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For from design and through design and for design are all things

Abstract:

Academic research in architecture has mainly become a theoretical activity driven away from its subject's core, focusing in complementary fields. Analytical investigations are common – concerning historical character, theoretical, constructive or technological – as well as propositional thesis – mainly regarding construction and technology. Yet, you can find much investigation in this scientific area, which find its significance in other domains. However, project-based theses in architecture, in which there are no antagonism or exclusion between theory and practice but rather promote complementarity, are quite scarce. This paper aims to answer the question that seems natural and consistent with the above scenario: how can we define a new paradigm, in which architecture would be understood and portrayed as a system for producing and spreading knowledge?

Keywords: Research, Knowledge, Architecture, Design, Archer, Portugal

Text

There are circumstances where the best or only way to shed light on a proposition, a principle, a material, a process or a function is to attempt to construct something, or to enact something, calculated explore, embody or test it.

Bruce Archer, *The Nature of Research*, 1995, p. 6.

It is generally agreed that *research by design* has existed for a very long time, though it has mostly taken place outside the academy. In the 1970s, Bruce Archer (1995)¹ identified three categories, which he labelled “research about practice”, “research for the purposes of practitioner activity” and “research through practitioner action”, which could be encapsulated in the three words *about*, *for* and *through*. In 1993, these categories were adapted by Christopher Frayling in his text “Research in Art and Design”, when they became “into”, “for” and “through art and design” (Frayling, 1993/4). Since then, a serious discussion has been ongoing in peer-reviewed international journals, such as *The Journal of Architecture* (Royal Institute of British Architects, ed.) and *Architectural Design Research* (Allpress, Brent; Ostwald Michael, ed., 2005-2008), to cite only two examples, and there has been a book series on the subject – *Design Research in Architecture* (Fraser, Murray; Hill, Jonathan; Rendell, Jane; Cruz, Teddy, ed.). In the meantime, various research-by-design centres have developed, particularly in England but also in Australia, Norway, Sweden, Belgium, Holland and, more recently, Portugal.

In fact, the subject has been thoroughly theorized, though it has proved difficult to illustrate. This article does not aim to challenge or overturn these theories, but rather seeks to exemplify each of Bruce Archer’s three categories with three practical cases from Portugal, taken from the domain of what might nowadays be called an architecture dissertation *by design* (two Masters and one Doctorate)². It does not attempt to exhaustively describe these studies, but rather analyses their pertinence and discusses how they could be classified within *research by design*, and in the sphere of academic research in general.

¹ Although this article was only published in 1995, the theory in it was first put forward in the 1970s (Norman, Heath and Pedgley, [n.d.]).

² These dissertations were all supervised or co-supervised by me.

1.

A Malagueira como nunca o foi (“Malagueira as it never was”), a Master’s dissertation by João Galhardo Santos³, is an example of *research about practice*. It concerns the Malagueira housing estate on the outskirts of the city of Évora, designed by Álvaro Siza between 1977 and 1995.



FIG. 1 – Location of the Malagueira housing estate by Álvaro Siza (drawing by João Galhardo Santos, 2014)

³ This research is an on-going work undertaken in the context of the Integrated Masters’ in Architecture at the University of Évora and under my supervision.



FIG. 2 - Álvaro Siza in the Malagueira housing estate (photo by an unknown author, Évora Photographic Archive)

The development project dates from the period after the 1974 Revolution when there was a severe housing shortage in Portugal. During this time, the programme *Operações SAAL* (*Serviço Ambulatório de Apoio Local*) was set up to assist house-building initiatives organized by Residents' Associations (a pilot scheme ran between 1974 and 1976).

The Malagueira project developed over several phases, and included a total of 1200 households, infrastructures and public buildings in an area of around 27 hectares.



FIG. 3 - The Malagueira housing estate by Álvaro Siza (photo by José Manuel Rodrigues)

This study focuses particularly upon the parts that were never actually built: an aparthotel, the headquarters of a cooperative, a clinic, church, cinema, old persons' home, restaurant/tea room, two blocks of special housing and a space for an orchestra.

