke a symbolic thought that the dome is a cover for the head. One example is a contemporary, rather than a medieval case.

In the 1920's, the architect Erik Gunnar Asplund designed a project for the Public Library in Stockholm, Sweden. In his first scheme, he used the form of the dome in conjunction with the statue of a bald head right underneath its concavity. (See Fig. Q) From the front it is possible to see both the profile of the head and the structural dome high above. This symbolic content was noted by Stuart Wrede in The Architecture of Erik Gunnar Asplund, 1980.

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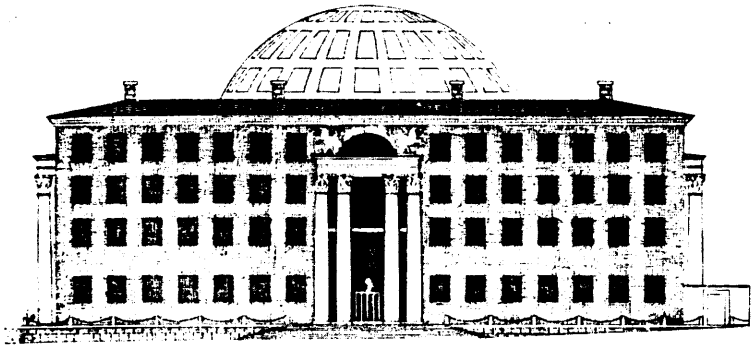
Fig. Q. Symbolic complementarity between a domed building and a statue of a bald human head.



First scheme of the front facade.

Stockholm City Library, Project 1921. Elevation and section, 1:200, repr. I:600.
Bibliotheque Municipale de Stockholm. Project de 1921. Facade.

From Holmdahl, G., 1950, P. 135.

> In the front facade of this scheme, ... there appears, silhouetted above the entrance, a curious symbol, a bald head in profile with a projecting goatee for which there is no known explanation. I would suggest that in fact it represents the key to Asplund's symbolic vision of the design, that he conceived in the building as a metaphor for the mind and that the almost spherical rotunda symbolizes the interior of the cranium. The visual analogy between the head and the building in section, is revealing in this regard. In a perspective drawing of the entry, we find a floor mosaic of an emaciated body with the Greek inscription Gnoti Seafton, or 'Know Thyself', a detail that would be consistent with this interpretation.
>
> S. Wrede, 1980, Classicism, P. 109.

This example belongs in the twentieth century, it is the work of an architect who looked at classicism and the vast majority of his schemes, being very much adapted to the arising needs of the machine-oriented age, were designed with a certain design continuity with both vernacular and traditional forms. Much of Asplund's work is evocative of architectural elements with which people were familiar.

D. THE VAULTED MOTIF OF ARCHITECTURE

A symbolic concept of antiquity taking the form of a helmet is discussed in E.B. Smith's The Dome (1950). It seems to have its origin in various cultural traditions and it became connected with Christian writings. The reported presence of the helmet as a symbol may suggest an archetypal character in the form, although this does not validate it as a cultural universal. The semi-spherical concavity of the helmet and its protective action (critical for life in the wars of the past) make it indeed an appropriate object to acquire substantial representational value in any culture.

The Hittites associated the helmet with royalty and cosmic power. It was a celestial symbol. This theme seems to be manifested often in diverse allegories. Rounded and spherical forms are repreatedly attributed notions of immortality, heavenly meaning and greatness. Smith gives sources that describe the sky of classical times as a domical helmet[19] and he says that Cratinas compared the helmet of Pericles with the cupola of the Odeon in Athens[20]. Later, the concept of the celestial helmet combined with another widespread domical symbol, the cosmic egg of the cult of Dioskouri. This is not surprising since a domical concept evokes more than one associated form. The multiplicity of meaning in formal symbols is manifest over and over in the records gathered by Smith.

Important for our study are Smith's cited reference in which the ancient head-gear of Hebrew high priests, the miter, is symbolically associated with the heavens.[21] His statement refers to this headdress as being "domelike". He also mentions that there are two poems in praise of Hagia Sophia in Constantinople in which the heavenly helmet is associated with the dome of this church (Smith, 1950, pp. 78 and 79).

According to this study, the persistence of beliefs surrounding domical covers were responsible for the popularity of the dome (P. 79, 1950). Smith puts forth the point that ideas of roundedness have a primary importance in the construction of domed architecture. His emphasis on the influence of symbol over structural form is based upon the fact that domed forms of minor manufacture existed much earlier than their structural counterparts. He reminds us that domes are more than just utilitarian vaulting. We fully agree with this view and respect it; we are certain, nevertheless that structure is by no means subservient to these conceptions, even if it arose later. It seems important in all of this to identify what is really happening when structure can so neatly

[19] Cook, Zeus, 11, 385 f; Eisler, op. cit., I, 64, 67; II, 582, 677.

[20] Plutarch, Pericles (Loeb ed.) XIII, 43.

[21] Josephus, Jewish Antiquities (Loeb), III, 1976 ("hemispheric lid"), 187 (symbolizing heavens).

be attributed the rich conceptual values of roundedness. This notion, as a source external to structural purpose, adds to it and makes it a remarkable case of meaningful built form.

We offer next a succession of structures indicating architectural notions by their formal cues. They will be presented in a chronological order. The peak clarity of the symbol appears in Gothic times.

Our first image is a funerary urn on top of which the helmet of the deceased person has been placed. The urn belongs to the Villanova culture (Roman settlement near Bologna; Kaschnitz, September 1961, P. 79). (See Fig. R (1).) Once a cover and protection worn by the warrior, the helmet evokes the fact that the urn contains a person. The helmet (rather than another object, e.g., a sword) recalls the man's head (his personality, his mind), especially due to the way in which it covers and fits the urn. The second figure of our series is one of the many structures serving as cinerary urns inspired on domed structures. (See Fig. R (2).) This one is late Roman Republican.

There seems to be symbolic homology in these two cases. In one, a helmet evokes the late person's head while in the other, a small dome, open at the front in the manner of a helmet such as that shown in the statue of Figs. R (3) lets us see the statue of a head. In the versatile realm of symbol there seems to be one theme underlining the representations of both helmet and dome (probably arising from an archetypal character of rounded cover acquired by the two forms). These are different versions of the same evocation. Thus by paying attention to this manifestation in a sequential comparative order, we visualize things that were not necessarily obvious before.

There is a kind of representation of the architectural image that evokes the role of architecture as a stage (see Fig. R (4)). All of this is implied visually. In this study we are not examining the story these representations are meant to tell, but this example was meant to represent a culturally known event. This role of architecture is very interesting and revealing. When we

A SYMBOL OF A FUNDAMENTAL KIND Figs. R (1), (2) and (3)

Fig. R (1) Urn with bronze helmet from the pre-Roman Villanovan culture (undated) This people who inhabited what today is North Italy (centered at Bologna) started migrating to Etruria from 1000 B.C. onwards. This urn is probably pre-Etruscan and certainly pre-Roman. Archaeological Museum of Florence. From Kaschnitz, September 1961, plate 11.

Fig. R (2). Cinerary urn inspired on the image of a dome. A.D. First Century. Marble. The image is said to be alusive to the cosmos. Late Republican or Julio-Claudian. From Portogruaro, P. 7, 1975, Calderini.

Fig. R (3). Apparently a funerary statue of a warrior (no date). Museum Antiker Kleinkunst in München. From Kaschnitz, September 1961, plate 10.

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Fig. R.(4)

