Jacques Perret: Visionary Architect, Practical Engineer, or Connoisseur?
A study on the identity of a controversial figure of the 17th century through the projects of his fortified towns

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Abstract This research started from the premise that Jacques Perret, "Savoyard gentleman" of the 17th century - whose only legacy consists of *Des fortifications et artifices*, a book of fortified town designs - is still an elusive figure in the history of architecture and deserves to be further investigated. In particular, attention needs to be paid to the lack of any attempt by scholars to define his actual professional status and cultural background: was he an architect, an engineer, a professional or an amateur? The intention of this paper is therefore to shed some light on this question by examining selected contents of his book describing five projects of fortified towns. Plates and descriptions are carefully analyzed related to the engineering (defensive structures) and architectural (city layouts, buildings) content. The figure that emerges is that of an articulate personality who does not fit either in the architectural or in the military engineering professional world. In the field of engineering, he simultaneously demonstrated the competence of a professional and the naivety of an immature technician, while in the field of architecture he showed an advanced creativity alongside several technical and theoretical misunderstandings. From the analysis in this study, the assumption is formulated that Jacques Perret was a *connoisseur*, i.e. an erudite without any direct involvement in real professional activity. This work is intended to provide a hypothesis for further researches that, hopefully, will deepen our understanding of several other aspects of Perret's complex identity and work.

Keywords: Jacques Perret, Fortifications, Artifices, Identity, Book, 17th century

1. INTRODUCTION

Jacques Perret is still an elusive figure in the history of Western architecture; his legacy consists of a single book - *Des fortifications et artifices; Architecture et perspective*, probably published in 1601 - and scant biographical information.

The book - an illustrated collection of designs for fortified towns and architectural types - was widely successful during the 17th century since several editions were printed in France and other European countries. Nevertheless, a full understanding of the actual influence of this work and a precise definition of the identity of the author are still far from being achieved. In fact, although Perret is not unknown to historians, as we shall see later in the paper, they have always relegated him to the margins of history of architecture because of the apparent visionary nature of his proposals. The scant literature is mostly incomplete and, since the contents of the book lends itself to several interpretations (namely, artistic, technical, literary, social or religious readings), studies often do not belong to the field of architectural research or were not conducted by architectural historians. Duportal (1914), for example, suggested that *Des fortifications* is essentially a livre à figures, i.e. a work of art, an opinion shared by Vagnetti (1979) and Scolari (1984), who mainly focused on its graphic features. Conversely, Kruft (1988, 1990) highlights its social utopian aspects, related in particular to the alleged Huguenot faith of its author, while Randall (1999) underlines the relation between Huguenot culture and the graphic concept of the book, and the studies of Balmas (1958, 1969) focus on Perret’s protestant culture in an attempt to understand his proposals for churches and towns. Lavedan (1959), on the other hand, tries to find a place for the book in urbanism literature, while for Hogg (1981), *Des fortifications* is a real - and technical - military treatise. De Laprade (1979), however, assessed him in a mostly negative way in his pioneering attempt to provide a synthetic architectural study on Jacques Perret. More recently, Conconi (1992) highlighted the dichotomy between technical and literary facets of the book, Germann (2004) and Westphal (2004) investigated the concepts of Perrets churches, and Dacarro (2010) analyzed the book's illustrations. So far, however, the most complete study on Perret and his work was conducted by O'Grady (1993, 2004), whose
more significant contribution is the carefully synthesis of the state-
of-the-art of the research.

Following a thorough review of the above mentioned literature,
this research observes the lack of any rigorously conducted
investigation of the contents of the book through the methods
and specificity of the field of architectural history. This lack of in-depth
investigation is probably the reason why, so far, a precise identity
for Jacques Perret remains illusive, both from the professional and
cultural point of view, and raises the question of whether he was a
professional or an amateur, an engineer or an architect, an up-to-
date theorist or an obsolete writer. The positions of scholars on this
topic - as will be seen in detail in section 2.2 - perpetuate opposing
convictions, not always supported by historical and critical
evidence.

It would be remiss to underestimate the problem of Perret’s
professional identity. It is well known, in fact, that the institutional
separation between the professions of engineer and architect
occurred in XVIII century, after the foundation, in France, of the
École Nationale des Ponts et Chaussées (1747). Nevertheless,
documentary evidence investigated by several recent studies
confirms that, from the second half of the XVI century, architects
and engineers (and, in particular, military engineers) were already
clearly separate professional figures, with peculiar backgrounds,
competences and different fields of activity, clients and
missions. This phenomenon took place in Italy first and spread
soon to France, the two nations that were at that time cutting edge
in the art of military fortification.1 17th century society, thus, was
adopting such a strict specialization of roles and competences, that
the meaning and weight of any contemporary cultural proposal
cannot be fully understood without considering the position of its
author.