The research starts from the premise that to understand a development project such as this, it is necessary to analyse its various phases. As Jaime Sarmiento puts it in "Recrear una obra de arquitectura - el papel del hacedor": "the work of art is like the tip of the iceberg; the thought-process that has generated is hidden from us and we have to discover it"⁴. That is to say, the built part is no more than the crystallization of a particular moment in a design project, whose history is much longer and more complex than what is expressly presented in the construction.

⁴ "la obra de arte es como la punta visible del Iceberg; oculto a nuestros ojos está el pensamiento que la genera, y que nos es preciso descubrir" (Sarmiento, 2000, p. 2)

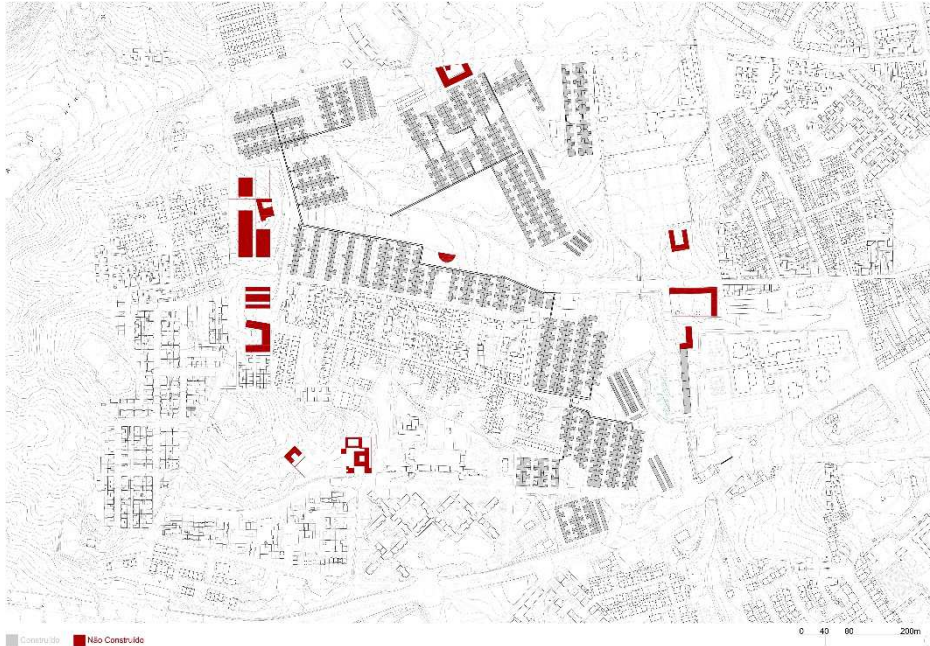


FIG. 4 - Plan of the Malagueira housing estate showing the features that were planned but never actually built (drawing by João Galhardo Santos, 2014)

The buildings represent only one moment in its genesis, the corollary of a long history – just as a text's conclusion does not always encapsulate its whole content. For this study, it is necessary to analyse the various versions of the project in order to assess the role played by the unconstructed buildings throughout the process as a whole. It aims wherever possible to revive the moment of design in Álvaro Siza's studio, recreating the internal argument inherent in its conception in the context of this development project and the various other designs that were at the time on the drawing board and in the studio's archives.

