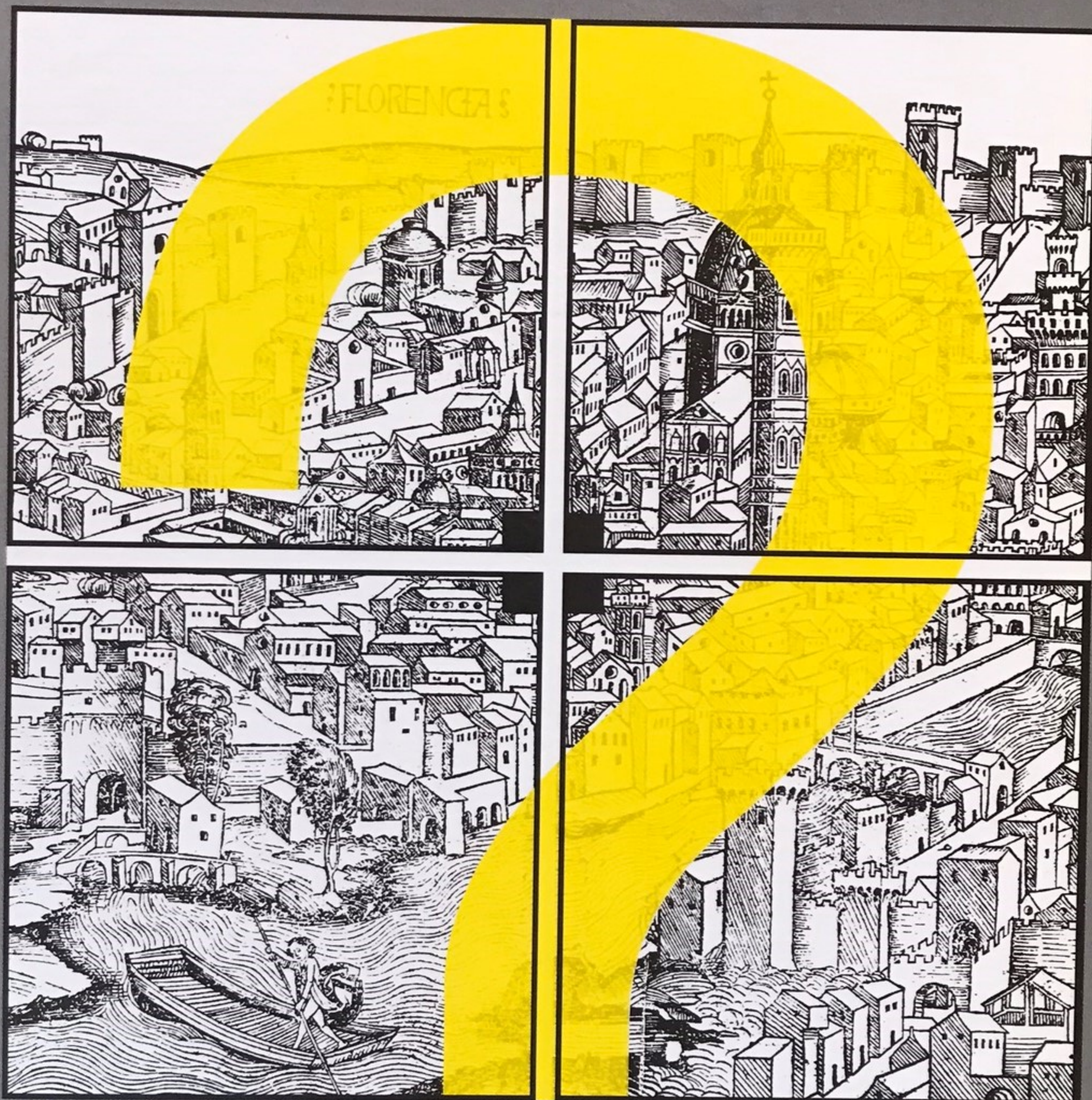UNIVERSITÀ DEGLI STUDI DI FIRENZE
DIPARTIMENTO DI PROGETTAZIONE DELL'ARCHITETTURA
SEZIONE ARCHITETTURA E CONTESTO

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TRANSFORMATIONS OF URBAN FORM
FROM INTERPRETATIONS TO METHODOLOGIES IN PRACTICE

FLORENCE

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CONTENTS

PRINCIPLES OF URBAN TRANSFORMATION:
A GRAMMATICAL INTERPRETATION OF TWO URBAN SQUARES

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ABSTRACT
Starting from the problem of contemporary interventions into ever-changing historic contexts, this study aims to extend the language for understanding of a particular context in time by a search for common patterns between different phases of its transformation. This study is solely concerned with 'geometric form' as the basis of an alternative interpretation of urban transformation towards a methodology for reconciliation between 'old' and 'new' components. Thus, shape grammars are used for the analyses. Progression of these analyses into empirical design methods, their sufficiency in dissolving the conflict of 'contemporary' and 'traditional', pitfalls of such a formal interpretation and plausible frontiers it can unfold are discussed.