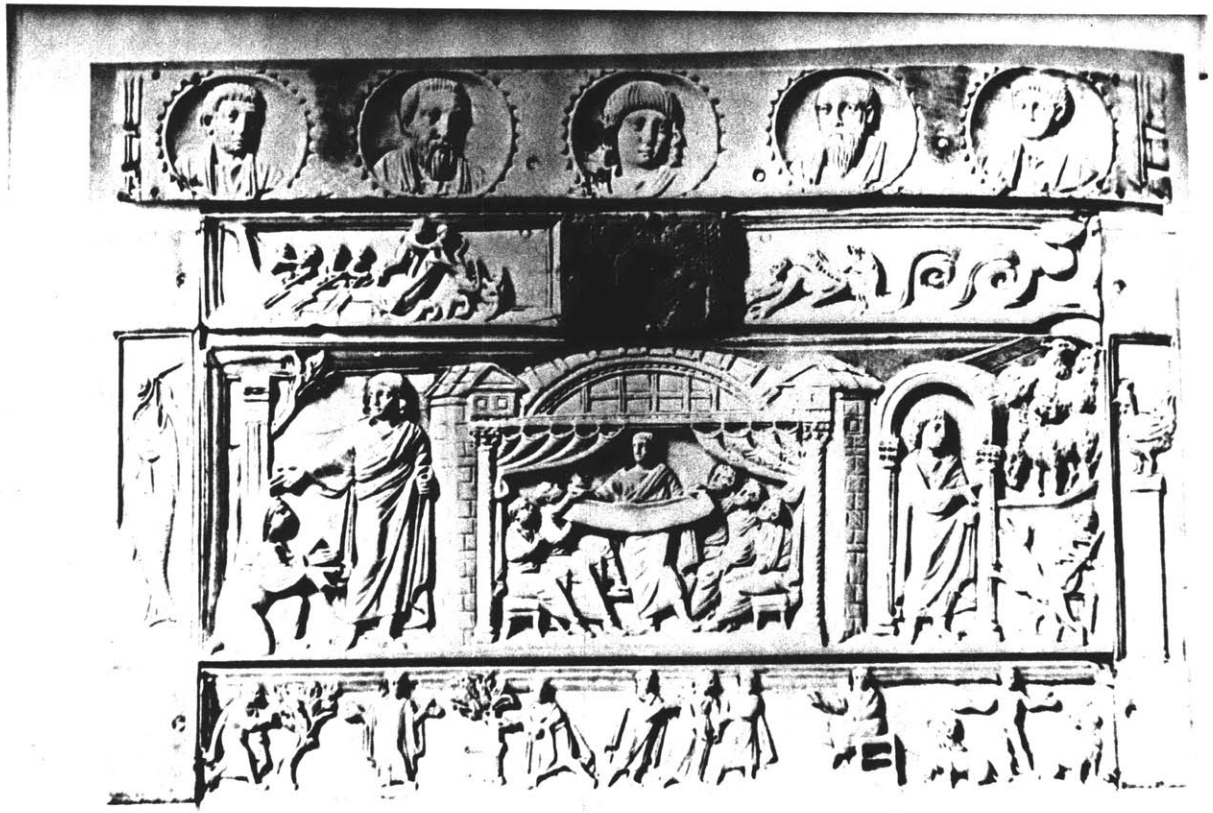

Fig. R (4) (continued)

Ivory Casket, Brescia, Museo Civico. Second half of the fourth century.

This casket contains a relief representation in which architecture is used as a motif. In it, a group of persons occupy the space between two columns and a beam across these. From here, curtains hang. The upper part of this central motif represents some kind of vault. This domical structure and the supporting stone abutment at its side are meant to be the actual structural system that shelters the group in the realm of this representation. The columns are ornamental. There are too, house-like tops decorating the abutment.

At the right side of this structure, there is a niche sheltering one individual. The dimensions of the structure are only slightly larger than the person. In real-life-architecture a booth of this size would be too small. The body of the person is enframed by the columns whereas the head is enframed by the half dome. These columns extend to the height at which the person's neck is, where the capitals support the vault. The role of the architectural parts echo the supportive function of the human body. The capitals are the base of the vault as the human neck is the base of the head. Both living and structural system are composed of supportive and supported parts. The two are morphologically complementary to one another. This niche, unlike real structural domes, has an opening at the front in order to allow the entire frontal-facial region of the person to be in contact with the outside while his body is protected by an encasement of close dimensions and complementary form.

In the sphere of the motif, the scale of architecture is proportionally too small and tight as compared with true built form. This effect is a common stylistic trend of early Christian motifs. A trend of this kind could be explained as originating in a poor sense for proportioning themes, during earlier stages; later the effect becomes established as a stylistic trend. However, we are still inclined to believe that any such effect, once it can be corrected, needs symbolic formal reasons to be maintained and we believe this is the case here. The example we have in this casket tells us the degree of skill of this craftsman both in the miniaturization of the much smaller theme underneath this one, and the fine general finishing of the carving. The unrealistic dimensions of architecture have, nevertheless, not disturbed the carver. It seems that the "mistaken" scale offered alternative formal value to the motif, relevant to information of architectural messages, even to craftsmen who were skilled to minaturize more proportionately. We

Fig. R (4) (continued)

sense visually from these forms, that they contain what Summerson detected in aedicules and actual vaults (1963), that they carry a fundamental symbol.*

Figure reproduced from W. Volbach, 1962. (The piece is believed to have been carved in Rome, it belonged to Roman aristocracy, Volbach, P. 27.)

*Although correct proportioning as a normal practice develop later in the Renaissance, a lack of this trend would not explain such widespread representational construction of architecture.

look at this motif, it seems to remind that in fact buildings are the "stages" in which activities are carried, or put in another way, where roles are performed. In the past, niches, sculptures and its representations, showed thematically specific social circumstances.

Our next example represents the enframing of a human group by an architectural motif of the arcuated type. This is a sixth century reliquary found in Spain. (See Figs. R (5).) In it, the tallest person is enframed by the central and tallest arch. The tope part of this motif recalls a cloister.

In Languedoc, in Southern France, there is a bas-relief in marble at St. Genis des Fontains, France (see Fig. R (6)) in which the architectural image tightly enframes the figure's entire body. All the capitals of the columns are located at the level of the neck and the lower part of the columns taper and bulge according to the form of the bodies they are enframing. This example dates from the eleventh century.

The next example we have selected is the Romanesque motif of the Adoration of the Magi (see Fig. R (7)). This is an English-Norman work in ivory carved ca. 1140. It has a building image located above the head of the virgin. The building however is too small for a person of the size Mary is depicted here. It can be seen as a protective canopy, especially when we observe the supporting elements: they are basically two slender columns that taper upwards like a ceremonial pavillion carried in processions. The architecture on top however is very detailed; it includes a roof of shingles, arches and large square stones. The oversized arch that crowns Mary's head holds a cloth that curves as a kind of curtain on top of her halo. This cloth, is evocative of the triangular head cloth worn by saints and the Virgin herself in many depictions. In addition to this, Mary has her personal head cloth on; this is a rhythmical replication of this cloth-theme in the same motif. The complex formed by the curch-top image, the suspended head cloth and the slender columns is a "crowning" shelter in which certain forms indicate it belongs to the Virgin (i.e.,

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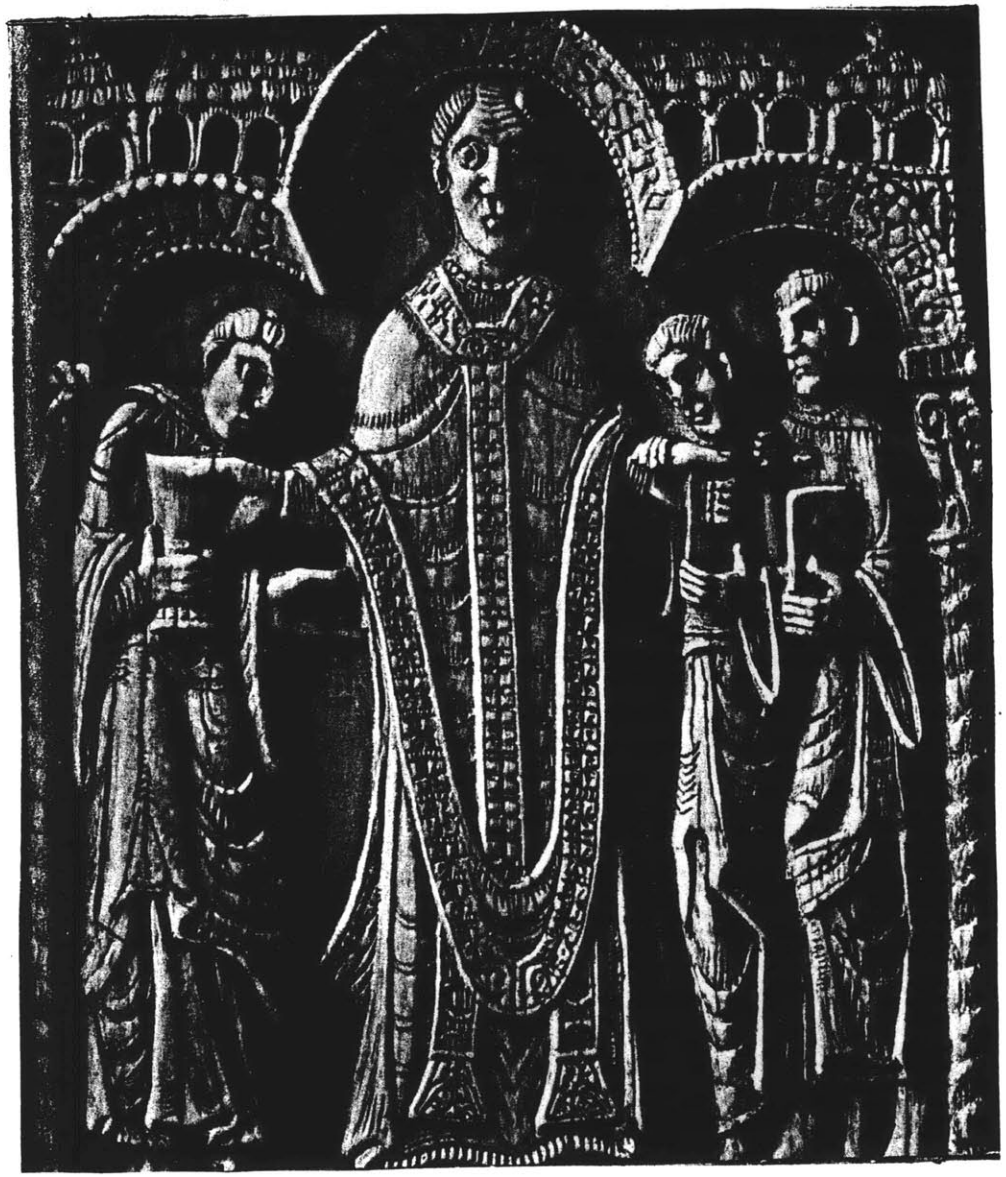
Fig. R (5)

Motif of the Reliquary of San Millán (S. Aemilianus). It represents San Millán with San Aseolo, San Atrocio and San Sofromo. It dates from the times of the first Benedictine cloister names San Millán de la Cogolla which is in Rioja, Spain. It was founded in A.D. 537 by a hermit who died in this place. He became a known saint of medieval times. The cloister of San Millán of today, dates from 1504-40.