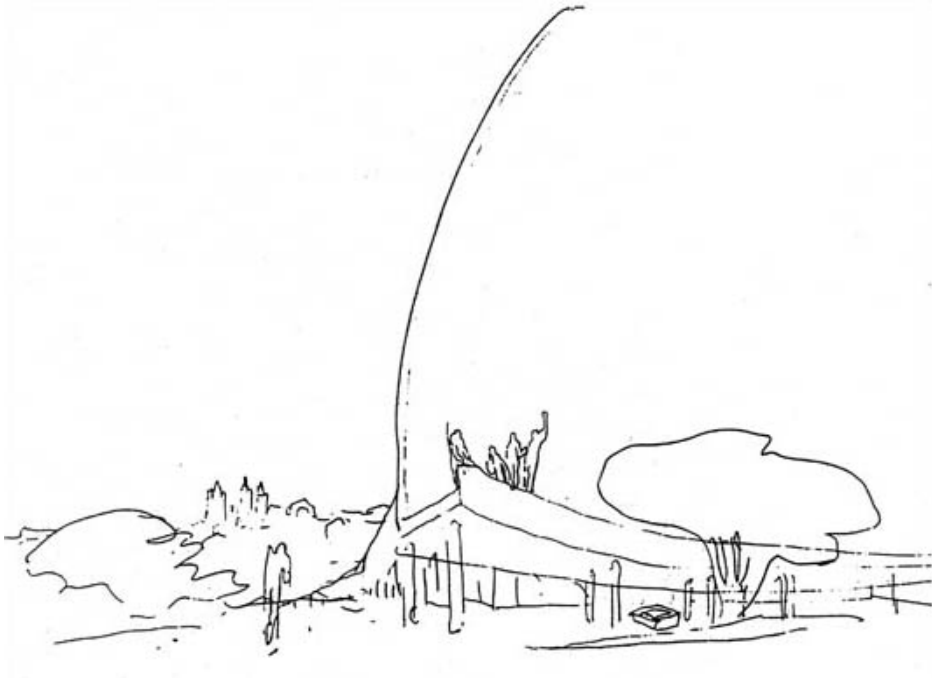


FIG. 5 - Unbuilt project in the Malagueira housing estate (drawing by Álvaro Siza)

But, as Baxandal claims: “it is not a reconstituted historical state of mind, then, but a relation between the object and its circumstances” (Baxandall, 1985, p. 42). Analysing a work of architecture involves to some extent taking on the role of the creator, “redoing” the project over again. It is this that distinguishes a truly analytical work from a merely descriptive one. As Rafael Moneo states in “La ‘Ricerca’ como legado”: “the plans allow the critic to sense the trajectory of the project. [And the critic] feels encouraged at being able to ‘reconstitute’ projects from the ‘schizzi’. The role of the critic is now to scrutinize architecture with the eyes of the architect”.⁵ For Tafuri in *Teorie e storia dell’architettura*: “by rationalizing something that, in aesthetic activity, mostly takes place outside the control of logic, strictly speaking, and discovering the ideological values associated with formal choices often made by custom, criticism can give the architect the great responsibility of continuous and ruthless monitoring of

⁵ “los dibujos permiten al crítico intuir el itinerario del proyecto. [E o crítico] se siente animado a ‘reconstruir’ proyectos partiendo de ‘schizzi’. El papel del crítico es ahora el de escudriñar la arquitectura con los ojos del arquitecto [...]” (Moneo, 1997, p. 7)

his sources and the symbolic systems upon which he draws, consciously and unconsciously”⁶. In order to carry out this reconstruction, it is necessary to resort to sketches, designs, maquettes, photographs, correspondence, memoirs, texts, interviews – materials that are mostly unpublished. Most of these were found in the Álvaro Siza Documentation Centre, but there were also some in the Évora Municipal Archive, Évora Photographic Archive and the Headquarters of the CRL Boa Vontade Economic Housing Cooperative. The documents themselves provide clues, from which a hypothesis emerged: that the construction of the buildings that were planned but not built would be capital for the total coherence of the whole. The constructed part, though magnificent, is often no more than a reduction of the sublime. The dissertation aims to test this hypothesis, thereby contributing to a better understanding of Álvaro Siza’s work and of the housing estate itself, and possibly enabling it to play important role in its future development.

2.

