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Fernando Bensabat e Beatriz Montenegro, 2020
Arco da Rua Augusta, Lisboa

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ÍNDICE

INVENTION AND ORDER: THE PROPORTIONAL CONTRIBUTION IN JOÃO MENDES RIBEIRO'S ARCHITECTURE

Joana Maia[1] and Vítor Murtinho[2]

INTRODUCTION

The aim of this research is to understand the role of proportion as a tool in the contemporary project regarding the methodology of the Portuguese architect João Mendes Ribeiro (JMR)[3]. On a journey marked by an alternation of disciplines (architecture and scenography [01,02, 03]) JMR stabilizes a particular methodology fertile in interdisciplinary relations that, according to our opinion, is worthy of a detailed analysis. Essence, efficacy, abstraction, and elegance are characteristics that Manuel Graça Dias underlines in the body of work of JMR, qualities naturally provided by *a refinement, a delicate way of feeling and establishing proportions* [...], [*setting*] *an accurate drawing*[4] [04: 14]. Geometry is the instrument in a process of high management capacity where debugging, clarity of language, and economy of means, are the result of surgical interventions capable of producing significance, flexibility and adaptability. The word proportion dominates this equation, where consistency and rigour extend from prior studies to the completion of the constructive process, in a salutary relationship between parts understood as a whole in a prevalent search for a balanced resolution. The *invention* of the project (as an act of creation) is supported by the order element, intellectualizing a method that revives a seemingly forgotten theme in contemporary theory: proportional value[5].

RESEARCH

Graduated in Porto (1986) and with a teaching practice linked to Coimbra's School, JMR (1960) had the opportunity to work closely with Fernando Távora, an oportunity that consolidated his understanding of

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3 This paper is part of a broader research in progress, focused on understanding the value of proportion (in its classical Euclidean version, that is, within the geometric framework of the point, line and plane) in the practice of the contemporary project in Portugal. With a selection of nine architects configuring case studies, several works and methodologies are analysed aiming to understand, within a broad observation framework, not only the systemic types of practices and their relationship with the current cultural context, but also the definition of the concept in its full capacity. The research presented here summarizes one of these case studies.
4 Free translation from: "refinamento, um modo delicado de sentir e estabelecer proporções [...], [configurando] um certeiro desenho".
5 The analyses presented, fundamentally based on the observation of the project, were structured on the methodological guidelines provided by JMR, having subsequently been subject of discussion and validation by the architect himself.

architecture. JMR shares, with other important Portuguese architects, a number of assumptions shaped by an intense intellectual standpoint: the attention given to the management of a project, controlling social/personal transformations; a sensitive attention to the site; the recognition of historic value; the importance of drawing; the solidity and enhancement of the construction process; and a sensitivity for the potentiality of materials. These assumptions consolidate a praxis which is improved with experience. His method follows a minimalist drawing of an assumed rationalist bond, where influences are transversal from the field of architecture to the universe of arts, personified in names such as Mies van der Rohe or Donald Judd, just to mention a few the author states as his influences [05: 190]. This fact, that sometimes allows him to achieve abstraction, increasing opportunities of experience and meaning, leads to an understanding of space as a phenomenon of metamorphosis, capable of introducing flexibility and adaptability as pressing requirements for contemporaneity. If architecture tectonics seem to demand it more than ever, the transience of scenography emerges as an experimental field, promoting the transmission of ideas between disciplines. The notion of of representation and scenographic ephemerality forays the field of architecture in an attempt to make its own persistance more flexible, incorporating a certain dominant *magic* that is found in the atmosphere of theatres: if the occurrence is verifiable in projects made from scratch, it is underlined in architectural heritage interventions subject to successive (and necessary) readaptations[6].

Despite JMR's search for a synthetic approach, practice does not end in the mathematical abstraction, but rather reveals a humanistic concern extensible to a methodology rich in its own personalized complexity. Some of JMR's routes of exhaustive knowledge, aimed to establish bonds with the new intervention, proceed from the program 's definition to the analysis of the site; from topographic directives to guidance premises; from edified spaces to those non-edified; and from the relationship between building and body. Regulating lines (of material or immaterial nature) occur as connecting channels to establish precise links for the construction of an ordered design, with particular emphasis in an initial phase. Simple geometric figures, starting with the square,[7] arise as gauge for the construction of accurate definitions during the composition[8]. Modular systems appear as a stabilizing rule of particular importance in relation to the constructive matter and the stereotomy of materials. Different proportional systems are applied at different stages of the process, communing with the creative strand as well as a required constructive rationalization. Nonetheless, it is important to denote a sense of continuity and interpenetration that, to a certain extent, is recognizable between different phases and systems, in which the choice of a dimension that supports the development of the project is not a mere abstraction in relation to the site, construction, concept or even the human body. It is up to the constructive phase to rigorously fine-tune the pre-established dimensions, focused on the alignment of the various systems adopted, now adjusted to detail without prejudice of the conceptual structure. Although in the work of JMR the geometric proportion largely surpasses the arithmetical[9], with no tradition in its numerical logic and corresponding multiple and sub-multiple, this fact does not yield in any inconsideration for measure itself. Anthropometric concerns are played in first instance in the intuitive/sensorial experience of space itself, where exact dimensions are tested in relation to his own body measures to be, afterwards, implemented. Along with his obsession with the square proportion and permanent search for precise rectangular relations, the notebooks and measuring-tape are used daily by JMR in his continuous surveys. Examples of these tested experiences, that testify a permanent search to create a structured archive aimed to support future project decisions, are seen in Figure 1: a room of the *Convent Sainte Marie de La Tourette* by Le Corbusier, a handrail in Cádiz by Alberto Campo Baeza or the S. Benedetg Chapel by Peter Zumthor. A database adequate to the confort of the human body.