This research therefore starts from this assumption, and aims to
contribute to a discussion on the professional and cultural identity
of Jacques Perret, with the proposition that this aspect is crucial for
a full comprehension of his place in the history of architecture.

For this purpose, a careful historical and critical analysis -
strictly focused on architecture - on selected contents of the book
will be conducted in this study, examining evidence that reveals
Perret’s persona. In particular, this paper will deal with the five
projects of fortified towns. As we will see later in the paper, these
projects are only part of Des fortifications, despite the book title;
however, for the information they provide, they can be considered
meaningful case-studies for the investigation of Perret’s cultural
background.

The study has been conducted on an original copy of the book.2
The contents - both graphic and descriptive - have been analyzed
and compared to contemporary theoretical and architectural works,
in order to highlight links, affinities and differences. Results of the
analysis have been discussed in relation to the above mentioned
existing literature.

The discussion on the projects (section 4) will be preceded
by information on the book, its publishing history and its
author, and in particular, scholars’ different opinions on
Jacques Perret will be reviewed (section 2). Some problematic
issues about the illustrations of the designs will be discussed in
section 3.

2. DES FORTIFICATION AND ITS AUTHOR

2.1 The book.3

Des fortifications et artifices; Architecture et perspective de
Jacques Perret gentilhomme savoyen consists of a volume in
folio, mainly illustrated, with 22 plates and 17 synthetic explanatory
texts, in French. The contents can be categorized into three groups:
a) projects of fortified towns (with two extra plates of war machines
and diagrams), b) projects of civil buildings, and c) projects
of religious buildings; b) and c) include proposals of building
types for the fortified towns. It should be noted though, that this
classification is artificial, since in several editions the plates are not
grouped by topic.

Although the book is not dated, it was likely published in
1601, in Paris, and as mentioned above, it was soon reprinted
in several editions, including one in German in 1602.4 The
plates were realized by the engraver Thomas de Leu, renowned
contemporary portraitist of Dutch origin.5 Their highest graphic
level was likely one of the major factors of the success of the work.

2.2 Jacques Perret: scholars views of his biography and his
controversial nature.

The biography of Jacques Perret has been investigated by Balmas
(1958), but information is limited to a few clues provided by his
book and some archival records. He was likely from Chambery, in
Savoy, where between 1568 and 1573 he figures as mathématicien
et lecteur ès artz d’arithmetic et géométrie théorique et
pratique at the local Jesuit college. After converting to the Calvinist
faith, at the beginning of the 17th century he moved to Paris, where

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1 Among the studies that dealt with this topic see: Biral, A., Mora-
chielo, P. (1985), Immagini dell’ingegnere tra Quattro e Settecento:
filosofo, soldato, politico, Milan, p. 87; Guidoni, E. and Marino,
A. (1991), Storia dell’urbanistica. II Cinquecento, Bari, pp. 10 ff; Fara,
A. (1993), La città da guerra nell’Europa moderna, Turin, p. 87;
Scolari, M. (2005), Il disegno obliquo, una storia dell’antiprospettiva,
ingegneri, tra metodo e ragion pratica”, in D’Agostino S. (ed.) Storia
dell’Ingegneria, Naples, pp. 819 ff.

2 The first edition conserved in Biblioteca Braidense of Milan (coll.
NN XV 43).

3 Although, as mentioned, the study was conducted on an origi-
nal copy of Des fortification, for ease of reference the notes of
this paper will refer to the facsimile edition: Des fortifications et
artifices; architecture et perspective de Jacques Perret, Uhl, 1971 -
hereafter, Perret. However, the figures in the paper are taken from
the original book.

4 For the hypotheses on dates, a complete review of the publishing
history of the book and a list of copies that still exist, see Conconi,
B. (1992), “Il salmo e il compasso, ovvero gli artifici di un inventore
riformato, Studi di letteratura francese”, 19, pp. 412, 419 n.16
fortifications et artifices. Architecture et perspective”, Ph.D thesis,
University of Toronto, pp. 9-22.

