

**Professors:**

João Pedro Costa (coord.), Alessia Allegri, Carlos Ferreira, Carlos Macedo, Filipa Serpa, João Figueira, Jorge Mealha, José Nuno Beirão, Madalena Cunha Matos, Margarida Louro.

**EXERCISE 2****PROTOTYPE** [*accommodation for urgent and temporary use*]**1. Introduction**

The initial reflection proposed by this exercise can be illustrated by the “outboard motor” metaphor, by the English critic and historian Reyner Banham<sup>1</sup>, which states “... an outboard motor turns any floating object into a boat”.

It is within this frame that the proposed design research will take place, focusing on the relationships between use, form and construction, considering the principle “more architecture with less resources”.

“Designing” should be an act of reflection, thought and drawing, based on principles and methods that help us make decisions. This exercise seeks to develop the *practice of designing*, starting from very specific conditions, using a housing program corresponding to a prototype as its starting point.

*PROTOTYPE, n. (gr. Proto-before+typos-model). (...) Also used to refer to an object built to serve as a model or test<sup>2</sup>.*

**2. Objectives**

The proposal to be conceived considers the future aggregation in a real context with the purpose of being temporarily inhabited, in a situation of emergency (re)housing. Temporality applies only to use and not to construction, which will have a permanent character.

The proposal is intended to respond in a structured way to “urgent needs for accommodation arising from unpredictable or exceptional events (such as natural disasters, fires, pandemics, migratory movements), or arising from the need for urgent accommodation, on a temporary basis, from people who are at imminent risk of being deprived of housing (such as situations of domestic violence, trafficking in human beings, people under international protection, situations of deinstitutionalization, homeless people, or people at risk of eviction due to the precariousness and extreme insecurity of the place where they live)”, according to Decree-Law No. 26/2021, of March 31st.

In this exercise, the *prototype* has limitations that condition the design: a maximum siting surface, a maximum built volume, the possibility of being used by a set number of persons, which should have conditions for everyday life: Access, Hygiene, Meals, Sleep, Work and other activities, overcoming, however, the classic notion of a HOUSE.

In the design process of the *prototype*, a number of themes should be permanently considered (among others): Comfort and Efficiency; Flexibility and Adaptability; Serving and served space; Collective and individual space; Functional space and Visual space; Equipment and Furniture; Structure and Distribution; Façade and envelope; Structural, Infrastructural and Horizontal and Vertical Aggregation Efficiency.

---

1 BANHAM, R., “The Great Gyzmo” in *Industrial Design* 12, September 1965

2 RODRIGUES, Maria João et al. *Vocabulário Técnico e Crítico de Arquitectura*. Coimbra: Quimera editores, 1990

Since Architecture is always realized in a material reality, i.e., in a built object with a set of relationships with a specific space and place, this exercise is based on the assumption that the prototype will be executed within a context (being multiplied, adapted and adjusted), which will raise questions of building, articulation of systems and relationship with (pre)existing elements. The prototypes must therefore, be designed to be aggregated – horizontally and vertically - in an urban situation. The actual conditions for the location, disposition and siting on those specific places will be defined later.

The pedagogical objectives of the exercise are: 1) to question preconceptions about the notion of HOUSE and HOME and conventional housing typologies, deepening the dimensions of INHABIT through the approach and (re)combination of its different functions; 2) questioning the techniques of architectural design supported by two-dimensional representation, in plan and sections, stimulating SPATIAL thinking in its three material dimensions, as well as in the temporal dimension, for that purpose investing in the design of an object with a very contained dimension.

### 3. Program

The project will respond to a program aimed at temporary for accommodation of short / medium-term stays in emergency situations (a few weeks to a year). The target population can be of any age, in full possession of their physical resources. Prototypes adapted to mobility-impaired citizens will be devised at a later time and are not developed for the purpose of this exercise.

The projection of usable area on the ground will be of **30 m<sup>2</sup>** for each *prototype*, as measured by the inner outline of its walls and slabs (roof and ground). The maximum volume admitted will be of **124 m<sup>3</sup>**, also measured by the inner outline.

The *prototype* must be designed to house simultaneously **4** (four) residents, who may not know each other; thus, autonomy and independence in the use of its spaces should be ensured.