The criterion chosen by JMR is that of the study of standard measures, not in the universal sense but

[6] To understand the contamination between fields see, for example, the scenography *As orações de Mansata* (2013) and the interior work of the Center of Visual Arts, Coimbra (1997-2003), or the scenography *Vermelhos, negros e ignorantes* (1998) and the interior work of the Chimico Laboratory Museum, Coimbra (2001-2006).

[7] *An obsession I have is the shape of the square* (free translation from: "Uma obsessão que eu tenho é a forma do quadrado" [06]).

[8] JMR keeps returning, through drawing, to these diagrams, namely in the black notebooks of daily use, searching for the stabilized dimensions of rectangular spaces: square; √2 rectangle; golden rectangle; square and a half rectangle. Despite the minimum difference, the change of scale in length is considered relevant (Figure 1).

[9] *I give the fundamental dimensions and the rule, and deep down these rules are what interpret the very concept of the project* (free translation from: "Eu dou as cotas fundamentais e dou a regra, e no fundo essas regras são o que interpreta o próprio conceito de projecto" [06]).

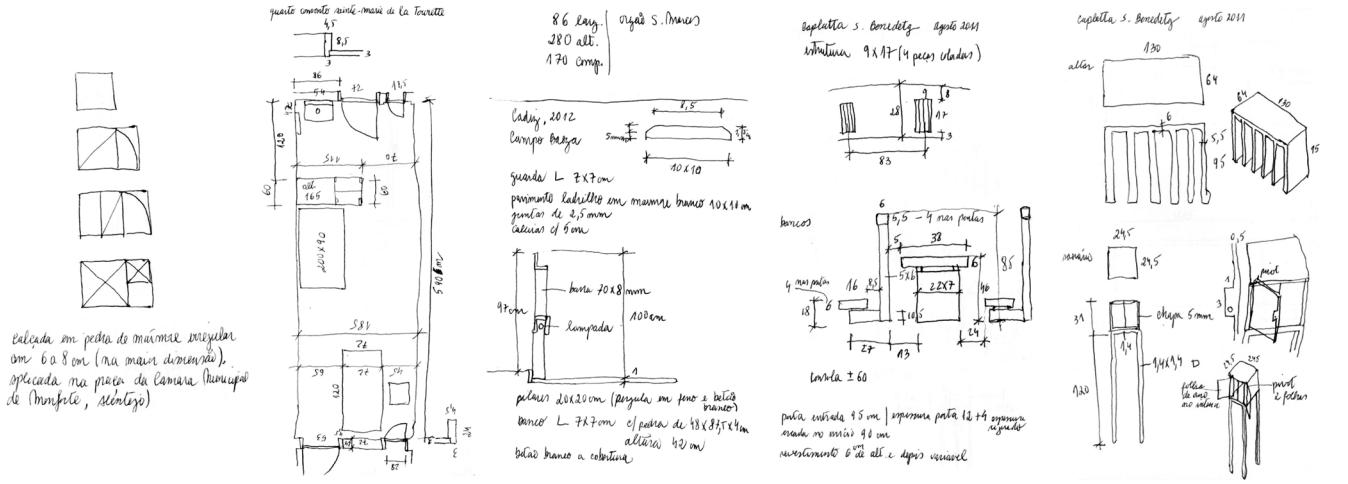

Figure 1 - Survey drawings: Sequence (square/√2 rectangle/golden rectangle/square and a half rectangle); Measurements (room of the Convent Sainte Marie de La Tourette, Le Corbusier; handrail in Cádiz, Alberto Campo Baeza; S. Benedetg Chapel, Peter Zumthor) Credits: João Mendes Ribeiro's archive.

assuming the architect as a character that tests dimensions in itself, setting proportions through a dimensional register. From the fascination with the minimal dimension or confort of relationships to the tense provocation between bodies in space (closure/release), JMR shows that, although proportion exists, it does not function in the traditional pursuit of stable harmony. The exercise follows the search for emotional intensity, through an ongoing research not detached from his own experience with scenography[10]. Therefore, it is proportion itself that seems to support the idea even if destined to escape a preconceived notion of balance: both harmony and conflict can, and should, follow a path of rigour. The notion of globality also boosts the development of proportional exercise in both planimetric and altimetric layout, in the conjugation of the volume and its real materiality, promoting the organism to an integrated whole. In order to deepen this methodology where proportion plays a crucial role, two works by the architect of Coimbra are proposed for analysis, exemplifying his theoretical thought in these matters.

HOUSE AND SWIMMING POOL, CHAMUSCA DA BEIRA (2005-2006/2010-2013)

The expansion of the pre-existing house and the construction of the swimming pool and its dependencies in Chamusca da Beira are a clear example of a practice devoted to a permanent proportional sense. The aim of the project was to associate the rehabilitation of the courtyard, including a covered space before the wall that was previously used as the firewood house, with a complementary space that acts as a living room with the ability to serve the surrounding outdoors: a concrete volume. A wall seems to separate *two eras* almost as if embodying an organic axis that structures a mediating space between two realities, confronted in a tense gesture that promotes a conceptual symmetry of reflection. The introduction of this duality, ostensible in the convergence of the inclination in both roofs, is softened not only by connecting elements that interrelate the distinct spaces but also (and paradoxically) by symmetry itself, capable of suggesting mimesis. Topography emerges as an initial theme to solve the basic relations in height, with other pre-existing parameters (natural and constructed) contributing to the germination of the volumetric definition. The wall, the well, the water basin and some pre-existing trees, as premises ofthe garden, guide some of the alignments of the composition, establishing important references aimed to materialize certain regulating lines, crucial not only to the implementation of the new volume but also to conjugate its relations with the surrounding environment. If this occurs with preexistent elements, others that were also proposed ensure the balance of the ordered composition, completing the whole scenario. Two tangents to the well's circle, perpendicular to each other, define planimetric key alignments that specify the starting point of the modulation of the volume: point *P1*. A longitudinal axis is generated, building the elongated character of the volume,