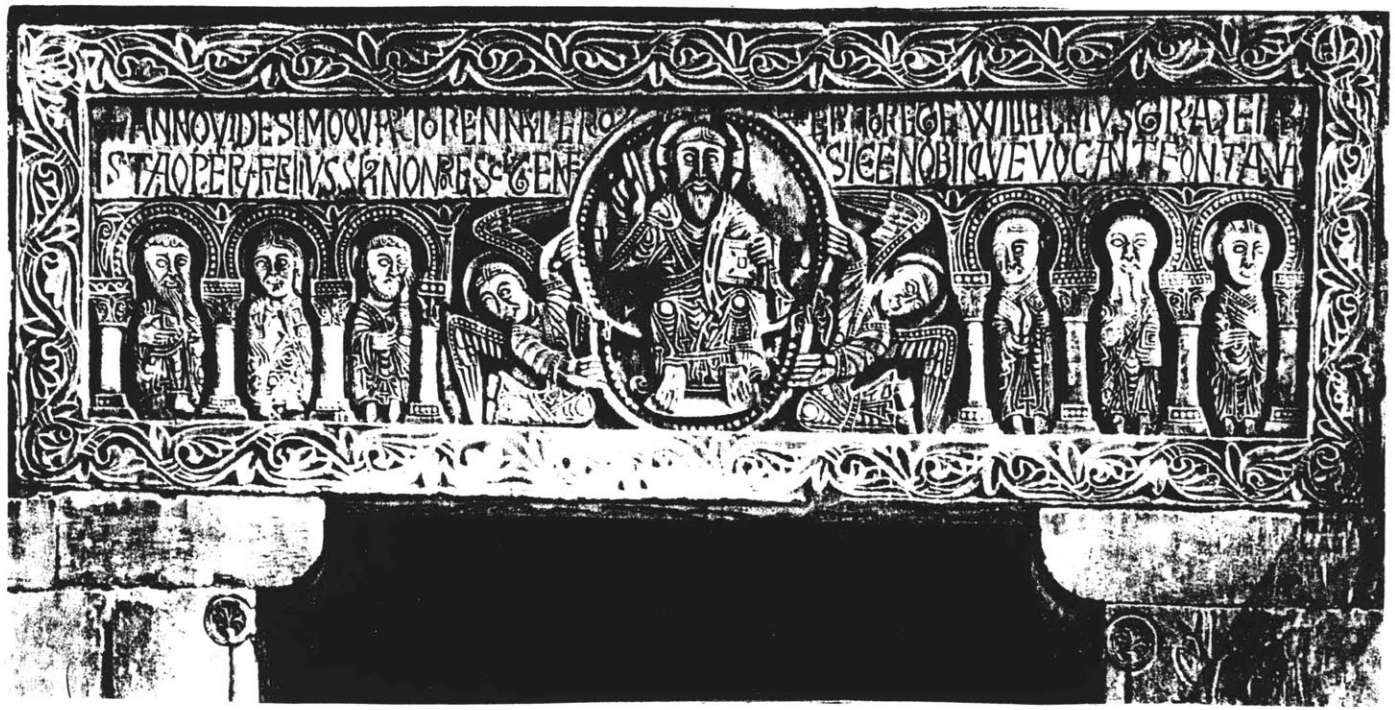
From V. and H. Hell, 1964, P. 189, plate 111.



A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (6)

Bas relief in marble at St. Genis des Fontains, France. Romanesque. 1019-1020. The allegory represents Christ in majesty in a mandorla carried by two angels between the Apostles; undercut sculpture imitating the technique of Carolingian goldsmiths' works on altars. The panel is almost two-dimensional. From H. Busch et al, 1965, P. 63.



her cloth is part of the architectural image).

As we advance in time, the sheltering character in some medieval motifs acquires more clarity. For example, in Cluny, France, the capitals of columns start showing human figures under a sheltering concavity (see Figs. R (8) and (9)). The shape of the capital is ver- appropriate providing some kind of awning for the images underneath its top part. In Fig. R (9), which was carved in the early twelfth century, the human images are represented in an eloquently vulnerable attitude. Their nakedness is probably the strongest indication of vulnerability, which is also suggested by their attentive expressions, the position of their bodies facing out, and their hands holding on to thick branches. (The capital may be quite high and this fact may have favored a theme in which the images have to grasp firmly as if they were insecure at the edge of a precipice). There are no clear vaulted spaces in these motifs. Our reference in this case is to point out the sheltering evocation of the theme. For any motif, there are various sources of inspiration as well as formal facets in which there is a fusion of images with themes. These sheltering representations done at a slightly later time in French stone capitals seem to support our view. The sheltering theme was combined with vaulted images as more instances of reinterpretation too place in France. (See Figs. R (10) and (11).)

In the mid-twelfth century there are many examples of these motifs. See Fig. R (12) also in France (Conques). Human images are tightly encased by vaults in the representation of the tympanum of the church of Ste.-Foy. By the end of the century, we have what has been termed Romanesque Classicism. A very interesting example of the theme is given by a statue of King David in a niche (Fig. R (13)). It has a smaller architectural motif above the head. This is also a case in which an arcuated motif covers human heads. The imagery informs three levels of replication of the motif in one sculptural context. The first one is the niche which is King David's vaulted space. The second is the ritualized little architecture above his head suggesting a mildly arcuated

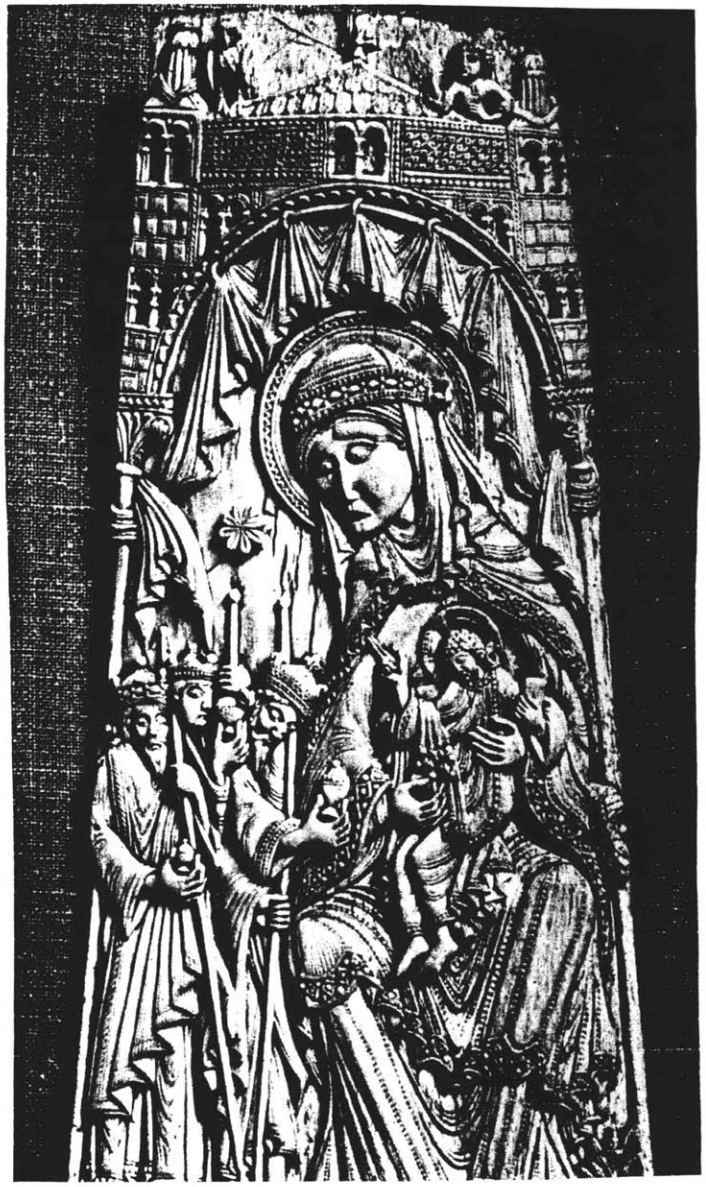
A SYMBOL OF A FUNDAMENTAL KIND

Figs. R (7) The Adoration of the Magi

The ivory figure was built ca. 1140 and measures 137 millimeters. It is in the Victoria and Albert Museum.

From H. Swarzenski, 1967, plate 125.

Bibliography: M.H. Lonhurst, English Ivories (1962), P. 23, No. XXII - A. Goldschmidt, Elfenbeinsculpturen, IV (1926), 14.