5 For Thomas de Leu, see Adhemar, J. (1937), ”Thomas de Leu et
perhaps with the support of the Huguenot faction, he published his book. While the date of his death is unknown, he probably died before 1620.6

However, as mentioned above, the most controversial issue about the figure of Perret - and what gave this study its purpose - is the definition of his actual professional role, and consequently of his cultural background. Scholars who have examined Perret and his work take opposite and incompatible positions on this matter. Balmas (1958), for example, considered Perret an experienced and up-to-date military engineer, and Hogg (1981) stated he was an esteemed professional enrolled in the newly formed French Corps of Engineers. Lavedan (1944) on the other hand identified him as the technical consultant of France’s Prime Minister Sully, while for Laprade (1979), the Savoyard was a simple amateur who merely edited principles and techniques that were outdated and inefficient. Debating his competence, Biral and Morachiello (1985) considered him a mathematician, a typical exponent of an era where military engineering was becoming a rigorous, scientific discipline. An opposing opinion was expressed by Vagnetti (1979), who highlights Perret’s incompetence in theory and practice of technical drawings. Positions are also strongly divergent on his alleged architectural skills and foresight. Balmas (1958) believed he was a rational and learned designer, inventor of reasonable architectural types perfectly fitting to contemporary reality. Conconi (1992) on the other hand, considered him to be mainly a theorist of old-fashioned ideal towns, while de Laprade (1979) recognized in his visionary nature some prophetic genius. Finally, Kruft (1988) criticized him as the author of projects merely characterized by a “playful charm”.

However, a careful review of the above mentioned literature seems to show that none of the authors provide thorough arguments or historical evidence for their statements. Both positive and negative judgments, in fact, perpetuate traditional and well-established points of view on Perret’s character, since putting his figure into focus is not, admittedly, the main purpose of those studies.

3. PERRET’S FORTIFIED TOWNS: GENERAL PRINCIPLES

3.1 The projects and their illustrations: some problematic issues

Des Fortifications introduces the projects of five fortified towns of different sizes, and with different numbers of fortified sides. Three towns (the 4-sided, the 5-sided and the 6-sided) can be considered little more than fortresses (citadelle ou forteresse, according to Perret’s definition), while the other two (the 16-sided and the 23-sided) are real urban environments (ville avec citadelle).

Every town is described through text and illustrated through two plates that present a plan and a birds eye view (Figs. 1, 1a). Both plates are provided with a graphic scale based on toises (1T=1.949 meters). In the main edition, towns are organized in a dimensional sequence - from smallest to largest - and are alternated with projects of building types.

Characteristics of both plates and text reveal some initial, problematic material for the investigation of Perret’s controversial identity.

a) The plates

Birds eye views (Fig. 1a) are realized with the method of the so-called ‘military perspective’, a graphic construction that, unlike the perspective view, prevented distortions and retained the measurements obtained from two-dimensional drawings. This method was the most commonly used among contemporary military engineers - now a separate category from architects6 - because it allowed them to visualize their theories in the rigorous

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8 See note 1
and scientific way that ballistic studies demanded. However, military theorists usually limited this three-dimensional representation to the focus of their disciplinary interest, i.e., the fortification system (walls, bastions etc.), while rendering streets, squares and buildings inside the walls as simple two-dimensional grids or symbolic volumes in perspective view (Fig. 2). Perret, on the other hand, extended the “military perspective” to the entire urban environment, representing every building of his towns in the most detailed and accurate way.

b) The text

While this choice - unique for a military treatise- might lead us to assume an architectural background of Perret, and to reckon that, perhaps, the right place for Des Fortifications is among architectural treatises, the explanatory text of the projects seems to contradict this assumption. Unlike architectural treatises, in fact, the book completely lacks any theoretical discourse, by the professed decision of its author, the text is neutral and synthetic and merely describes the illustrations without any comments or assertions.

However, the text cannot even be considered particularly technical. In fact, in comparison to contemporary military treatises, we see that descriptions in Des fortifications do not provide quantitative data in a sufficient, scientific, and logical way; some measurements are not provided, references to drawings are often vague or omitted and geometric principles at the base of his proposals are missing.

Both plates and text thus seem to testify to a cultural ambivalence between the “technical” and “artistic” world and Des Fortifications, as a publishing product, seems equidistant between architectural and engineering practical and theoretical works. An examination of the projects will help us to verify this assumption.

4. THE PROJECTS

4.1 The three “citadels or fortresses” (4-sided, 5-sided and 6-sided town): military and urban issues. The 4-sided town (Figs. 1, 1a) consists of a square fortress with

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"Pource que plus ieur sont escrit des principes de Geometrie, Fortifications, Architecture, & Perspective, Je n'en mets point en ce livre, ains seulement des effects d'iceux", Perret, fol. 4r.