10 In scenography, JMR starts from the actor's body as a generator of space, for a reciprocal interaction between interpreter and physical environment conforming a highly personalized process. In the practice of his architecture, that is to say in the "stage of life", given the impossibility of measurability, JMR assumes the role of actor/interpreter, projecting in the comfort of the actor, his personal comfort in the living of spaces [05: 291-302; 07; 08]. This way, his research emphasizes a sensorial aspect, extendable to the interaction with its direct agent (the human body), showing his humanist inclination.

punctuated on both sides by finely centered finishing elements: the water mirror in weathering steel in the southeast, and the proposed tree in the northwest. To the southwest, a cluster of trees seems to engage in a dialogue with the alignment of the wall, while, at the same time, two exterior trees (one already existent and the other, proposed) become essential to the alignment of the openings: a contribution meant to guide the visual perception from the interior space (Figure 2).

In planview, a cuboid volume is structured in a 3:1 relation, defining the mediation between the preexisting building and the garden. Consequently, axes and alignments descendent of this initial metric define not only the design of the enclosure, but its extension to the space outside. Dimension *B* (half of *A*) allows the introduction of a great part of the symmetry axes of the openings and defines the central axis in the transversal dimension. Dimension *C* (a quarter of *A*) draws a great part of the limit of the openings (Figure 3a). Outside, next to the main facade, two great square platforms implement the steps of two main openings in dimension *B*, with the third step of the third window defined, in a smaller scale and different geometry, with lenght *C*. It is interesting to denote how the two main platforms in the transition from the interior level to the garden, horizontally display the missing form of the corresponding opening in the vertical plane. In the opposite facade, the minimal dimensions outlined by the contracted axes highlight a tense mediation between volumes, in strict relation to the preceding metric values *C*, *D* and *E*, creating an intimate confrontation with relations close to the human body. It is important to emphasize the disconnection between these elements that reestablishes each one individualy,while maintaining their profound interrelation (axes *A* and *B* in Figure 3b are an example of this).

Similar relationships extend to the altimetry, where the 3:1 ratio is transposed in close relation with the highest elevation point of the terrain showing, as we have said, JMR's sensitive attention to topography (Figure 4). As in the starting point *P1* of the layout drawing, it is from the altimetric dimension next to the well that the proportional construction begins, conforming an extra space of variable treatment. In the opposite side, it is possible to confirm that the idea of dimensional excess presented in the base is adjoined at the elevation as part of the cover, in the proportion of a square with lenght *C*, thus materializing a desire for the restitution of a certain balance. The submetric, then, emerges from this relation, establishing openings and wooden shutters, always related with a square or double square geometries in the main longitudinal elevation. The metric continues in the opposite facade, where the conceptual decisions implement a more unstable drawing and scale by testing minimal dimensions. However, the geometric rigor, a depuration of the centrality or the precision in the alignments, remains. This exercise is also visible in sections and lateral elevation's drawings, where a pursuit for proportional balance is not

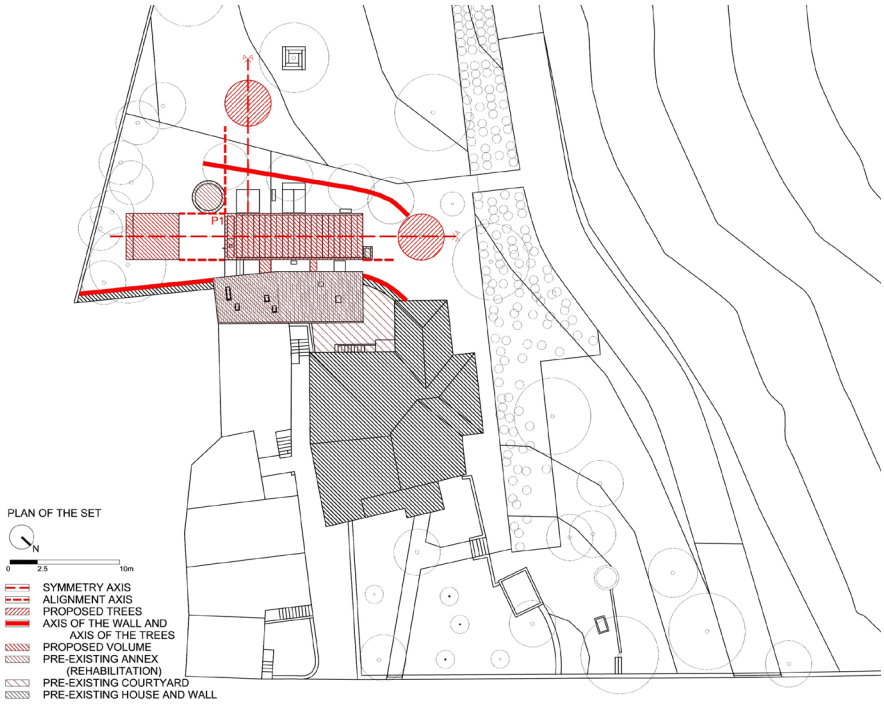

Figure 2 - Plan of the set. Regulating lines.

only attached with the material aspect, but also with the spatial issue, as section C1 (Figure 4) certifies. It is important to denote that, in addition to the use of metric, the use of the stable figure of the square (in singular or combined options) or the use of symmetries and alignments as vital tools of the composition, everything is modulated according to the dimension of 10,5 cm. This measure matches the width of the wood mould (constructive proportion), verifiable in the stereotomy of materials: wood and concrete. The visualization of the exterior environment and its referential elements, as well as the proposed volume and the interior issues, help to document the described process primarily recognized in the drawing's clarity.