INTRODUCTION:
How new is added to old is the central issue for urban transformation suggesting an 'underlying continuity' within a particular context. Despite the diversity of theoretical approaches, architectural practice shows that continuity can be explored not only in visual terms but in rhythms and organisational principles (i.e. *grammar*). In the architecture - language analogy, *grammar* appears to be an underlying regularity. Its logic is composed of *initial form*, set of *rules* applied to the initial form, and *recursive structures* that orders the application of rules[1]. Recursive structures seem to remain the same within a particular style, period, society or context whereas formal attributes may change. It is of interest to know whether this may be contributing to a harmonious total effect in most of the townscapes. The first one of the urban squares interpreted is Piazza San Marco in Venice, which itself was conceived as a gate to East and a small scale Constantinople, now the city of Istanbul, from which the second one -i.e. Taksim Square- is selected. Both squares are ceremonial urban spaces made up of transformations. Salient features of their townscapes seem to be common. Their evolution and formal features constitute the focus. Thus, chronological comparison is not intended as the former finished its transformation around the period when the latter started.

VENICE - PIAZZA SAN MARCO:
The purpose of this research is to find whether there is a shape grammar logic to describe the continuity of its transformation. If it can be divided into specific phases, and the continuity between successive stages are interpreted on the basis of the similarities between their recursive structures, it seems possible to observe that a number of applied rule operations appear to be equal for both stages divided around 1200s. Furthermore, shape grammars enable us to define the rotation of two superimposed layers of orthogonal ordering systems acting upon the piazza around a pivotal point (Figure 1). This analysis also shows, an alternating

order of spatial operations between original and rotated layers. Moreover, when the building generation rules are introduced, buildings seem to be organised along two coordinate axes defining two juxtaposed cartesian systems from the opposite ends. It may, then, become possible to find a common shape grammar logic, for the piazza, which is composed of i) insertion point, ii) generator form, iii) recursive components of enclosure and iv) termination elements. Thus, the *recursive structures* in these stages seem similar. Therefore the analysis reveals that urban transformation might encode underlying patterns that might be explained in terms of grammar.
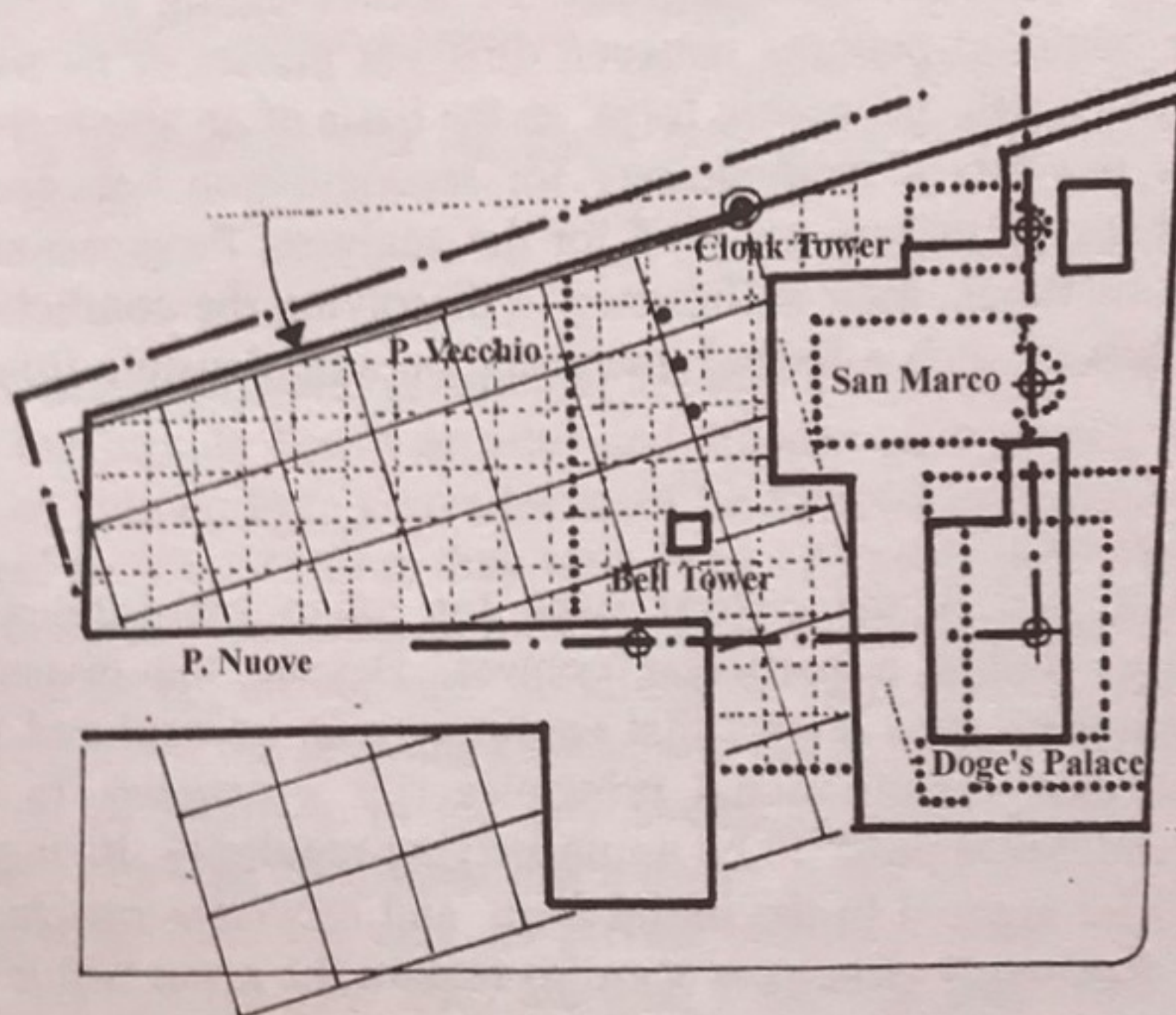