Santuário de Nossa Senhora do Cabo. Mitologia e rito – fundamentos para um projecto de recuperação (“Sanctuary of Our Lady of the Cape: Mythology and Rite – bases for a restoration project”), a masters research project by Paulo Dias⁷, is an example of *research for the purposes of practice*. The starting point for this research is the possibility of intervention in the Sanctuary of Our Lady of the Cape, located to the west of the town of Sesimbra, southwest of Lisbon – a pilgrimage site since the remotest times, and today in ruins. This leads to a reflection about the current heritage restoration paradigm, which involves transforming structures to make them compatible with what has come to be known as *present comfort needs*. Although buildings are adaptable living organisms, this policy has often resulted in the excessive manipulation of their meaning, for different reasons, and ultimately the destruction of the very things that need to be conserved.

⁶ “con il rendere razionale ciò che, nell’attività estetica, avviene per lo più al di fuori di un controllo logico in senso rigoroso, e con lo scoprire i valori ideologici connessi a scelte formali spesso compiute per consuetudine, la critica può porre l’architetto di fronte alta responsabilità di un controllo continuo e spietato delle sue fonti e dei sistemi simbolici cui in modo conscio ed inconscio, egli si affida” (Tafuri, 1968, p. 241)

⁷ This work was carried out in the sphere of the Integrated Masters in Architecture at the University of Évora under the supervision of Pedro Matos Gameiro and under my co-supervision.

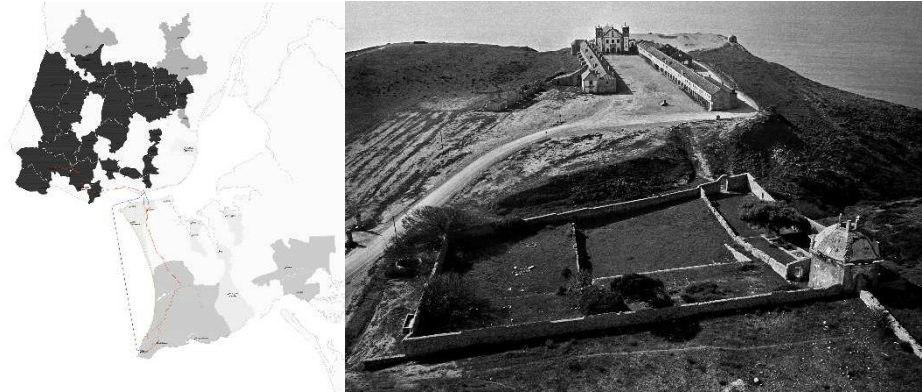


FIG. 6 and 7 – Location of the Sanctuary of Our Lady of the Cape (drawing by Paulo Dias, 2013).
 Sanctuary of Our Lady of the Cape (photo by Carlos Sargedas)

This led to careful research into the morphological development of the sanctuary, based not only upon what has been published about it to date, but also on a series of unpublished and in some cases completely unknown primary sources: manuscripts, engravings and old photographs.

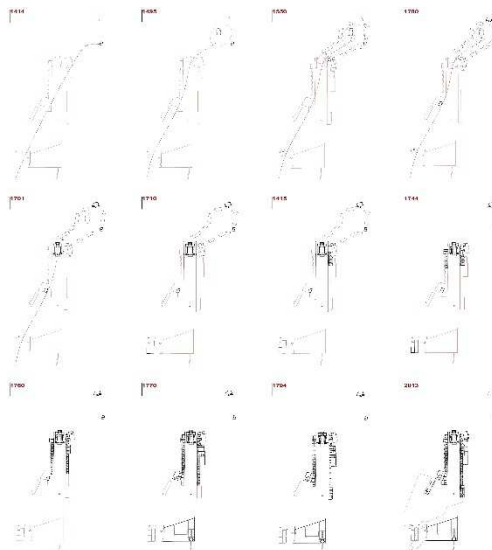


FIG. 8 – Morphological development of the Sanctuary of Our Lady of the Cape (drawing by Paulo Dias, 2013).