Regarding the swimming pool, we can see from the sketches that the relationship established between the two interventions derives from the irregularity of the pre-existing wall (Figure 5). As the extension body of the house previously proposed, a new volume conceived as a support building of the pool is positioned in a strict relationship with the wall (creating an intimate passage from the garden to the orchard), releasing the pool platform for a more direct relationship with the natural surroundings. Two perpendicular axes outline, not only the limits of the proposal, but establish the orthogonality of the place. JMR's studies show that the composition starts with rigid symmetric relations, that during the process,

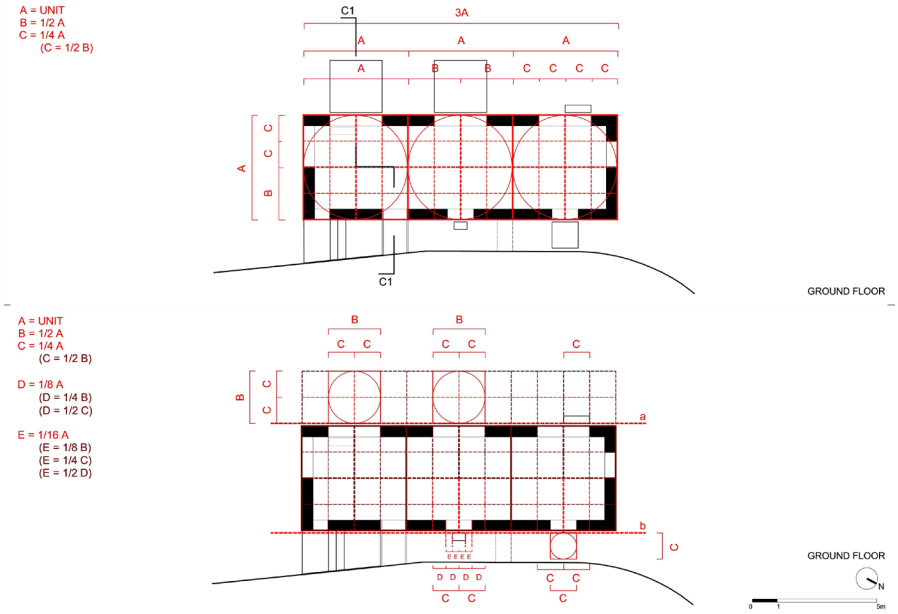

Figure 3 - Ground floor. Metric.

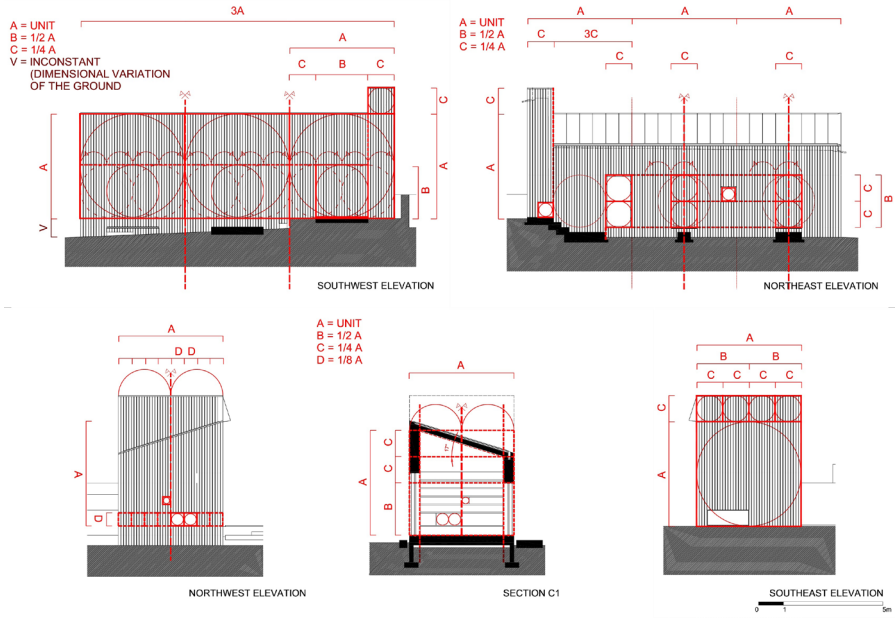

Figure 4 - Elevations and section. Metric, symmetries, relation between elements.

come to acquire greater flexibility. The pool decentralizes from the symmetry of the platform and volume (as the preliminary sketches reveal) to incorporate a more dynamic impulse, even if constructed within a precise metric.

The design of the platform and steps interacts with the stereotomy of materials, whose logic seems to approach a modular game of construction with blocks, using the 3D pieces of stone as modules. Rethinking modular structures developed by the architect himself, the solution for the volume shows a reinterpreted mathematical systematization[11]. A double square relation draws the central piece of the platform, limiting not only the support volume but the pool itself (Figure 6). An extra margin in each side changes the orientation of modulation in a 90º rotation, setting the end of the whole set. This double square relation is transposed to internal relations, as the coverage of the volume or the stereotomy module itself shows (Figure 7). The whole composition is inserted into a network of multiples and submultiples with the lenght of 75 cm, playing the stereotomy of the pavement a crucial role of guidance in this matter (Figure 8). All these relations are transposed to altimetry, where the transversal elevation gains (once more) a double square proportion and the longitudinal elevation duplicates it in a 4:1 ratio (Figure 9). The result shows how order, even if developed in a search for flexibility, contributes to a sense of continuity and integration promoting harmony, not only in the internal labor of the composition but also in the external relation with the surrounding context. The polished stainless steel facades of the volume, reflecting the surrounding natural environment, expose what seems to be an extra-systemic strategy (a semantic allusion of symmetry by reflection) aimed to extend proportional control to other settings.