Figure 1. Transformation of Piazza San Marco (Superimposition of ordering layers)

ISTANBUL - TAKSIM SQUARE:

The physical changes at different stages of the evolution of urban spaces in Turkey are examined with reference to the 1980s[2]. The characteristics of change in that period are compared to those of other transition periods[3]. The first buildings of Taksim - formerly a country cross-roads - were the Water Distributor from the 18th century; Artillery Barracks and an Orthodox church from the 19th century. The large mansions turned into row houses and into middle-rise apartments in 1920s. The monument was erected in 1928. During 1940s many buildings were demolished. This led to opening of larger boulevards in 1950s - 1980s. After 1960s, high-rise hotel buildings and big-scaled buildings emerged turning the area into a traffic trouble spot[4].

Similar to the interpretation of Piazza San Marco, the continuity between successive stages of transformation is examined on the basis of patterns in their recursive structures. The initial

form of the plaza is determined by the fountain. Shape grammar enables an identification of a rotation of the grid around the Monument (Figure 2) via a parallel translation of Church-reservoir-Monument axis as the bisector of rotation. The discontinuities in the transformation can be identified via irregular shifts in the rule operations among rotated layers. Thus, the analysis shows the deviation in underlying regularity of the transformation at times of social change.
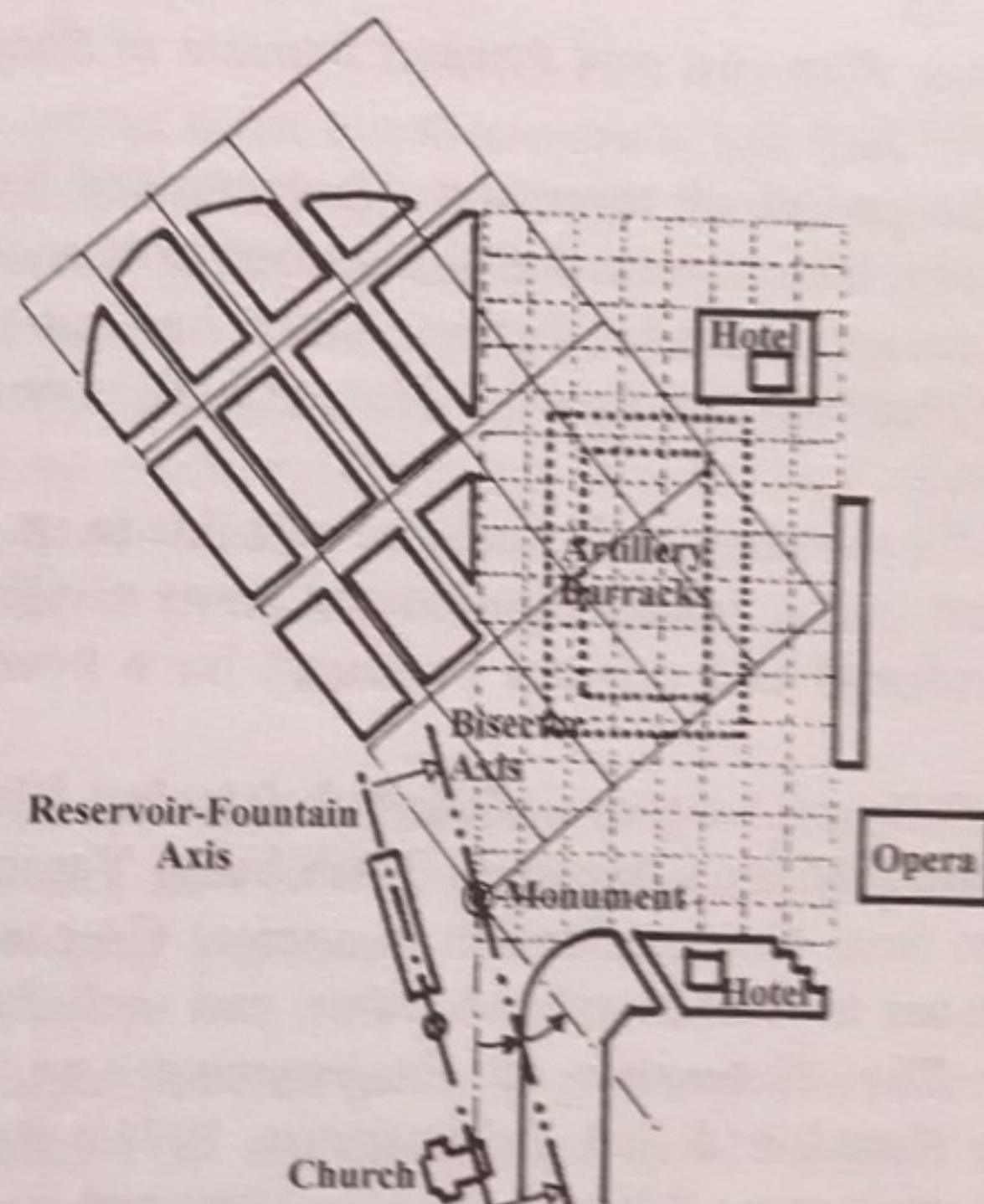