Compare this statement to the introductory discourse of Filarete’s Trattato di architettura (1460-64), probably the most appropriate precedent for Des Fortifications: Antonio Averlino ditto il Filarete (1460-64), Trattato di Architettura, ed. Milan, 1972, Libro I.

For example, he often invites the reader to take the measurements directly from drawings, through graphical scale and compasses ("L'échelette montrera avec le compass toutes les mesure" Perret, fol. 3). In this respect the book is different even from theoretical works such as the above-mentioned Trattato di Architettura. Even in Renaissance’s most ideal and utopian proposals, in fact, despite some inevitable practical simplification, the professionalism of the author always emerges and concern for the feasibility leads to report quantitative data, measures and construction principles; see Kruft, H.W (1990), Le citta’ utopiche : la citta’ ideale dal 15o al 18o secolo fra utopia e realta’, Bari, ad indicem.

In this section, the projects of the three smallest towns designed by Perret will be analyzed together, because they are substantially variations of the same theme. Here and in the following section, where the largest towns will be discussed, the study will focus on those aspects of the designs that can provide some clues to investigate Perret’s identity; for details about other issues not directly relevant, but important to complete the understanding of the topic, the literature will be referred to.

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The “military perspective” is today best known as isometric construction. The method was, at that time, applied in an empiric way and was later codified in the 19th century, cf. Scolari, M. (2005), Op.cit., Venice, pp. 27-28.

For the application of “military perspective” to the drawings of major military treatises of Perret’s times see: Cataneo, P. (1544), I Quattro primi libri di architettura, Venice; Maggi, G. and Castriotto, G. (1564), Della fortificazione delle città, Venice; de Marchi, F. (1599), Architettura militare, Venice, and Errand de Bar-le-Duc, J. (1600), La fortification démontrée et reduicte en art, Paris.
four cut bastions (*tenailles*), surrounded by a second circle of cross-shaped fortifications and a moat. The urban layout is orthogonal.

The 5-sided town (Fig. 3) is a pentagonal fortress characterized by a single system of defensive walls with five bastions and a moat. The urban layout is radial.

Finally, the 6-sided town (Fig. 4) is a fortress with two hexagonal systems of fortification; the exterior is provided with bastions and a moat. The urban layout is radial.\(^{13}\)

If we consider the projects from the point of view of military engineering, we see that in all projects Perret applies - in the proper and thorough way of an experienced professional - the "*trace Italienne* system", namely, the most updated fortification technique of the "gunpowder era."\(^{14}\) In fact, not only is the sequence of glacis / counter-escarpment / moat / escarpment / curtain walls / pentagonal bastions correctly represented and described, the shapes, modules and measurements also comply with the latest precepts of contemporary fortification theories.\(^{15}\)

On the other hand, a closer analysis reveals the following details characterized by a certain naïvety that, on the contrary, does not fit the experience of a professional.

- The dual fortification system of the 4-sided and 6-sided towns, for example (Figs. 1, 1a, 4) seem redundant and too dense, more fitting of Medieval fortresses (of which we have several examples) than modern citadels defended by firearms. In fact, there are no similar solutions in contemporary treatises.\(^{16}\)

- In the same two projects, Perret suggests an arrangement of masses according to a descendent order of height from the inside to the outside of the town (namely, from buildings inside the walls, the tallest, to glacis, the lowest). The purpose was to control and defend the entire complex from the city center.\(^{17}\) This solution, usual in Medieval structures, is however avoided in contemporary literature since it contradicts the ballistic principles at the base of the system of glacis / defensive walls / defended town.\(^{18}\)

- The entrance of the bastions of Perret’s towns is always protected by tall pavilions or towers: square in the 4-sided town, circular in the 5-sided town, and doubled and linked to small bastions in the 6-sided town (Figs. 1, 1a, 3, 4). According to Perret, these structures were intended to be used as retrenchments and powder magazines and to increase the firepower of bastions. In contemporary treatises they were known as *cavaliers* but had a lower height and a more considered position.\(^{19}\) Compared to examples in the literature,

\(^{13}\) Perret, foll. 3r (4-sided town, plan), 3v (4-sided town, bird’s eye view), 5v (5-sided town, bird’s eye view), 7v (6-sided town, bird’s eye view).