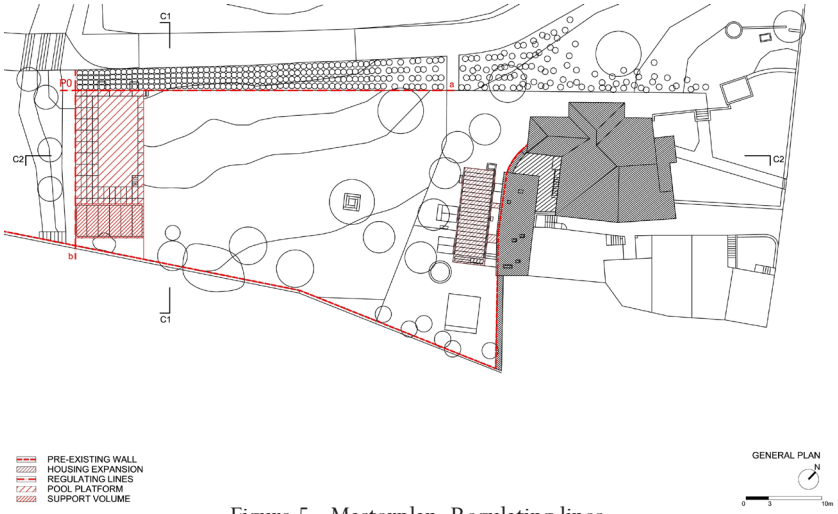

Figure 5 - Masterplan. Regulating lines.

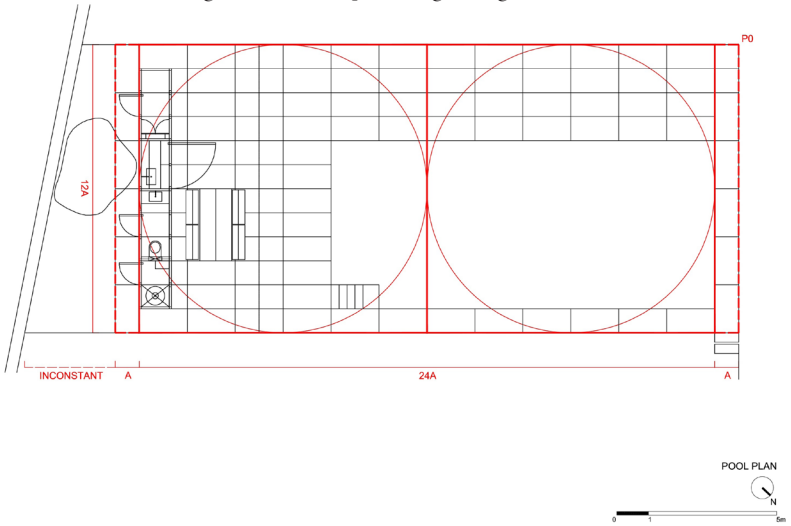

Figure 6 - Pool plan. Geometric base.

[11] To understand this comparison, see the scenographic works by JMR such as: *As orações de Mansata* (2013), co-authored with Luísa Bebiano; *Entrada de Palhaços* (2000); *A list* (1997); *Propriedade Privada* (1996).

TEA HOUSE, MONTEMOR-O-VELHO (1997-2000)

The Tea House in Montemor-o-Velho may be regarded as an intervention developed in close relation with architectural heritage. Nested within the ruins of the Alcáçova's Palace, the proposal follows the directrixes of the site and its dominant direction. Two regulating lines outline the main structure of the castle: axis *a* establishes the direction of Paço das Infantas' ruins, conforming the existing and proposed settlement to the geography of the site and its dominant direction; and axis *b*, settling the church alignment. Two different pathways give access to the

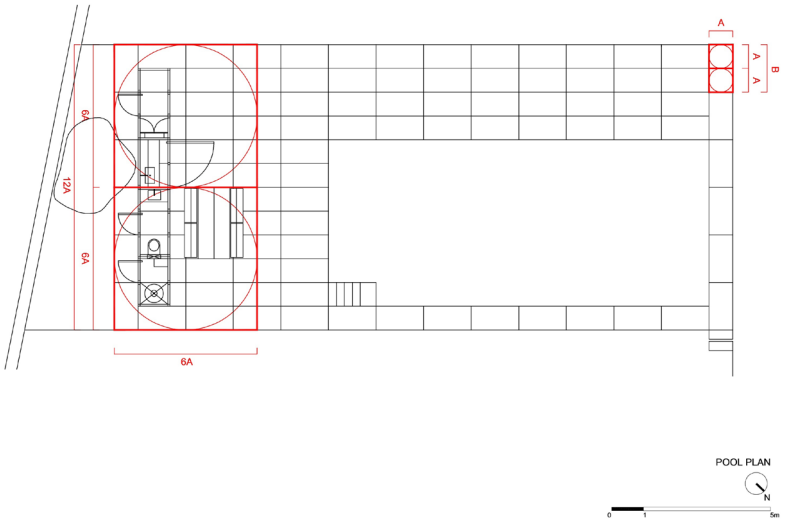

Figure 7 - Pool plan. Geometric resolutions.