Figure 2. Evolution of Taksim Square (Rotation of ordering layers)

DISCUSSIONS:

This study attempts to define urban transformation in grammatical terms as the continuity can also be expressed in terms of *formal grammars* in art and architecture (e.g. *underlying unit, stylistic features, typological characteristics* or *rule-based systems*)[5]. One may observe that both squares are formed by the superimposition of two layers rotated around a peripheral pivotal point. The latter is organised around a bisector derived from the axis of initial form while the former is rotated around the point which is directly determined by town fabric and echelon arrangement of Basilica and Doge's Palace. Consequently, one might suggest that underlying grammatical patterns of transformation could be found as further components are introduced into the formal analysis process. It can be said that the essence of a city lay not only in their specific forms but in the rhythmic relationships of the transformations of its public spaces. Once this constant basis is established, it can be correlated to its social, economic and political aspects. Then question would be how to shape the accretion so that a

city would be compatible in principle with existing form and meet future needs. This study intends to prepare a conceptual basis of a potential shift from visual aspects towards processes and logical aspects of design (i.e. computer based systems in design and planning) in the conception of continuity in urban transformation. Consequently, this regularity would help to form the basis of choice among a variety of intervention possibilities to historic centres. This conceptual model should also be applied to different periods and locations to achieve a better comprehension of the overall transformation. It should be considered as an additional dimension to a broader framework of townscape and morphological analyses.

NOTES AND REFERENCES:

[1] George Stiny & James Gips, *Pictorial and Formal Aspects of Shape and Shape Grammars* (Brussels: Birkhauser, 1975).

[2] 1980s represent a specific period of transition (characterised by re-integration with the world) in Turkish history. This interaction introduced post-modern culture and its new concepts into Turkish society and architecture, which has not yet settled the impacts of modernism. Celal A. Güzer(ed), *70 Sonrasi Mimarlik Tartismalari*. (Ankara: Mimarlar Dernegi Yayinlari, 1996).

[3] Turkey has always been influenced by both west and east due to its geographical location, its nomadic history, its land which had accommodated many civilisations. The conflicts and synthesis between occidental and oriental pressures have been the essence of Turkish culture.

[4] Çelik Gülersoy, *Taksim; Story of A Square*. (Istanbul: Istanbul Kitapligi Ltd., 1991); Dogan Kuban, *Istanbul; An Urban History* (Istanbul: Tarih Vakfi Yayinlari, 1996).

[5] The wide spectrum ranges from Golden Section in ancient Greece to Durand's typologies, from Alberti's proportions to Corbusier's Modulor, and includes works of Lionel March & Philip Steadman, *The Geometry of Environment; an introduction to spatial organisation in design* (London: RIBA Publications, 1971); Roger H. Clark & Michael Pause, *Precedents in Architecture* (New York: Van Nostrand Reinhold, 1996).