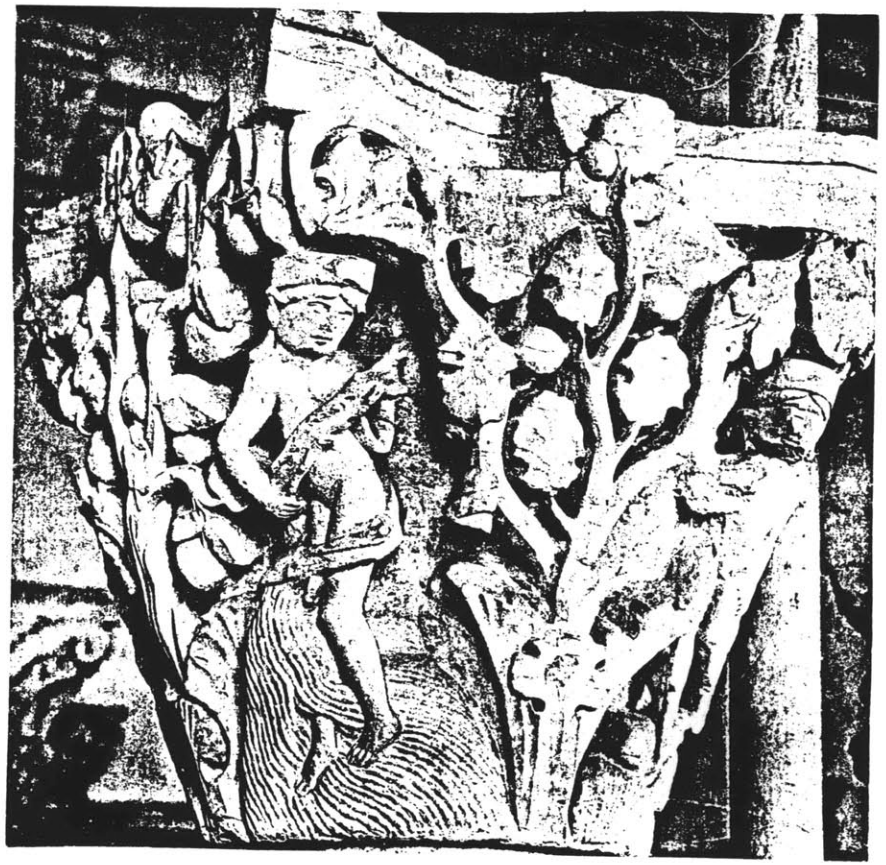


A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (8)

Capital from the eleventh to twelfth century, France, Cluny. "The Four Rivers of Paradise". The date can be guessed as just before 1100 judging from the technique used for carving. The design is essentially two-dimensional drawn on the outer surface of the stone. This kind of work is described as opus planum in a writing by Gervas of Cantebury, from three-quarters of a century later. He uses in this reference the symbolically appropriate term securis in a sense that has not yet been determined. The author believes it is a reference to a cutting tool although he admits Gervas of Cantebury had no interest in reporting techniques (one of the meanings of L. securis is "to cut").

From W. Oakeshott, 1959, Plate 23 A.



A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (9)

Stone capital in St. Benoit sur-Loire.
Early XII c.

From W. Oakeshott, 1959, Plate 22.

A SYMBOL OF A FUNDAMENTAL KIND

Figs. R (10)

Capital in the convent of Nazareth. Carved by the Master of the Christ of Plaimpied. A drill used here as a tool.

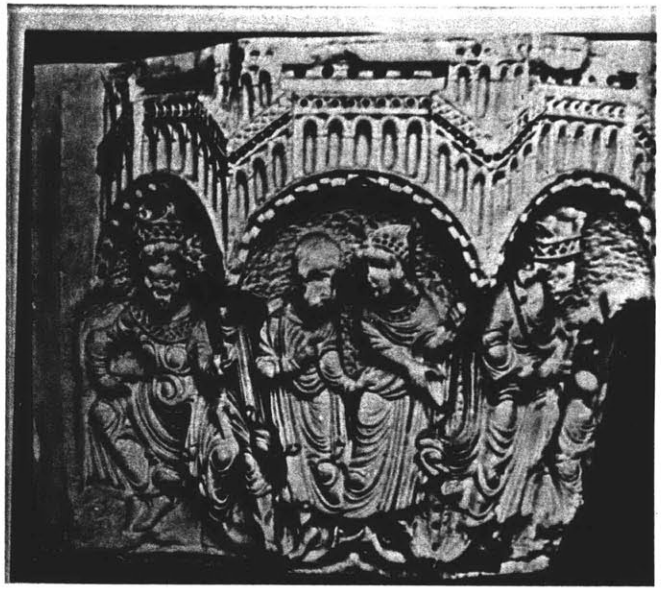


Fig. R (11) (next page)

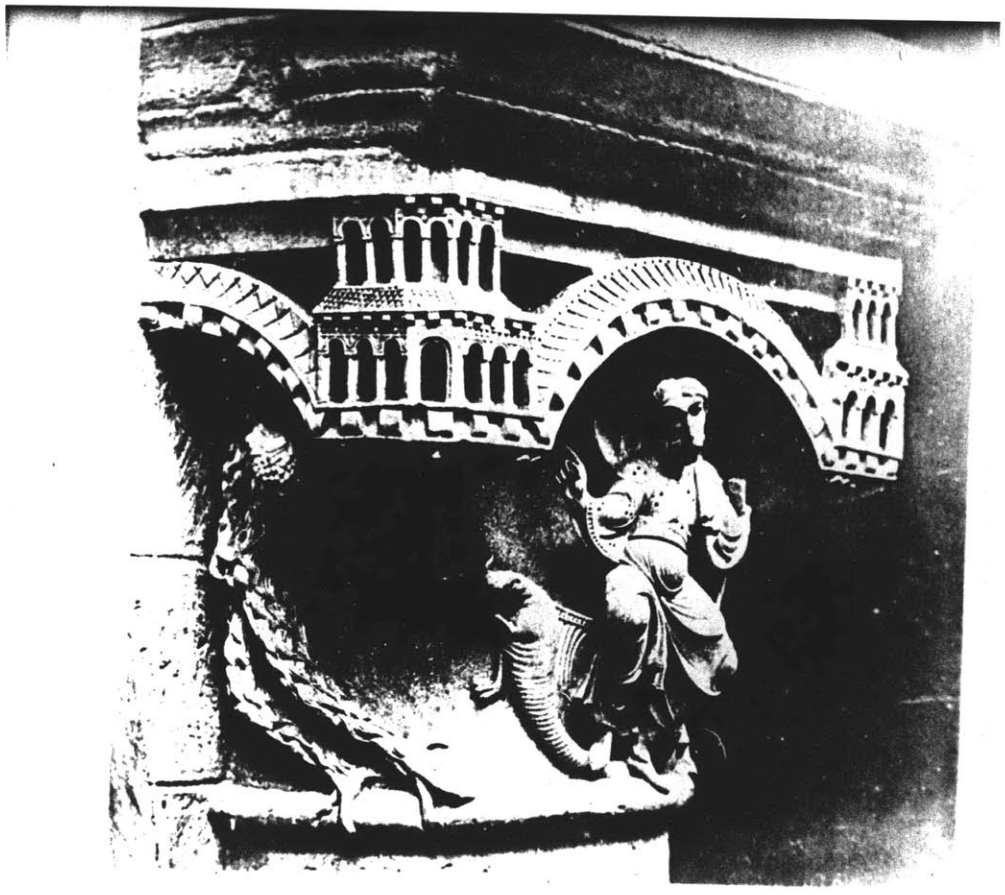
In all the capitals at Nazareth and Plaimpied (Figs.(10) and (11) as samples for this work) the human images are shown sheltered by vaulted concavities. On top of these there are architectural forms. The persons are in an attitude of either bending, sitting or crouching. This imagery reminds us of the concept that Summerson calls "the idea of the little house".

These sculptures are done in a characteristic design tradition that stressed the linear element and the plane forming waves and eddies. This is more evident in our Fig. R (11). The tendency seems to have been inspired in Bynzantine miniatures and became one of the stylistic trends of the Romanesque.

From W. Oakeshott, 1959, Plates 23, 29, 31 and 32; and from R. Huyghe, 1958, P. 233.

A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (11)



A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (12) Last Judgment, Auvergne. Tympanum of Ste-Foy, 1115-1125 (Conques).

From V. and H. Hell, 1964, Plate 46; and R. Huyghe, 1958.

A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (13) King David by Benedetto Antelami. ca. 1180-1190. West facade Fidenza Cathedral.

From W.H. Janson, 1977, P. 275, Fig. 375.

archway held by two columns. The third is the transformation of this arch into three minor arches that follow the contours of the heads (the two side heads are in profile and the arches follow their shape). The central head is one of a child and has a correspondingly smaller arch with shorter lengths. These vaulted forms are part of a building complex with an ecclesiastical character. The internal form of this urban complex is complementary in shape to the three heads.

In the thirteenth century the vaulted motif is similar but always becoming more eloquent. Tri-arcuated niches contour the shoulders of the human figure (this arching is known as the Gothic cusped arch). The next pages show this effec in Figs. R (14), (15) and (16). A remarkably appropriate morphological match between encasement and human image is shown by the winged angel in Fig. R (16). Also the halo of the two images is almost the same size as the vault. However, no matter how closely the sheltered and the sheltering parts meet, a certain amount of space between inanimate encasement and, animate creature, shows that the two are independent parts. The urban motif is often still present in this kind of theme.