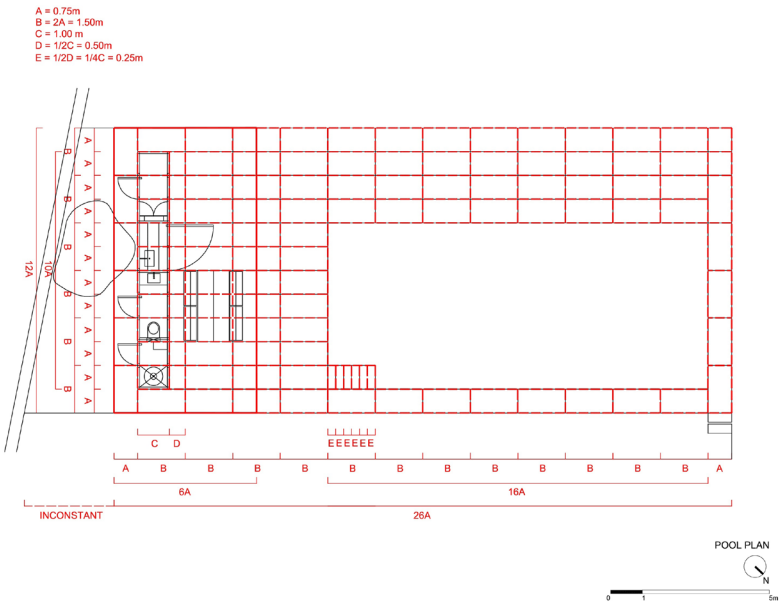

Figure 8 - Pool plan. Metric.

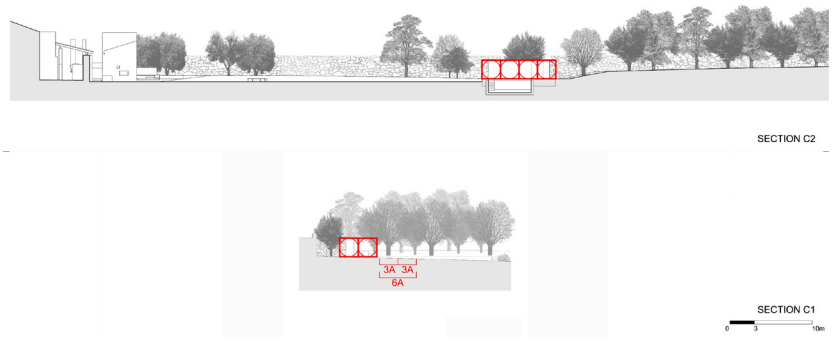

Figure 9 - Sections. Geometric base.

center of the enclosure, which are associated with the overall configuration of the castle (Figure 10). Two paths allow entering the tea house: one from the center of the castle, leading to the main entrance through the esplanade; and another, peripheral, allowing lateral access, deriving from the wall (Figure 11). In consideration for the symbology associated with the tea ritual, the project does not neglect the geographic specificity of the site. Facing west and benefiting from solar orientation, the proposal is drawn on an elevated platform. Despite being physically separated from the ruins with the interior space contained within a glass boundary, the set seeks a symbiosis with the preexistence, in a gesture close to the theoretical directives of Cesare Brandi [12] [09].

Combining interior and esplanade, the proposed set is drawn as a product of two phases: an initial proportion in root-2 rectangle, later adjusted by the facade module and the stereotomy of the pavement itself. In a scenario where scenography invades the real space, the use of symmetries by reflection, the accuracy of alignments between elements and materials, or the choice for simple geometric figures, helps to find a sense of stability and precision, transferring the protagonism to the irregularity of the preexistence. In the space outside the glass volume, we can see a relation between the main step width and the depth of the esplanade space, defining the boundary between exterior and interior space (Figure 11). Here, inside the glass box, the virtual symmetry axis that connects the main door with the private entry of the kitchen (that is, the central module of the wooden volume that lodges the facilities), defines not only the mirror of the structure but also the division of the programmatic functions in this internal element: the lateral margins are predetermined to circulation (Figure 12). In the plan drawing, the wooden volume of 3:1 ratio generates, with the main body, a 4:1 relation in which the symmetry of reflection exists but is simultaneously distorted in response to programmatic requirements. This 4:1 relation is extended to altimetry, as well as the 3:1 ratio of the internal volume. The tendency for the square as a structural figure in the composition, already perceived in the plan drawing, spreads to the elevation and sections drawings as well, outlining not only proportional relations but also recognizable elements (Figure 13).

A closer look to the constructive scheme also shows a transposition of the symmetric logic to the conformation of the internal space, where the geometric precision of the choices made is clear (Figure 14). The experience of the space conceived helps us to understand a little bit more about the clarity and precision of João Mendes Ribeiro's method, as well as his exercises between open spaces and minimal dimensions. Being clear the contemporary intervention in direct interaction with the preexisting heritage, prevailing fragments of history evoke the conceptual intervention of the theater's universe in an attempt to create a more unified whole, and reestablishing new meanings. For instance, a new staircase leads to one of the openings, today deprived of its initial function, but still capable of restoring part of its memory in an abstract gesture. In summary, all the regulating lines, along with a modulating work, the accuracy of simple geometries or certain subtle symmetries (all subject to interrelation in different stages of work), promote the systematization of an ordered composition which, by contrast, achieves an adequate symbiosis with the historical heritage, thus, securing it the leading role. As in the previous example, the centrality and precision in the alignments (elements, materials) compete for a certain cohesion that becomes apparent in an essential and unitary drawing.

CONCLUSIONS

The analyses presented of JMR's practice, reveal the necessity to revise the theory of proportion applied to contemporaneity. In order to perceive the totality of JMR's method, that is recurrently improved by his self-criticism, it is necessary to intersect different stages of its development to understand his pursuit for a proportional intent, for instace, in the

12 Cesare Brandi (1906-1988), unavoidable name of the theory and practice of art works restoration, structurally restored the skills of this activity previosly associated with the mere function of craftsman, without any theoretical-critical support. Thus, he developed the activity supported in experimental practice, where an idea of interdisciplinarity begun to take shape through the articulation of three fundamental fields: scientific research, teaching and practice of restoration, raising the exercise of practice to the level of theory [09, p. ix-xviii]. Brandi's critical philosophy, which extends to different artistic disciplines, reveals the pre-existing artistic object in its material and immaterial components, being the material aspect the only one subject of intervention: a practice based on the mere essentiality of the intervention, with no intention of disturbing the aesthetic or historical data of the work. This reading deeply attentive to the contribution of different periods, opens the way for contemporary interventions in the field of architecture to assert themselves in line with the continuity of pre-existences, while contributing to the preservation of the most pressing values of the past, making a synthesis between historical times.