\(^{15}\) See, for example the recurrence of the module of 80 *toises*: a fundamental principle of modern fortification based on ballistic considerations (Fara, A. (1993), *Op.cit.*, p. 13). For a comparison between Perret’s solutions and contemporary literature, cf. descriptions in Perret foll. 4r, 5r, 8r with authors cited in note 9, *ad indicem*.


\(^{17}\) "...tellement qu’on peut voir et tirer arquebusades de puis la dite citadelle, jusques audit terrain tout à l’environ, et par dedans tout le long du bâtiment de la dite enceinte, comme aussi fait le canon", Perret, fol. 4r

\(^{18}\) Cf. authors cited in note 9, *ad indicem*. Glacis was intended to climb towards the town with a slope calculated in accordance with the height of defensive walls and buildings. This forced offensive cannons to fire above the horizon and to miss their target if walls and buildings did not exceed a certain height (Fara, A. (1993), *Op.cit.*, p. 13). Perret does not specify the slope of glacis so his decrescent arrangement seems to gainsay the purpose of the whole system.

Perret’s versions seem too tall and thus more exposed to artillery - and in an uncomfortable position for movement of troops along the walls.20

- A vaulted arcade runs around the inner side of the wall of the 4-sided town (Fig. 1a). This is an original solution by Perret, adopted, according to his description, to provide covered pathways and spaces for merchants (boutiques de merchandise).21 But this choice contradicts well-established rules of fortification and weakens the structure: the interior side of defensive walls (according to several physical examples, examples in the literature (cf. Fig. 2), and other projects by Perret himself), was almost always reinforced with embankments.22

- The tenailles of the 4-sided town (Figs. 1, 1a), apparently the most revolutionary of Perret’s proposals and marked by some scholars as surprising precedents of Vauban’s theory,23 originate more from geometric requirements than from ballistic or defensive studies, as Perret himself admits.24

As mentioned in analyzing Perret’s representation techniques (section 3.1), Des Fortifications and its author seem to oscillate between the worlds of architecture and military engineering. The examination of the urban layouts of these fortresses seems to strengthen this impression. All the solutions, in fact, are correct applications of military engineering principles, but Perret provides them with additional architectural characteristics that seem to go beyond mere technical matters.

- The adoption of regular and centralized urban layouts, for example, both square and radial, is a principle shared among contemporary engineers, originating from the need to fire from the central square when assailants penetrate the walls.25 While Perret understands this principle,26 unlike the other military treatises, his grids generate complex spaces that he designs in the most detailed

- and architectural - way. In the 6-sided town, for example (Fig. 4) roads form internal trapezoidal squares whose functions and buildings are carefully studied and described.27

- According to military requirements, the roads of fortified towns were intended to be wide, to allow rapid movement of troops. In Perret’s fortresses, in fact, the widths of roads and buildings are in the ratio of 1:1 (6 or 7 toises each) (Fig. 1). However, Perret’s concern goes beyond two-dimensional data and extends to elevations: in fact, he also fixes the height of buildings (8 toises, i.e., slightly more than the width of roads) and of building pavilions (10 toises).28 While these are superfluous elements for the purpose of military defense, as will be seen in the analysis of his largest towns they were crucial to providing a pleasant and healthy environment.

- Finally, in the 4-sided town (Fig. 1a), buildings that form the central square and the four courts are connected at the top floor by terraces on high vaults over the streets. Also, this unique solution - which vaguely recalls well-known projects of Leonardo - is inspired by a military purpose: to provide pathways for moving troops on two levels. However, the text also highlights the architectural value, in peacetime, of the four terraces around the central square: a “théâtre” to contemplate from above the square itself.29

4.2 The 16-sided and 23-sided towns: the synthesis of Perret’s knowledge and design.30

Unlike the citadels analyzed above, the 16- and 23-sided towns are real urban settlements, of considerable size. Perret, as usual, illustrates and describes both defensive structures and urban layouts in detail. It might be fair to say nevertheless, that in this case, urban and architectural issues take precedence over military aspects and these two projects represent a synthesis - and the most articulate achievement - of the architectural component of Perret’s expression.

The 16-sided town (Fig. 5) consists of a fortified town with a single system of defensive walls and a pentagonal citadel. The urban layout is orthogonal.

The 23-sided town (Fig. 6) is the largest of Perret’s urban designs. It is characterized by a dual system of fortification and a hexagonal citadel. The urban layout is radial.31

Regarding military engineering content, Perret applies to these projects, with little variation, the “trace italienne” system adopted.