The development of the Gothic style took place in the twelfth century. As we have mentioned earlier, this construction phase created the acme of clarity of the vaulted-shelter motif in sculptural form. In its representations, the statue, as a projection of the human figure, is crowned with ease by arcuated urban complexes above their heads. The imagery seems to indicate reciprocal dependence between humanity and architecture. The expression of the faces are beautiful and show intense serenity -- often referred to as the "arcaic" or "Gothic smile" -- (see Figs. R (17) to R (21)).

E. A PARADIGMATIC DIMENSION OF ARCHITECTURAL MOTIFS: The Context of Personal Cover, Engraming and Ornamentation.

As discussed earlier in this study, the image of some architecture may be used to represent

A SYMBOL OF A FUNDAMENTAL KIND

FIGS. R (14) and (15).

Fig. R (14) Reims Cathedral, Madonna. Right hand portal of the northern transept. ca. 1211-1212

From E. Panofsky, 1951, P. 135, Fig. 37.

Fig. R (15)Gothic cusped arch. Same church, Melchizedek and Abraham. Interior west wall. After 1251.

From W.H. Janson, 1977, P. 311, Fig. 422.

A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (16) Annunciazione basilica. End of thirteenth century.

From Portogruaro (Calderini), P. 105.

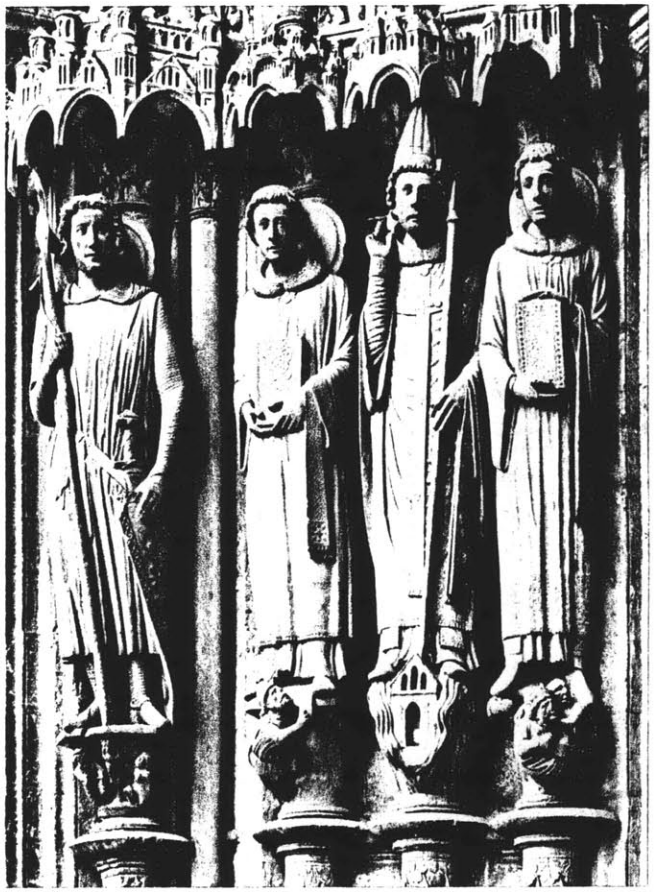
A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (17)

Notre-Dame, Chartres. Jamb Statues, south transept portals. ca. 1215-1220.

In this symbolic representation the miniaturized architecture above the statues is most of the times an urban complex. There are cases in which a form very similar to a crown takes this place. In this degree of motif archievement the symbolically protective arches open in two planes. Some of the Chartres statues have been placed under these arcuated forms oriented in a way such, that a tip of a central articulating corner is right above the figure's nose. This corner edge is done in these cases with a shorter tip. The morphological evocation seems to be one of an ancient helmet that has a piece covering the nose between arched openings for the eyes contouring the eyebrows (see Fig. R (18)). An ancient helmet of this kind is shown in the appendix section.

From W.H. Janson, 1977, P. 309, Fig. 419.



Figs. R (18) a and b Chartres cathedral, Jamb statues. From Branner, Chartres Cathedral, 1964 p. 35-6)

The miniaturized urban complexes above the statues sometimes have a simplified image; in some instances this image is a crown-like form.

Etampes, Notre-Dame: Jamb.

South transept, portal, left jamb: Apostles.

A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (19) Scenes from the Passion of Christ, Old Testament figures. From W.H. Janson, 1977, p. 309.

Here, the miniature groups above at the capitals, are sheltered by arcuated forms. Below, the center statue has a crown-like shaped aedicule, whereas the right hand statue has one with architectural form.

A SYMBOL OF A FUNDAMENTAL KIND

Fig. R (20). Left wall of central portal of the cathedral Santa María de Regla in León, Spain. The church was built over Roman baths (914-24) and was damaged by Saracen invasions and restored in the eleventh century. Later demolished in the twelfth century and rebuilt in 1199, 1255 and inagurated in 1303. These images were built in different periods up to the fifteenth century. This is the oldest Gothic church in Spain. The aedicules on top of these statues are a series of roof forms. From Hell,1964.

some status and convey certain notions. There are certain forms in head attire that evoke architecture although this reminiscence is not commonly recognized. That is, they are not normally thought to imitate structural images, but to be independent forms whose possible resemblance is coincidental.. The materials used and the scale of dimensions involved are different, but perhaps the most important reason their resemblance to buildings is ignored is that most daily life situations whether modest or ceremonial, require earnest and sober appearances. Any identity between a building and a hat would not be desired. Anything of this sort is obviously a custom, but not dress.

One of the most difficult issues in the study of these parallels is idenitfying the importance of these subtleties in the psychology of a culture. There is little or no human interest in enframing the face with the forms of architecture. There is only choice among fashions whose forms are favorable to personality, social role and physical features. Hence, the selection of fashions with architectural configurations or reminiscence may be the result of a choice done only because they convey an effect sensed to be favorable.

Head covering devices recalling architecture clearly do not derive from transition paths from structure to artifacts but from fashion trends, however, sometimes their extremely adaptable materials seem to pick up a reminiscence to well-known architecture. This recollection might be expected to be tied to various reasons; among these, perhaps important is the evocation of notability, sanctity or power. But aside these representations, it may be significative that the sheltering symbol of architectural vaults has been represented above the human head in so many instances in history. In headgear cases, there may be an effect of the variable architectural meaning involved. Symbol in built form is culturally attributed. In this case it may have been unwittingly transferred from structure to head-covering object. Again, this presents us with a case in which artifacts are endowed with visual cues that are familiar to something else.* Since both architecture and

*And again this points out to the cultural importance of resembalance for meaningful associations.

head gear are two types of cover (shelter forms), the evocative interchange between the two seems symbolically appropriate.

Head gear evoking the general configuration of buildings of importance can be found since Assyrian and Egyptian times (see Appendix). The helmet and the dome are the pair that evoke one another most intensely. The helmet is the most protective and perhaps utilitarian head cover of all time. Its importance for safeguarding the head may have been critical in its significance tied to life against death and hence immortality. Its shape is domical since it must enclose the surface of the head. Thus the coincidental domical form and the protective purpose present between the structural dome and this object links them both symbolically in more than one way.

There are as well other kinds of evocative pairs between head gear and buildings as for example the form given to the contour of some crowns, with the shape of the crenelation of fortresses (see Fig. S (1)). In this case there seems to be present an intentionally derived formal evocation of this form as symbol of defense and power. Other examples are given by head gear that evoke facades, spires, towers, arches and other structures (see Figs. S (2)and (3)).

The phenomenon of enframing the face as a need to emphasize appearance through design is complex and fascinating. Our focus has considered only the relationship of this affair to architectural form.*

*As history of societies has shown, symbolic dress can be exploited for class distinction simply because all possessions provide the opportunity to be luxurious and unique. It is not our convern to make judgments about these phenomena. Our work favors adornment because it is a social means to communicate critical visual information.

Fig. S (1) Italian illustration from the fifteenth century. German head gear and dress from the same period.

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Lodi. From Edizioni Calderini, Musei d'Italia-Meraviglie d'Italia. Illustration of a manuscript from the Cathedral of Lodi.

Left: In this representation the crown evokes the form of a fortress seen at a distance. It is held above the king's head right in front of the image of the distant castle (if we ignore perspective, this one is too, above the king's head). The contour of the crown is evocative of the fortress towers. There seems to be a symbolic strategic positioning of the images in this representation; there is likely a conscious symbolic intent.

Right: The contour of this hat and gown show a form that evokes the crenelation of towers, (in the tower this effect is utilitarian, in dress, it has no function).

Fig. S.(2) National folkloric attire of Burma and Caucasus.

Burma, Siam. The folk head gear evokes Siamese pagodas.

Armenia. Nineteenth century headdress evokative of a country church façade.

Fig. S (3) Tudor head gear of royalty reminiscent of a pointed arch. Fifteenth and sixteenth centuries.

Jane Seymour
Contemporary portrait by
Hans Holbein the Younger

Margaret Beaufort, detail of a portrait by an unknown artist; in the National Portrait Gallery, London

By courtesy of the National Portrait Gallery, London

Catherine of Aragon, detail of an oil painting by an unknown artist; in the National Portrait Gallery, London

By courtesy of the National Portrait Gallery, London

Margaret Beaufort was the mother of Henry the VII of England. Catherina de Aragón and Jane Seymour were wives of Henry the VIII.