This analysis aims to deconstruct something that is ultimately a synthesis of a complex process. From the architectural perspective, this research is a fundamental part of the creative process, aiming to illuminate aspects of reality that were not previously visible. The architectural project thus involves an in-depth understanding of the existing complex and a desire to perpetuate it in a way that is particular to architecture, maintaining the coherence of its remit and above all, meaning [Fig. 9 and 10].

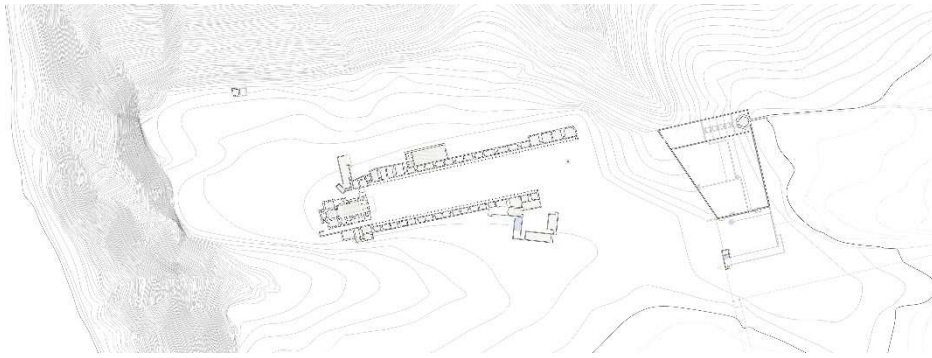


FIG. 9 - Rehabilitation project for the Sanctuary of Our Lady of the Cape (design by Paulo Dias, 2013)



FIG. 10 - Rehabilitation project for the Sanctuary of Our Lady of the Cape (design by Paulo Dias, 2013)

Thus, this research arose from the need to intervene in a building, and therefore from an *a priori* design need. But while this category of *research by design* seems at first sight to be similar to what occurs in professional architecture practice, the kind of research that underpins professional design does not always comply with the requirements of academic research, nor is it always very innovative. In fact, any future academic study or architectural invention involving the Sanctuary of Our Lady of the

Cape will necessarily have to take account of this research by Paulo Dias.

3.



FIG. 11 and 12 – Alqueva Dam and Reservoir aerial view and foto of the dam (photo by Sofia Rodrigues, 2013)

Águas Lavradas. Requalificação de territórios fragmentados pela introdução de planos de água artificiais (“*Farmed waters: Recovering territories fragmented by the creation of artificial bodies of water*”), doctorate research carried out by José Maria Cumbre⁸, is an example of *research through practice*, the category that has been most difficult to define and put into practice, and the one that most obviously combines design and research. It concerns the Alqueva dam in the Alentejo region of Portugal, which has not yet managed to invert the pattern of social development and economic growth in the region (marked by increasing depopulation and ageing, low educational levels and poor agricultural productivity despite functioning since 2002 with drastic alterations to the landscape). The starting point for this research was not a prosaic commission or question of a biographical or circumstantial nature, but rather a far-reaching problem area defined *a priori*. The thesis does not get involved in the controversy over whether the dam should or should not have been built in the first place (it takes that for granted); rather, it makes a proposal for how the body of water might be used productively in a way that goes beyond mere contemplation or tourism.

⁸ This research is an on-going work carried out within the Doctorate in Architecture at the University of Évora, supervised by myself and by Prof. João Manuel Bernardo.



FIG. 13 - Alqueva Dam and Reservoir (photo by José Maria Cumbre, 2013)

It suggests that it may be possible to return to the agricultural activities of former times by using a hydroponic system (soilless plant cultivation technique) fitted to the reservoir



FIG. 14 - Alqueva territorial intervention project (design by José Maria Cumbre, 2013)