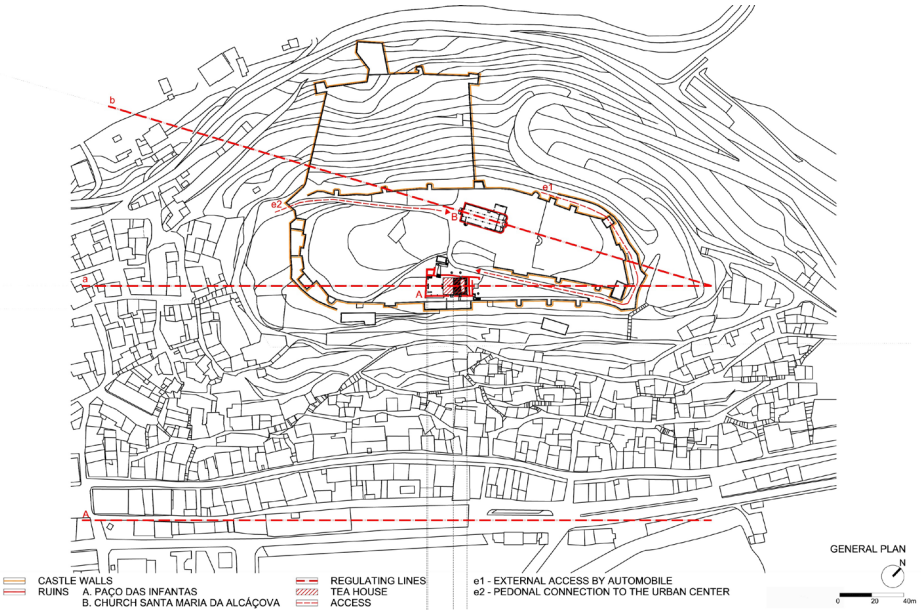

Figure 10 - Masterplan. Regulating lines.

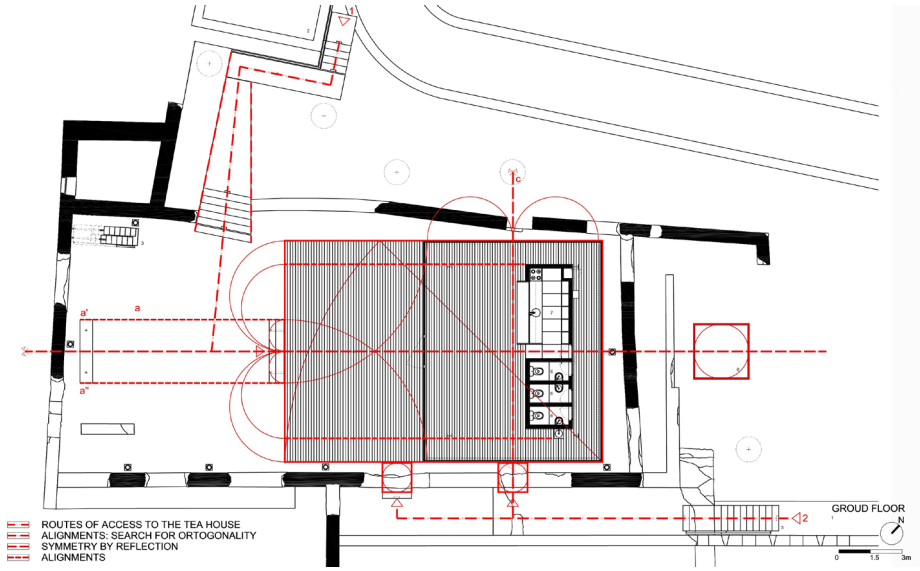

Figure 11 - Ground floor. Access, geometric base, symmetries, alignments.

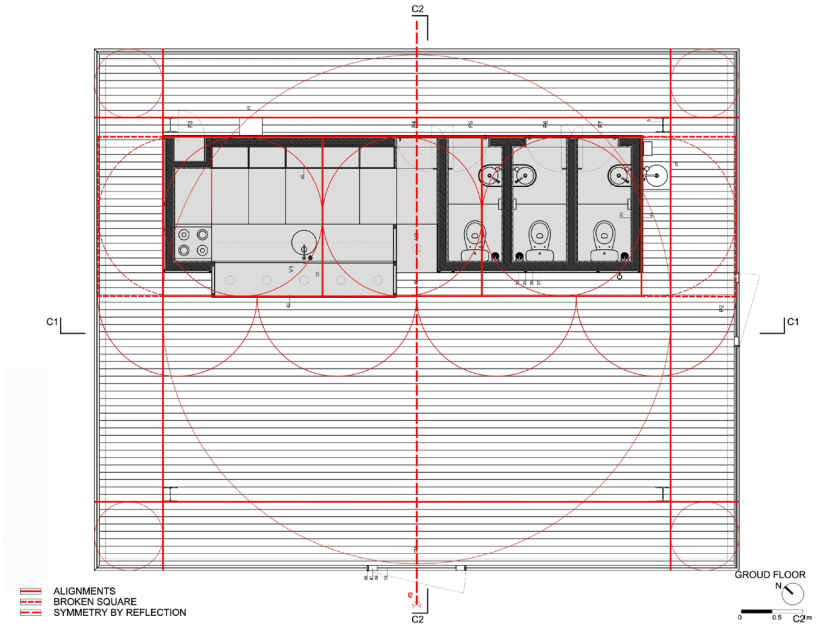

Figure 12 - Ground floor. Geometric base, symmetries, alignments.