20 The only scholar who pays some attention to these structures is Balmas, E. (1969), “La città ideale di Jacques Perret”, Studi di Letteratura francese, 2, pp. 9, 11, 13, who, however, focuses mainly on their symbolic value (“sentinels”) and ignores the military problem.
21 See Perret, fol. 4r. The author shows the arcade only in the bird’s eye view.
22 Cf. authors cited in note 9, ad indicem. Perret’s embankments, as we can see in his plates, never have the canonical escarpment.
24 “... quatre bastions en forme de tenailles, parce qu’autrement faits, leurs angles extérieurs seraient par trop aigus.” Perret, fol. 4r. As mentioned, of the authors in the literature, Balmas, E., (1958, pp. 43 ff) studied Perret’s town projects in the most accurate way. His analysis, nevertheless, is mainly aimed at demonstrating the links between Perret’s alleged protestant culture and his design proposals and, it does not seem to recognize any technical or theoretical problem in the contents investigated.
25 Guidoni, E. and Marino, A. (1991), Op. cit., pp. 30-33. Therefore, the symmetry and regularity of 16th century military towns (both planned and built) corresponded only incidentally to the same principles in the Renaissance “ideal town”.
26 “Du milieu de la grand’place, le canon peut tirer par toutes les rues...”, Perret, fol. 8r.
27 They are intended to be used as market squares or gardens; plates and text illustrate dimensions, internal and external facades, entrances and pathways; see Perret, fol. 8r.
28 Perret, fol. 4r, 5r.
29 “...le bâtiment s’entretient par terrasses à hautes arcades sur les rues, tellement qu’on peut aller partout de l’un à l’autre par le haut. Tout le bâtiment se peut diviser en 4 palais excellents, ayant chacun d’iceux au milieu une grande place carrée, comme est celle du milieu de tout le bâtiment qui est environné de huit pavillons qui se joignent par quatre terrasses, pour servir comme de théâtre à regarder la place du milieu...”, Perret, fol. 4r.
30 In this section, the projects of these two towns will be analyzed together, because they share aspects that deserve to be discussed synoptically.
31 Perret, fol. 9r (16-sided town, bird’s eye view), 11v (23-sided town, bird’s eye view).
in his fortresses and analyzed in section 4.1. The presence of a semi-detached citadel with bastions can be identified as the most updated aspect of the two designs. On the other hand, we cannot avoid noticing the recurrence of some naiveties already detected in his fortresses (cf. section 4.1): the tall pavilions, or towers, at the entrance of bastions of both towns and the redundant dual fortification system of the 23-sided town.

From the point of view of urban and architectural design, the 16- and 23-sided towns are, instead, a vast collection of ideas, inventions, and unique proposals. This study does not discuss whether or not (and to what extent), these ideas affected the history of Western architecture, since as mentioned that is not the scope of this study. Nevertheless, the careful analysis of targeted contents of these projects suits the purpose of this research: the investigation of Perret's professional and cultural identity. From this perspective, in fact, we will see that this section of Des Fortifications confirms an advanced architectural creativity, in comparison to contemporary military treatises. On the other hand, it also shows some weaknesses and deficiencies that, as we will see later in the paper, provide us with important evidence, perhaps crucial, to understand who Jacques Perret actually was.

In the 16-sided town (Fig. 5), the arrangement of activities and functions (zoning) contradicts the precepts of all the urban literature, both contemporary and of the past: public buildings, in fact, are not located in the more usual position of city center, but are arranged in two semicircles on the periphery. Instead, the central square is empty, dominated by a large fountain, and located in the middle of a vast, square residential area, whose buildings, arranged on an orthogonal grid, form large, square courtyards. According to Perret's description, functions of peripheral buildings (see Fig. 7) consist of: two stables and riding academy (a), two tall temples (b), two hospitals (c), a tribunal and prison (d), the city hall (e), a college (f), and a palace “for foreign sirs” (g). Diametrically opposite the citadel is the governor's palace (h), and the citadel hosts a pavilion for the captain of the guard (i). Buildings are mirrored on the axis that connects the citadel and governor's palace and then mirrored again, so that there are pairs of identical palaces (but not identical functions) in opposite positions. The designs of some of these buildings - also represented in detail in this drawing - are shown in separate plates of the book. Buildings of the residential area are - as in all the other projects - homogeneous, and serial blocks are provided with taller pavilions. The blocks are partially connected by terraces (Fig. 7, l), L-shaped courtyards around the central square are designated as market places, while the other courtyards can be used as gardens “if residents want”. It is well known, that serial facades with central and/or corner pavilions, enclosing semi-public squares, were become, soon afterwards, the leit-motif of Henry IV

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33 A review of the results of a few studies which - although summarily - try to link Perret's proposals to history of 17th century architecture is provided by O'Grady, P.M. (1993), Op. cit., pp. 65-70.