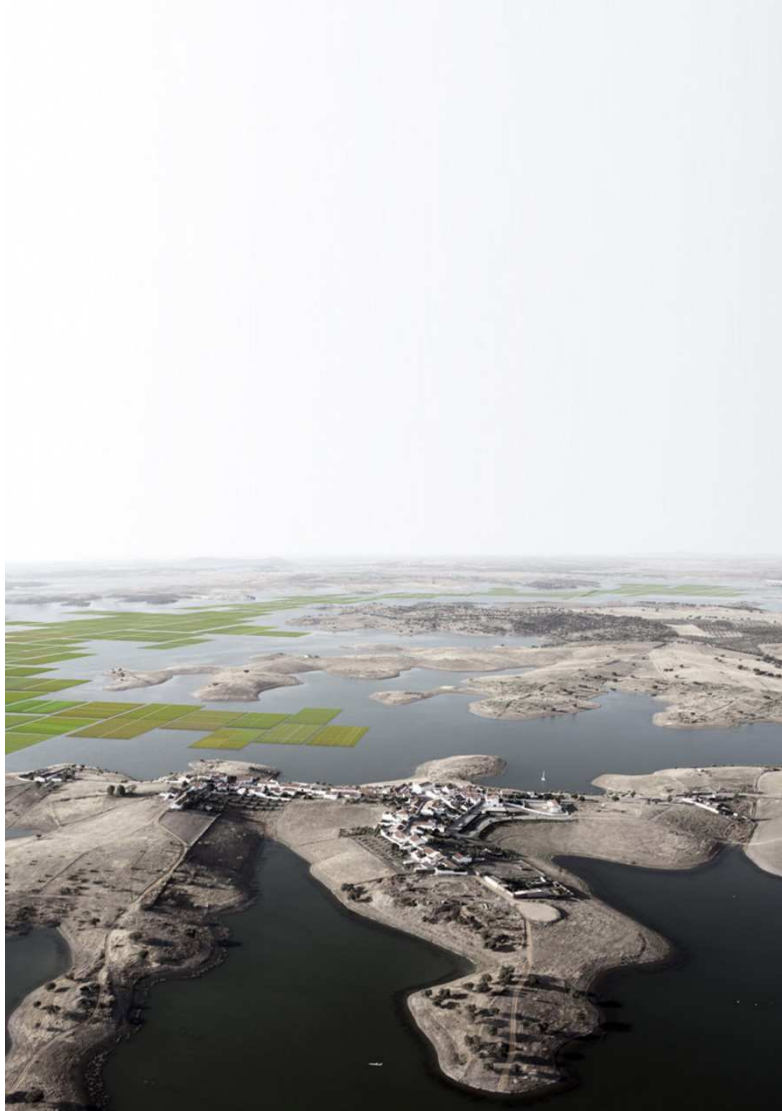


FIG. 15 - Alqueva territorial intervention project (design by José Maria Cumbre, 2013)

The plants are cultivated in a closed-circuit system in which a liquid solution, containing all the necessary nutrients, circulates. The system involves floating modules anchored at the bottom of the reservoir with self-regulating tensioned

cables which provide stability and adjustment to different water levels. The area destined for the planting of fruit and vegetables is estimated to be around 3230 hectares. This will enable the counties in the surrounding area (Alandroal, Portel, Reguengos de Monsaraz and Mourão, deprived of the expected growth in tourism due to a drop in investment in that sector) to become agriculturally productive, with a yield that is far superior to that of dry farming. This project will also reconfigure the riparian strip (between the minimum and maximum water levels), and will replace the (now submerged) old network of paths and roads with a network of waterways that will reunite the riverside villages.

Finally, this study has aimed to transform a process that is by nature cryptic into something that can be transmitted through writing in order to generate objective knowledge, accessible to all. Though the technologies and analyses underpinning this study will have to be fine-tuned in subsequent research, this work has already been submitted and selected for publication in an international academic journal (Laborda Yneva, José, ed).

