CHARLES CORREA'S HOUSING LANGUAGE

Belinda Torus

Bahçeşehir University,Turkey

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Introduction

Charles Correa is an Indian architect, planner and theoretician, who has been doing architecture for fifty years [1] and designed many projects both in India and abroad. Correa, which Khan referred to as a lateral thinker and pioneer [2], designed his projects underpinning culture, vernacular and context without overlooking the user's need as well as cost and energy efficiencies. In this paper housing projects of Correa's are analyzed in order to draw a main frame for an architect's language, which can be said, is an interpretation of vernacular and culture. In order to analyze the projects shape grammar method is used.

Shape Grammars

Generative grammar is a system used to study and explore new languages with characters and symbols. Shape grammar is one type of generative grammars which deals with points, lines, shapes and solids instead of characters. In shape grammars, new shapes can be created by an initial shape, shape elements and production rules [3]. So basically it focuses on the shapes and the production rules with which the shapes come together. Analytical studies of shape grammars on architectural works help to understand the formal relations of architectural works and can be used to analyze design grammars of a certain architect, a characteristic tissue or a typology. It also helps to complete and reconstruct projects with the help of grammar or adding new grammars. It may inspire new projects especially computational projects both in the sense of form, concept and generation. Some architects have languages which are extremely suitable for this kind of analysis and data derivation. In terms of technology and science these derivations can be used in order to design new housing projects or at least can be inspirations for them.

Correa's Grammar

In Charles Correa's public housing projects, it is possible to see the effect of his design language. Correa, parallel to the rapid population growth in Third World Countries, designed settlements which are low-rise and quickly built as well as have the potential of expansion. In addition to this, each house is designed with its open spaces and house groups which its public spaces. In short, Correa designed low-rise housing with its open-space relations, well-resolved air conditioning with a rational manner [4]. The underpinning of culture as well as old architecture is the dominant factor for this manner. Correa stated that "In this, the old architecture – especially from vernacular – has much to teach us, as it always develops a typology of fundamental sense." [5]. In short the rationalism and efficiency between these projects lies on the teachings of vernacular architecture.

The Projects and Analysis

Correa has designed several houses with a variety of generation method [6]. The forms are mostly basic and the generations can be grouped as linear generations, grouped or clustered generations, and chainlike generations. In some settlements, only a single type of module is used while on the others various modules (units with a variety of fields) can be seen (fig. 1).