The surface to be occupied by the “*outboard motor*” should be designed in a perspective of maximum efficiency, without compromising an adequate use. Spaces devoted to hygiene should allow use by both users simultaneously. Regarding the other “spaces” of the *prototype*, which may be designed as a counterpoint to the optimization of the “*motor*”, the design must consider:

- a) The existence of conditions for natural lighting and transverse ventilation (except for hygiene areas).
- b) The guarantee of minimum infrastructure conditions for the functions of food preparation and personal hygiene.
- c) The guarantee of the necessary individual privacy.
- d) The existence of a storage area with a minimum volume of 1.5 m<sup>3</sup> per inhabitant.
- e) The existence of a private outdoor space with a minimum area of 4 m<sup>2</sup>

In terms of inside/outside relationship, considering that the use of the *prototypes* is of a private nature, the solution should ensure the possibility of closure, to ensure visual and physical protection regarding the exterior. The study to provide privacy between inside and outside should also consider the future aggregation (vertical and horizontal) of the *prototypes*, considering a need for privacy between different *prototypes*.

The constructive systems of the *prototype* should be simple but flexible, ensuring resistance to ageing and use prefabricated construction elements. The design should propose the existence of vertical ducts (to ensure the passage of infrastructure) connected to the hygiene and food preparing areas of the *prototype*.

The following conditions must also be considered:

- a) If there are stairs, these cannot exceed slopes of 45° (according to the line drawn by the steps edges);
- b) “Coretes” (ducts for the passage of pipes and / or ducts) associated with the proposed water / smoke exhaust zones, which will be conditioning factors in the aggregation, must be provided.

**Professors:**

João Pedro Costa (coord.), Alessia Allegri, Carlos Ferreira, Carlos Macedo, Filipa Serpa, João Figueira, Jorge Mealha, José Nuno Beirão, Madalena Cunha Matos, Margarida Louro.

**4. Tasks**

The design of the prototype will be developed individually and on two main themes:

- a) Considering uses and conditions, for the prototype;
- b) Initial studies of the initial condition for aggregation and logics of transition (public-private; outside-inside).

**5. Means**

The design process will use only traditional means of drawing (pencil, ink, graphite, colouring pens, charcoal, gouache, watercolours, etc.), over opaque or transparent paper, in the preferred format A1 (exceptionally in format A2); and the development of three dimensional study models.

The main working scale will be 1:50, while the aggregation studies may be done at 1/100. These elements (drawings and scale models) will be the “process” of the work developed and will constitute the basis for the “continuous evaluation” process required.

**6. Deliverables**

At the end of the work, each student should present the elements listed below, as a synthesis capable of adequately illustrating a prototype proposal and its possibilities of repetition and aggregation (without said possibilities, the unit is not a prototype). This final delivery will be the starting point and support for the next phase of the exercise. The final drawings of the prototype should be presented through two A1 panels, portrait, following the recommendations in attachment.

**6.1. Final Drawings (1:50 scale)**

- Plan(s);
- Sections (minimum of two, one of which should show the length of the staircase should it exist);
- Elevations

All drawings must show (considering a difference between plan and section): a) indication of interior floor levels; b) definition of dimensions of the elements of the solution; c) location and representation of all fixed equipment and furniture; d) main materials and its joints; e) dimension lines for spaces, equipment and furniture.

**6.2. Three dimensional presentation**

- Exploded axonometric perspective, in section or with transparencies;
- Work model(s) photos (built to 1:20 scale)

**6.3. Atmospheres**

- Two interior perspectives (minimum), drawn by hand (may be based on photos of the scale models), showing the space, its use, characteristics and qualities, including lighting and interior / exterior relationship.

**6.4. Possibilities of repetition and aggregation**

- Axonometric and other drawings, including plans and/or sections (1:100 or 1:200 scale), that represent systems of repetition and aggregation of the prototypes in two typological variants: vertical (“tower”) and horizontal (“bar”).

#### **6.5. Scale Model**

- 1:20 Scale model, with some degree of disassembly possible, to allow visualization of the interior of the prototype. May be “single material” or contain a representation of the main materials to be used. Must contain possibility of understanding human scale (furniture and one or more human figures).

#### **6.6. Process**

- Large format folder in format A1 (exceptionally in format A2), compiling the research and development process, with all study drawings and similar elements, in temporal sequence according to the evolution of the proposal (more recent to the oldest).

### **7. Calendar**

starts: class 3 - October 11

finishes: class 16 – November 29

delivery – November 29 until 23:59 on FA cloud

Lisbon, September 28<sup>th</sup>, 2021