34 Cf. authors cited in note 9, ad indicem De Marchi, F., in particular, proposed “...the major square in the city centre, with the cathedral and the palace of the lord. The dirty activities near to the city walls, as well as the most noisy ones...”; cited in Guidoni, E., and Marino, A. (1991), Op. cit., p. 29 (transl. of the author).

35 According to Balmas, E., (1958, Op. cit., pp. 43 ff), the use of the term “temple” instead of “church” originates from Perret's alleged Huguenot faith and from his hypothesized attempt to provide a type for the Protestant church.

36 Perret, fol 10r.
of France’s urban policy (the so-called places royales).\footnote{For the links between Perret and contemporary architecture see note 33.}

The 23-sided town plan is characterized by a system of streets radiating from a central octagonal square (Fig. 6). The logic adopted by Perret to arrange buildings in this grid is based on a complex dual mirroring of four identical pie-shaped sections (A, B, C, D, mirrored in A’, B’, C’, D’, see Fig. 8).\footnote{According to which axis you choose a boundary for the pie-shaped sections (e.g. streets towards bastions or streets towards pavilions) the plan can be read in several ways; for interpretations that differ to that provided by this paper, see O’Grady, P.M. (1993), Op. cit., p. 59 and Balmas, E. (1969), Op. cit., p. 27.} Also in this case, the zoning concept is unique. Perret, in fact, arranged public buildings on three concentric rings interspersed with residential blocks. Public functions, (both representative and industrial) are therefore not concentrated in the city center or on the periphery, but are equally distributed within the entire city territory. According to the description, these functions are arranged as follows (cf. Fig. 8).

In the first ring (from the city centre) we find four market squares (a), and four “groves and gardens” squares (b). In the second ring there are two temples (c), two hospitals (d), two tribunals (e), two prisons (f), two butcheries (g), two fish markets (h), two city halls (i), and two colleges (l). In the third ring, near to the city wall, there are two royal stables (m), eight warehouses (n), eight residential pavilions with a garden (o), and the governor’s palace (p). The citadel is dominated by the palace of the captain of the guard (q). The first, second and third rings are separated by two rings of residential blocks with pavilions (r) that form circular streets and small squares. Other blocks with pavilions (s) form the radial roads that connect the central square with bastions. As in the 16-sided town, dual mirroring generates groups of identical buildings - here with identical functions - in opposite positions. In the middle of the central square, Perret placed the “royal pavilion” (t), an extremely tall building (60 toises high, namely, 117 meters), with undefined function but designated to host five hundred people.\footnote{“Ce grand pavillon peut contenir et loger cinq cents personnes à leur aise”, Perret, fol 12v.} This and several other public buildings are illustrated in separate plates of the book.

This city project seems to pay close attention to the theme of a healthy public environment, provided with wide streets and squares, but in particular, a public green and gardens (pour avoir bon air et grande récréation). It is well known that gardens and open public spaces were to become soon afterwards fundamental elements of France’s 17th century urban design.\footnote{For the links between Perret and contemporary architecture see note 33.}

However, apart from several architectural inventions provided by both designs, some weaknesses, also architectural, deserve to be highlighted because, as mentioned, they are crucial for the investigation of Perret’s cultural background.

Since the scope of the analysis of this research is restricted to Perret’s urban designs, we will not focus here on the visionary nature of his buildings. While the alleged impracticability of most of his prototypes, which in fact (e.g. the royal pavilion or the temples) is often cited by authors as evidence of his poor architectural skills (or of no architectural skills at all), it seems this aspect of Perret’s
work has never been investigated using a specialized, technical approach. This topic therefore deserves to be better understood through more in-depth research.

Likewise, we will not linger over the fact that many of these buildings are not suitable being too tall and visible - for a city that needs to defend itself from artillery. This problem - essentially of a military kind - has already been highlighted in other parts of this study (see sections 4.1 and 4.2).