This work does not position itself in the *for practice* category (where research serves a practical purpose) or in the *about practice* one (which observes processes of practice); rather it is, as said, a form of research *through practice*, where practice actually constitutes research. Though it uses the tools of architectural design (in the landscaping and conception of the main points of contact and superimposition of the two realities), it nevertheless fulfils the requirements of an academic dissertation, responding to the questions “what?”, “why?” and “how?”. It deals with a pertinent and clearly circumscribed problem, namely the transformation of the landscape through the building of a dam, focusing upon one concrete object of study, the Alqueva Reservoir. Its aim is clearly defined (to stimulate the economic and demographic growth of a depressed territory), and it raises a hypothesis with which it tries to offer a solution for the problem raised: large-scale hydroponic cultivation on a body of water, and the treatment of the riparian strip. It is clearly innovative, taking a step forward in relation to the experiments that have been carried out to date. There is some attempt at proof, using a methodology that is clearly from architectural design, though informed by other disciplinary areas, such as history, agronomy, landscape architecture, biology and economics – and interdisciplinarity is absolutely natural to the act of design. The hypotheses raised draw on the results obtained through the design project, which is itself clearly supported by theoretical reflection. This is action-research, which shuttles back and forth between action and reflection in a dialectic spiral. Theory and practice thus complement each other like two sides of

the same coin.

The question arises of how an experiment based on one particular design project could yield generalizable knowledge, applicable to an indeterminate number of concrete cases. Of course, much professional design involves research at the highest academic level. But there is also another kind that is located in the realm of individual experience, unrepeatable and isolated, a manifestation of the particular consciousness of the architect, atomized and particularist. This type of design cannot really be considered as advanced academic research in architecture, though it may be perfectly worthy in the professional sphere⁹. The kind of knowledge that is generated through research in the professional sphere (or on bachelor's or master's degrees) does not need to be universal though at doctoral or postdoctoral level, it not only has to be rigorous and original, but also relevant for the construction of collective knowledge. Umberto Eco, in *Come si fa una tesi di laurea: le materie umanistiche*, claimed: "The research must be useful to others. [...] A study is scientific if [...] it adds something to what the community already knew, and if all future work on the same subject should, in theory at least, be taken into account. Of course, the scientific importance is commensurate with the degree of indispensability of the contribution"¹⁰. As architecture is not an autonomous academic area (indeed that would only lead to a meaningless marginalization¹¹), this general precept can of course be applied to it. In order for the universal condition of the hypothesis to be made manifest, it is necessary to use inductive logic to allude to an essence or nature common to various particular objects in a quest for systematic knowledge. *Águas Lavradas* is concerned with the economic, demographic, landscaping and of course architectural aspects of Alqueva. But it also deals with questions that are inherent to many other dams in Portugal and elsewhere. With the right adaptations, the solution proposed may be implemented in other places with similar characteristics, as the hypothesis presented has the aptitude to become a model. Hence, this project may be understood as the germ of an idea that is not exhausted in the particular space in which it is manifested, but whose its applicability can be studied in a broader spectrum. The problematic field thus constitutes a fundamental engine of the work developed, while at the same time guaranteeing the scientific reach of the research.

⁹ On this matter, see the description of the third myth (Jeremy Till, 2007, pp. 4-10).

¹⁰ "La ricerca deve essere utile agli altri [...] Un lavoro è scientifico se [...] aggiunge qualcosa a quello che la comunità sapeva già e se tutti i lavori future sullo stesso argomento dovranno, almeno in teoria, tenerne conto. Naturalmente l'importanza scientifica è commisurata al grado di indispensabilità che il contributo esibisce." (Eco, 1970, pp. 40-41).

¹¹ On this matter, see the description of the first myth (Jeremy Till, 2007, pp. 4-10).

This work demonstrates that architecture, by means of *research through design*, may definitively be considered and described as a specific way of generating and disseminating knowledge.

While *about* and *for practice* research is within reach of a master's student (though also appropriate for higher levels), *through practice* research is more complex, involving various disciplinary areas and more means. As such, it can occupy a position in academia at the doctorate, postdoctorate and even multidisciplinary team level. Architectural design is usually attributed to a single architect or studio, but in reality, most projects usually involve multidisciplinary teams. Academic research at the highest level necessarily involves at least the same basic assumptions.

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