IV. CONCLUSIONS

A single type of cultural artifact can admit variable shapes. Variations in an object are accomplished by the addition of decorative elements and by changes in the artifact's essential form that, at the same time, do not interfere with the functional aspects or cues by which it is typologically identified. The morphological variables recognized as styles, themes, characters, motifs, etc., are possible through these transformations. Most artifacts can therefore be designed differently. This adaptability in objects gives craftsmen the opportunity to change the form of objects and create variety within a type and at the same time transfer the form of one type of artifact into another, e.g., reliquaries of architectural form.

As artifacts are shaped with different forms through time, discrete configurations arise as their shape is adjusted to specialized ends. Some of these configurations are more readily identified than others and they come to characterize the entire type in people's collective memory. In this way, images arise associated with types of artifacts and their functional advantages and benefits.

The image that characterizes an important structure can influence the shaping process of another as s result of a desire to re-create form for many different reasons. These reasons can be technical, utilitarian, social (to convey a certain status, to replicate what exists elsewhere, and so on) or emotional (the contemplation of an aesthetic form, or its evocation by means of a miniature or a depiction). The replication of forms for evocational purposes offers a material means for transmission of information. Notions attributed to pre-existing forms can be reproduced in others and a formal order can be perceived in their shapes. The use of the images of stereotypical architecture as cultural symbols is an alternative usage of the forms of structures. In this respect, architecture acquires dimensions external to its utility, which are nevertheless important. In the interest of enhancing the profession's self-consciousness, this

level of usage needs to be considered. Its investigation means searching to understand the ways in which society habituates visually to design.

On the whole, attitudes favoring the continuation of certain images do admit change and indeed the literal perpetuation of images is rare. Images are most often reinterpreted rather than reproduced faithfully. The most obvious reason for this is that the person giving shape to an object aims to improve the form or to make it applicable to a new circumstance or scale. This effect gives "plasticity" to the image as it is represented in several artifacts. While some of its formal features are maintained, perfected and utilized, others become superfluous to the objectives of the artifact and eventually must give way to new forms. However, superfluous forms are not consistently eliminated but some are kept in reduced and simplified conditions. The continuation of superfluous forms is a kind of replication that is fully evocational. In the history of structures there are numerous examples of these formal rudiments (usually seen as decorative, although they are not the same since once they were functional). They are significant because they reveal that certain remnants of forms still have a role; undoubtedlly they function visually and probably this function is to evoke some of the qualities of earlier forms. Good examples of this effect are both the classical Greek-temple image used aesthetically in gates and niches, or in reduced form on walls (see appendix p. 136), and the blind arches of Comacine origin. Sometimes superfluous forms are eliminated as long as an ornamental form of similar proportions takes its place, but in it, the essential features by which the replaced form was identified have been eliminated (see appendix p. 145).

Due to the symbolic nature of all communication, the representation of notions by means of suitable elements and forms is always taking place. The main channels for communication are used in an intrinsically symbolic way. Speech, hearing and writing make alternative use of physiological abilities to communicate information.

Rounded forms created in culture are used to represent primordial notions of cover because their roundedness is suitable to symbolizing sheltering notions, both in terms of the associations of roundedness with maternal shelter and in terms of a mature sense of the human figure in relationship with a

cover (this association focuses upon the rounded form of the head apparently because artifactual shelter comes from above). Whereas the symbolic vision associating the form of architecture with pre-natal protection presents a case in which a primordial archetype is recalled, the miniature urban form above the human figure is a symbol that identifies architecture for what it is; perhaps also tied to primordial notions, i.e., survival (as an option for the Jungian numinosity or "spell" carried by the cultural archetype), but nevertheless mature in its representation.

As B. Smith's records show, rounded forms in objects seem to have existed before than in structures, e.g., in helmets. Thus, it is likely that the association of roundedness with the notion of a cover preceded the structural development of vaults. This hypothesis, nevertheless, does not affect or interfere with a structural origin for the form of the vault. The rounded form of vaults inherited an earlier symbolism that had developed associated to the roundedness of other objects. Such a conceptual addition to vaulted structures probably took place at the time they were perceived and identified. In the context of symbol all rounded objects may share the attribution of a given meaning. Therefore the fact that some early rounded artifact may share in common configuration and consequently meaning with vaults does not certify that their presence is an origin for vaulted forms. The shape of true arches, vaults and domes, was accomplished as a rational construction advance that provided spanning of large spaces and offered supporting features that were applicable to all kinds of works of antiquity. This kind of form, is actually a structural design that proved extremely successful in capturing attention. It satisfied both of antiquity's professional and symbolic pursuits. It offers a case of a structural accomplishment that became a form with a fundamental kind of symbol.

Each of the new phases in the architectural development of vaults was paralleled by an artifactual replication in niches, aedicules, urns, etc., implying that the vaults had a significance in symbolic expression beyond their sheer utility. Hence, although the structural advances increased the complexity of the vault's form, the miniatures enhanced its symbolic lucidity.

The replication of architecture makes its image accessible to society's collective perception and therefore, strengthens its meaning. In the development of a built form's significance, repetitive

phases seem helpful and are probably essential to the form's becoming a cultural archetype. On the whole, attitudes favoring the continuation of images seem to be socially meaningful. But this statement, rather than being aimed at creating a professional interest in producing phases of this kind, is intended merely to point out a basic morphological difference in the traditional urban structure, as it compares to that of the twentieth century. The ways in which such knowledge may be useful or applicable is not this study's concern. This work has pointed to some morphological relationships that can explain how architecture in the past has been more accessible to the public, but in the course of its development there is basically no research done which can offer a basis for judging whether such accessibility is the right way to design.

Treated in this way, symbolic content offers a source of knowledge about public visual preferences. Symbolic modes of thought operate in all individuals. In contrast, accepted modes of logical thought must have been guided by different criteria throughout history, varying in each period. Modes of thinking are based on the knowledge content of anyone era and are modified in accordance with advances which illuminate perspectives in understanding phenomena. Thus, the pre-logical manifestations which we perceive in the form of symbols are more reliable to study because of their spontaneity. It is likely that the way symbols are manifested today is very much the same as it was in earlier times. When an investigation requires the comprehension of anonymous visual choices as in the aesthetic preferences of the layman, symbol content becomes valuable.

From the public's reaction to twentieth-century design, we presume the need to examine familiarity in built form and to do so without being affected by the polemics given rather recently and at the beginning of the century in opposition to the old-fashioned character of traditional architecture.

By dint of a succession of images in related froms we came to understand what certain imagery evokes. This procedure was followed because, when viewed in this way, the relationship and derivation from one image to the other can be detected, and a series presents more records than one sample. It became evident that this procedure was also necessary for the exemplification of our concepts through the

derivation and provision of images.

The succession of vaulted forms has had a profound effect in our perceptual receptivity. The forms of vaults --their imagery and their arrangement in a design relative to other forms (e.g., columns)-- seem to communicate something. From our analysis we have learned that these symbolic architectural images have somehow engraved in them the sensitivity of the medieval architect and artisan. This is especially marked in the symbolic architectural form used as miniaturized imagery. It is evident in them that architectural symbolism can express very deeply accomplishments related to religion and mankind in general. This is all through morphological indications, as for example the Gothic aedicule and their statues constituting a theme that expresses in mystical passion the triumph of Gothic form. Their overall effectiveness arrests visual perception and awakens rational thinking about eternal human questions. In this sense, its image has the power of a cultural archetype, with Jung's proposed numinosity or spell arising in deeply rooted concerns in which the significance of architecture plays a major role. We cannot demand from this imagery the same standards of merit attributed to individual art. They are a symbolic accomplishment, guided and hindered in its changes by collective understanding, however, valued by many. Neither can they be compared with the content and substance of great literary and scientific works. They do not enter the sphere of logic that we excersise in abstract communication, though they certainly have their own system of criteria that derives from pre-logical modes of thought and is advanced through sublimation of forms, from early imagery as those in carved stones and underground caves into highly mental and mystical levels in Gothic times. Their symbolic content is of fundamental importance, their expression has rationalized and systematized the use of motifs in an arduous effort to develop the uncomprehended levels of meaning suggested sometimes by forms. Although no one can expect knowledge in this meaning, as it can be obtained from a book, the informational content it contains is no less thought-provoking and emotionally affecting than the great works of scholars.

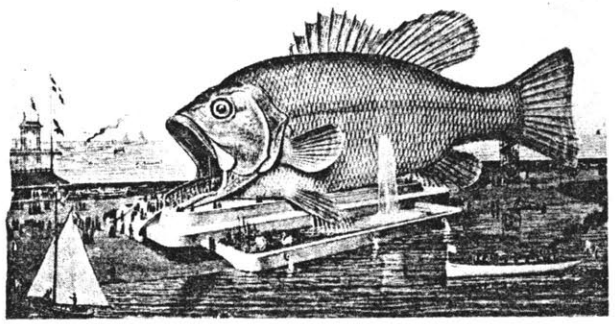
APPENDIX

APPENDIX

Design Proposed in 1909 for an Exhibit.