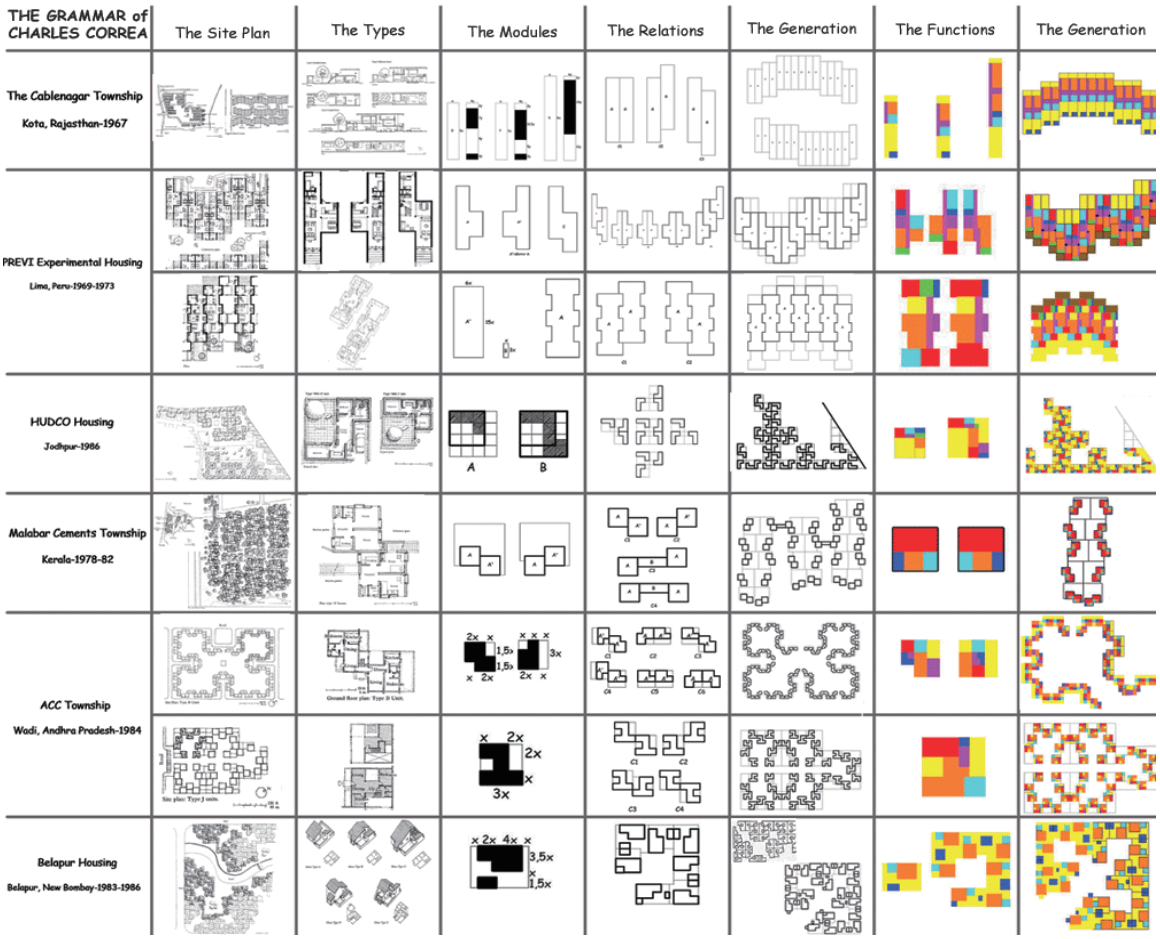

Fig. 1: Analysis of the houses [7]

1. The Cablenagar Township:Kota, Rajasthan-1967: The Cablenagar Township, designed in 1967 but never built, was to be at he edge of the Rajasthan Desert using several ideas which combined Correa's attitude to climate and materials [2]. There are different types of basic modules according to the size. The basic modules are rectangles and on the bigger types second stories are used. This project is an example of linear formation. Modules come together side by side by sliding slightly.

2. Prev: (Proyecto Experimental di Vivienda) in Lima, Peru, 1969-1973: The United Nations and the Government of Peru are the co-sponsors of this contest project. The jury was unable to make a consensus for the winner and 12 to 20 housing units from each project were applied in a region. Correa's design is focused on two issues in this project. First one is the minimization of the service area and to provide natural air-conditioning and the second one is the potential for expansion [2].

This is an example of a linear derivation. Both types of development are linear. The module in the first generation is formed as a result of the basic arithmetic operations. Two rectangles, large rectangle (6x15) and small rectangle (1x3) are used and the basic module is formed with the subtraction operation. The module is repeated and the generation is done by again sliding the module. The modules are connected with the subtracted parts into each other. The first floor and second floor of the same form used in this project. On the third dimension there are differences on the plan layout and the space typology. The stairs and toilets are on the cavities, parallel to the subtracted parts. Common living rooms is placed facing the inner courtyard, the kitchen is designed facing the outer courtyard. The second type of the first project has two different modules and the mirrored symmetry of these modules. Two rectangles are used to form each module. These modules come together in linear formation by sliding. In the functional analysis, a linear horizontal circulation is connected with a vertical circulation element (stairs) in the center. As in the first type, living room is in the center, while kitchen and rooms are facing outside.