It seems reasonable instead to suggest that the major architectural deficit of these projects - and, in particular, of the 23-sided town - is probably due to the obsessive application of mirroring and symmetry in their urban plans. In fact, while on the one hand individual parts of the city, according to the analysis provided, can be considered advanced, on the other hand, the overall arrangement of urban activities seems too abstract and mechanical, and therefore non-functional. In the 23-sided town, in fact, streets are all of the same size and not hierarchically linked to the activities they serve; it is difficult, moreover, to find a reason other than the desire for abstract geometry for the rigid duplication of functions (cf. Figs 6, 8). The same problem can be found in the 16-sided town, where functions that are very different from each other are assigned to identical buildings (Fig. 7). Perret’s logic, in short, seems to contradict all of the contemporary and ancient literature on city planning, and the usual behavior of real architecture professionals: his designs, in fact, lack any balance between demand for symmetry and functional needs.

Therefore, throughout the targeted analysis of Perret’s five fortified towns, this study attempted to highlight how the author of Des Fortifications et artifices shows the following different aspects of an articulate personality.

- In the field of military engineering, in some respects, he seems to show competencies and professionalism, while in some others, he shows the naivety of an immature technical background.
- In the field of architecture, his work shows considerable creative efforts and advanced achievements, but also technical and theoretical deficiencies usually unsuitable for a professional.
- In his work in general, architectural and engineering attitudes often overlap or are in conflict with each other.

We therefore need to return to the question introduced at the beginning of this paper: who was Jacques Perret - an architect, an engineer, a professional or simply a theorist? According to the above discussion and to the results of this investigation, his figure does not seem to correspond to the professional canons of either the technical/scientific world of engineering or to the artistic/theoretical architectural world. This is an important achievement for the purpose of this study because the equal emphasis placed on several different specialist worlds is usually the characteristic of an amateur - or connoisseur - a figure that, moreover, began to be widespread in Perret’s time. It is well known, in fact, that the 17th century connoisseur had an encyclopedic knowledge that, nevertheless, was never put into practice, verified, or verifiable, through concrete applications or by producing a proper theory. If this insight is correct, this study could provide a first assumption for the recognition of Jacques Perret’s identity. Namely, Perret may have been an erudite (and his status of “mathematician” may confirm it), a scholar with a keen interest in engineering, and - most of all - in architecture, but not sufficiently versed in both disciplines to formulate a theoretical construction or a real practical proposal. This may explain his conflicting interest in a strong and updated culture, and technical and methodological fallacies, the latter possibly coming from the lack of real practical experience.

As mentioned at the beginning of the paper, this study and its findings are intended to raise a discussion about this topic. Further studies, based on this working hypothesis, will hopefully help to provide a definitive interpretation of the complex figure of Jacques Perret.

5. CONCLUSION

This research started from the premise that Jacques Perret, Savoyard gentleman of the 17th century, known only for his single book Des Fortifications et artifices, is still an elusive figure in the history of Western architecture and deserves to be further investigated. Paying attention to the lack of specialist studies on his work, and above all, to the absence of a thorough investigation on his still uncertain professional and cultural position in 17th century society, this study aimed at raising a discussion on Perret’s controversial identity. For this purpose, contents of his book were selected - namely, the five projects of fortified towns - and analyzed both from a technical and theoretical point of view, examining evidence that coincided with the goal of the research. The study revealed that the figure of the author of these projects was that of an articulate personality that does not fit either the architectural or the engineering professional world. In other words, the results of the analysis seem to suggest for Perret the identity of a connoisseur, i.e. an erudite without a direct involvement in any real professional activity.

This work’s hypothesis, which constitutes the main finding of this investigation, aims to serve as a base for further research required to establish a greater degree of accuracy on this matter. This work, and this could in fact be its limit, has not been able to study, besides the book itself, further material that is normally used in the investigation of a personality in the field of architecture (i.e. built or theoretical works), since this material, in the case of Perret, doesn’t exist. Moreover the research is based on the analysis of only part of the contents of the book: the urban projects. A full understanding of Perret’s identity, nevertheless, cannot be separated from the investigation of his architectural designs, since his identity strongly informs his proposals. Although Perret’s city drawings are highly detailed, and provide us with a good degree of understanding of his architectural thoughts, an analysis of his buildings, conducted with the same rigorous and specialist methods, would surely be crucial to complete the reconstruction of his identity. The latter result must be considered an essential step to start a second phase of the research: the investigation of his actual influence on the architecture of the 17th century.

History of architecture is populated by both well and lesser known characters whose reciprocal weight continues to change according to the development of studies. Nevertheless, there are several cases that historiography seems to keep ignoring, remaining satisfied by superficial readings. Jacques Perret is one of the lesser


known characters. Besides practical implications, the findings of this research suggest that, in historical studies, going beyond bias or well-established interpretations could sometimes unveil unexpected research opportunities.

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