Probably a commercially attractive design but its form lacks structural, sheltering and social sense.

That utility need not be the determining factor in a building's appearance is an observation currently attracting a good deal of attention and even generating controversy in the high realm of architectural criticism. So that practitioners who now embrace the belief that form need not always follow function may be aware of their predecessors, we publish a pioneer design, ca. 1903, suggested by J.E. Gunckel for the Fisheries Exhibit of the Ohio Centennial and Northwest Territory Exposition.



From a publication called BLUEPRINTS, supported by members of the Building and Construction Trades Department of the AFL-CIO. Volume I, Number 2, Fall 1981.

Reference: p. 32.

APPENDIX

The megalithic stones studied by Kaschnitz.

In these forms the multiplicity of symbolic form can be tested by a viewer. The left stones evoke heads with necks and shoulders. The right stones are reminiscent of ill-formed frightening creatures.

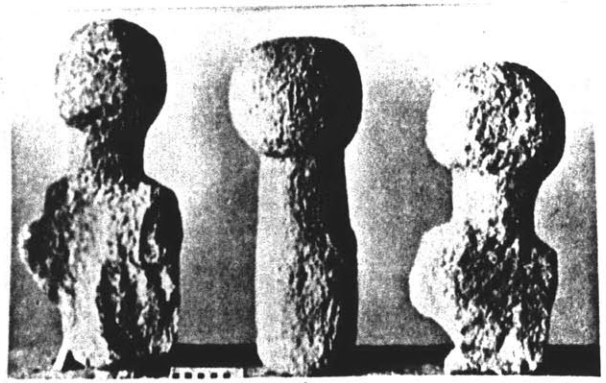


Abb. 8 Phallusgrabsteine. Pergamon

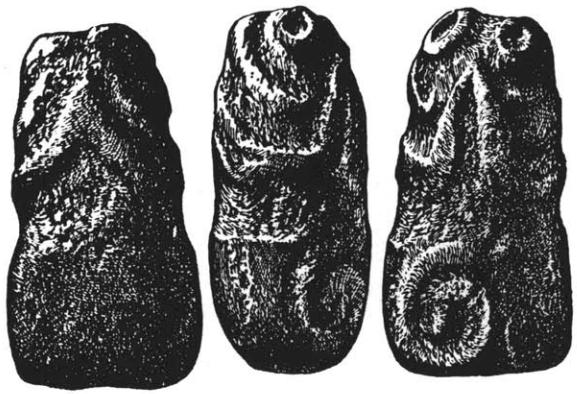


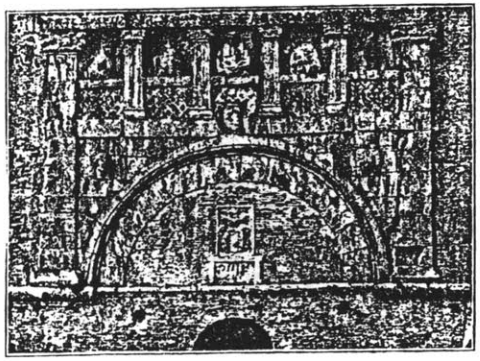
Abb. 19 Statuette von Alderney

Reference: Kaschnitz' studies of primordial imagery in megalithic columns, p. 36.

APPENDIX

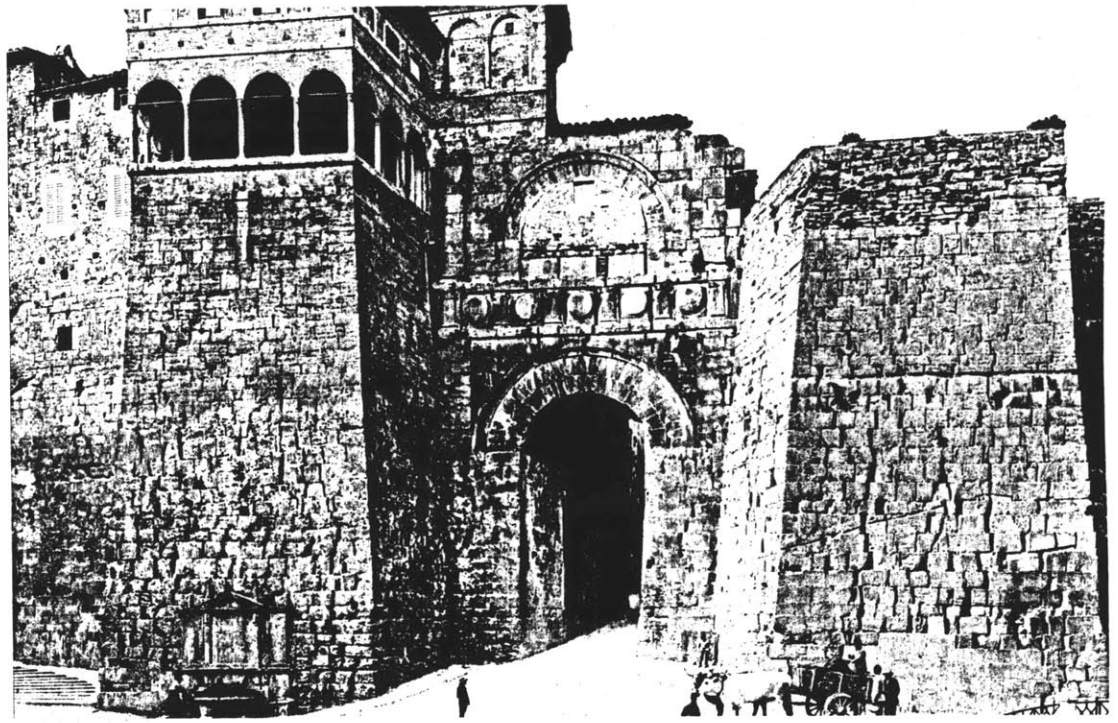
The image of arches as a motif in Etruscan architecture.

A single arch form ornaments porta Augusta and porta Marzia in Perugia.
High above porta Augusta's arch,forms that may constitute the ancestral images of the 'Lombard' (Comacine) bands. (filled or closed arcades).
Lower portion of left tower has an ornamental image of the Greek trabeated system.



Porta Marzia

W. Bombe, 1914.



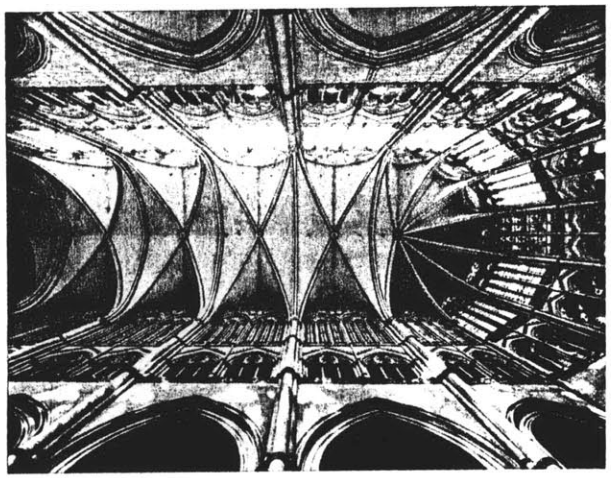
Porta Augusta, second century B.C.

Janson, 1977, plate 209.

Reference: page 59.

APPENDIX

The form of the cross arches of Amiens seen from below.



The form of the papal head gear maintained till today. In a mural depicting Saint Isidore in sixteenth century Seville Cathedral.

Reference to Figs. P (1) and (2), and to chapter III, "A Symbol of a Fundamental Kind" (p. 93).