territory and contextual environment (physical, historical, social); the scale of the buildings; the constructive work; and the relationship with the human body. All the regulating lines (of material or immaterial nature) seem to occur as connecting channels to establish precise links for the construction of an ordered design, an aspect that is particularly evident in the initial stages of the project. Simple geometric figures, starting from the most perfect of quadrilaterals, arise as reference for the construction of accurate definitions. Modular systems appear as stabilizing rules that gain a particular importance in questions related to the constructive matter and stereotomy of materials. Alignments and symmetries (internal or external; full or partial) complete the search for a balanced design. The norms established in the work of JMR are imposed not as a limitation in itself but as a guiding tool leading to results that not only enhance procedural safety but also simplicity, economy of means and clarity of justification, intended to simplify communication channels between different agents of the project and construction. A *security matrix* ensures the *eternal return* to the resolution of problems, where the contingent ocurrence of accidents tend

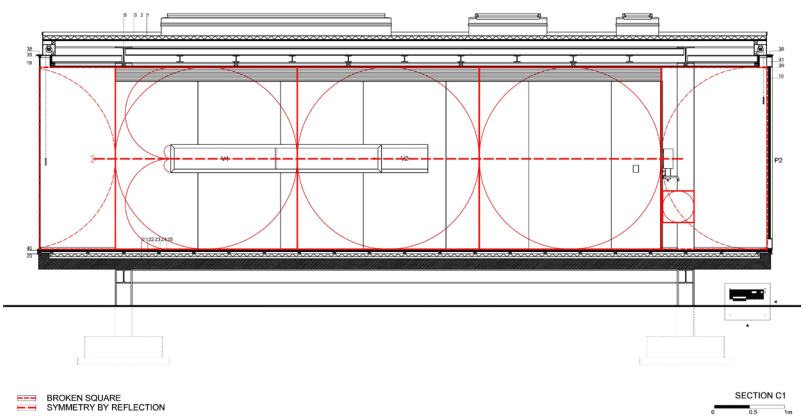

Figure 13 - Section C1. Geometric base, symmetry.

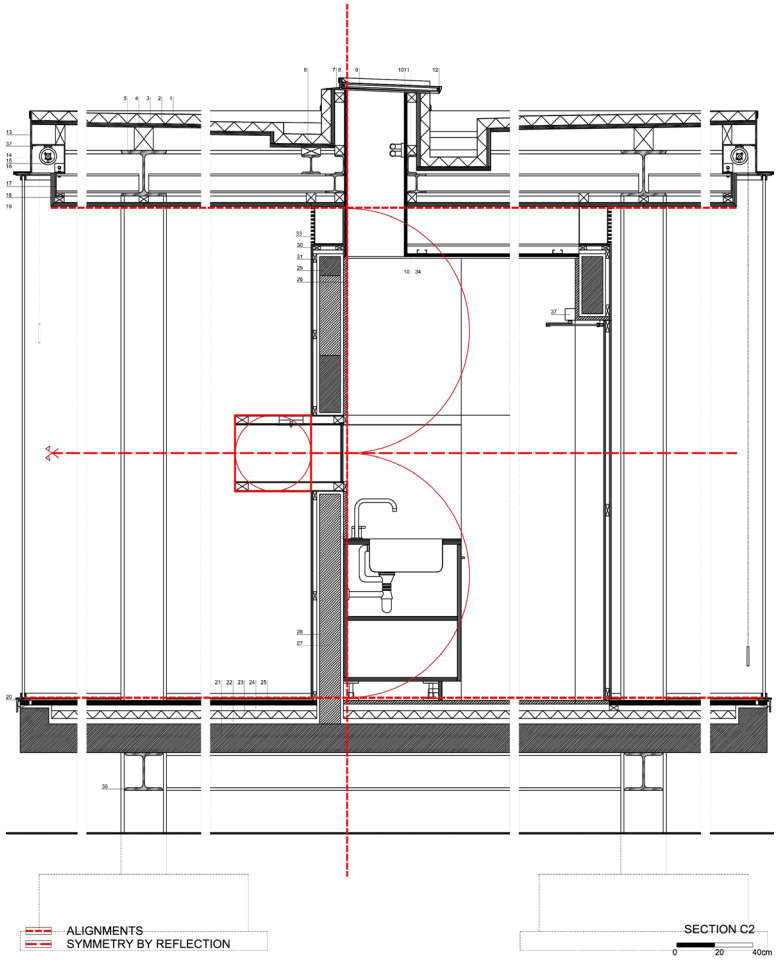

Figure 14 - Section C2. Symmetry, alignments.

to be considered as a fortunate event, due to the malleability they introduce into the system, towards a carefully conceived equilibrium of assumptions properly adapted to the contemporary context. The need for an implementation of an intellectual logic that justifies the choices made, to promote the construction of a coherent design, is the motto required in a discipline where the inevitable inventive strand leads the conceptual narrative.

If the word *invention,* in its etymological root, embraces both *freedom* (creation, discovery) and *confusion* (fakery, lie), *order* emerges as an inevitable key capable of restoring *truth* in this interplay between independent, yet relatable, meshes that promote the restitution of the real (because full), balance. In the current context where the complexity of contemporary life proliferates, proportion arises with renewed significance in a search for new harmonies.

Joana Maia and Vítor Murtinho

Figure 01: Credits: João Mendes Ribeiro's archive.

Figures 02 to 14: Base drawing credits: João Mendes Ribeiro's archive. Analysis by Joana Maia.

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