APPENDIX

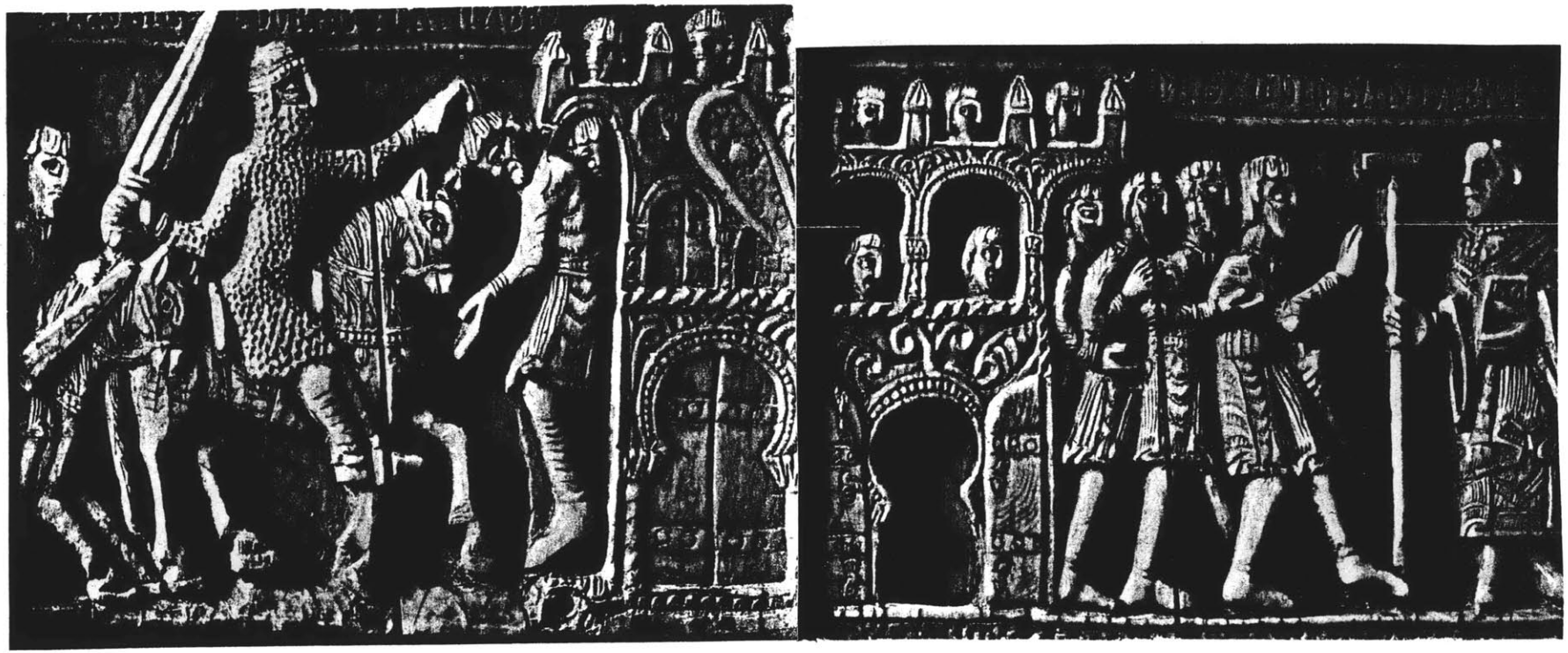
Early vaulted motif.

Tombstone found near Carthage. Probably second century. From Kitzinger, 1963, plate 2.

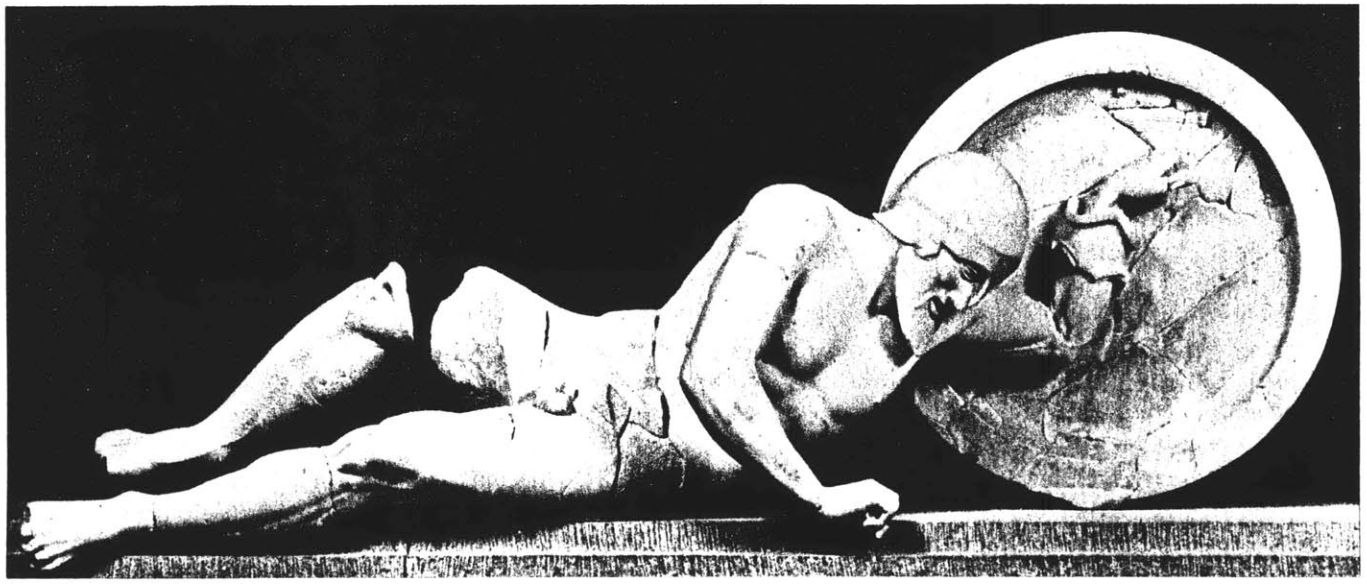
The two human figures at the center are represented in an arched space of tight dimensions. The artesan has provided one individual niche-like space for each figure. However, a common activity centered at a vase between them tells the two are in contact with one another. The individual vaulted spaces would not be required in real life circumstances when two persons are together in a room. The vaulted niche is a form into which a figure is to be placed. The form conveys some kind of unspoken information in its identifiable configuration. At another level, enframing the central images by these arches, may provide a visual mark of the central role of these figures in the representation. They can be parents followed by relatives, children, animals and servants, or they may all be different generations.

APPENDIX

Motif in the reliquary of San Millán de la Cogolla, Rioja, Spain.
In this representation the arched motif can be appreciated without the human figure. There are comparable formal relationships between these spaces (dated sixth century) carved in Spain and Carolingian woodwork of the type shown in Fig. R (6) (p. 107).



A helmet of antiquity with the nose covering piece

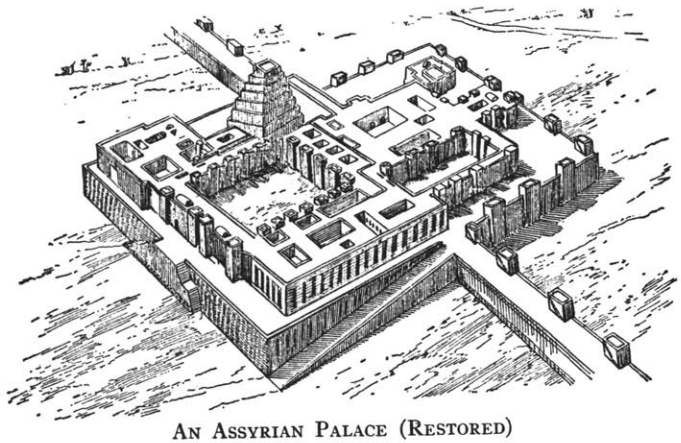


***Dying Warrior*, from the east pediment of the Temple at Aegina. c. 490 B.C. Marble, length 72". Glyptothek, Munich**

Reference: Figs. R (18) and (19) and p. 119 for description in an aedicule.

APPENDIX

Spiraling forms that may evoke one another.



AN ASSYRIAN PALACE (RESTORED)

The royal residence of Sargon II near Nineveh was placed upon a high platform of brick masonry, the top of which was gained by stairs and an inclined roadway. The palace consisted of a series of one-storied rectangular halls and long corridors surrounding inner courts. They were provided with imposing entrances, flanked by colossal human-headed bulls, representing guardian spirits. The entire building covered more than twenty-three acres and contained two hundred apartments. In the rear is seen a temple-tower.

In the structure the spiraling form provides a road to go up.

In this head gear the spiraling has a visual function (e.g. to evoke the building ?).

Assyrian inscription of the Law Code of Hammurabi, ca. 1760 B. C. The Louvre, Paris. From Janson, 1977.

APPENDIX

The three- tiered cap of antiquity.

There are several records of statuetes wearing this cap from ancient Minoan, Aegean and Phoenician cultures (2000-500 B.C.). The form may recall a spiralling structure, perhaps a temple form. This figure is believed to represent a goddess or a priestess. It dates from 1600 B.C.. Terracota. Museum Heraklion, Crete. From Janson, 1977, p. 86.

APPENDIX

Ninth century spiraling form.

Iraq, 848 - 852 A. D. .From Janson, 1977, plate 208.

Byzantine type of three-tiered cap, attire of an aide of the emperor.

APPENDIX

Fifteenth century Germany and Southern France. Women's court dress.. The contour of this head gear is proportionatelly similar to the shape of some church spires.

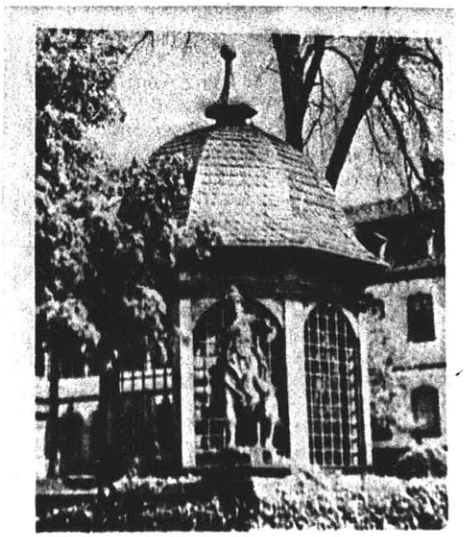
Burgundy, France. 1425-1490.

Germany 1410-1460.

APPENDIX

Helmets, gazebos and some domes (see Marienkapelle on p. 58) have acquired a characteristic top form which in the dome seems to originate in a lantern or a spire.

Kęstutis, engraving, 18th century
By courtesy of Istorijos Etnografijos M...



Gazebo after a design by Antonio Petrini, near Würzburg, W Ger

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