3. HUDCO: (Housing & Development Corporation), Jodhpur – 1986: In this project Correa designed an addition of 176 housing units to an existing settlement. Local stone and materials are used and due to the climatic conditions of each house has an enclosed courtyard. The houses have either one or two floors [2]. There are different types of modules; small module (3x3) and mid-module (4x4) are both can be placed on a grid. Modules of same sizes came together in order to create grouping units with a 90º rotations. And one module is removed in order to repeat the same generation. Later, these generated groups came together in order to form the settlements. The rooms and living spaces and kitchen are placed facing the inner courtyard while the toilets and bathroom are looking outside.

4. Malabar Cements Township, Kerala-1978-82: The idea of a “company town” often located in remote areas or urban outskirts, is to provide a self-contained living environment for employees directly connected to the physical production plant [2]. In this project two houses are grouped or connected with bridges and the neighborhood is generated by clustered of these houses.

5. ACC: (The Associated Cement Company), Wadi, Andhra Pradesh – 1984: Two types of projects are designed in an existing settlement for the ACC Company [2]. Two types of modules are used in each solution and they both have two floors. In the first type, unit modules are grouped with 90º rotations and mirror operations. The generation is done by rotation, rotational symmetry and mirror operations. The site generation is done by repetition and rotation of the generated groups. In the center of the houses stairs and halls are designed and around the hall rooms, living room and kitchen is placed. In the second type, two types of modules are generated. With the combinations of two modules, different alternatives and perspectives can be obtained. All the rooms are facing outside in this project. In the first group, the generation is chainlike while in the second one it is clustered.

6. Belapur Housing: Belapur, New Bombay-1983-1986: The project uses one overriding principle: each unit is on its own individual site to allow for expansion. The scheme caters for a wide range of income groups, from the lowest up to the upper income levels [2] (fig. 2). The basic modules are formed as shown in figure 3. The bathroom and WC is on the courtyard while the kitchen is adjacent to the living spaces. All the buildings have their own courtyard and they come together by basic operations like 90º rotations and mirror (fig. 4). Houses come together with these relations and form a community space (fig. 5).These generated groups come together in order to form the settlement (fig. 6). The formation is clustered in this project.

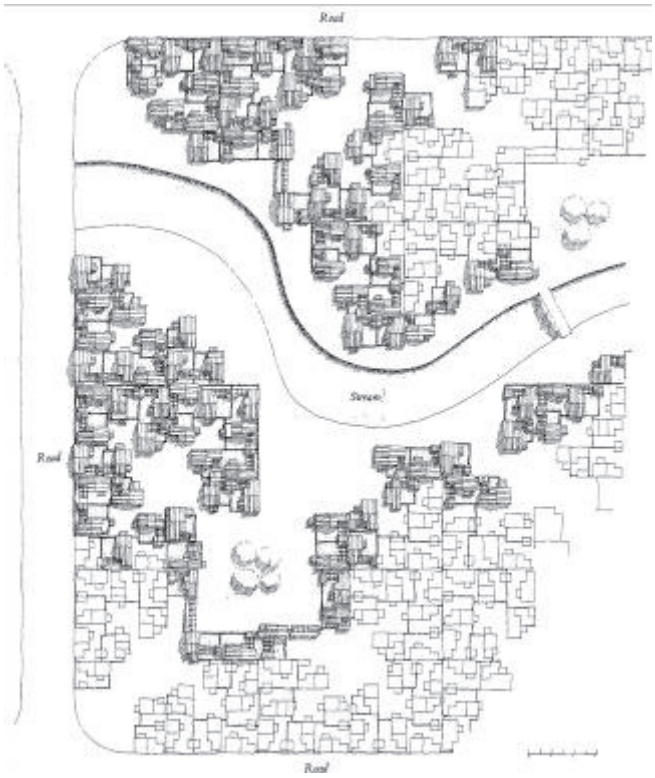

Fig. 2: The site [2]

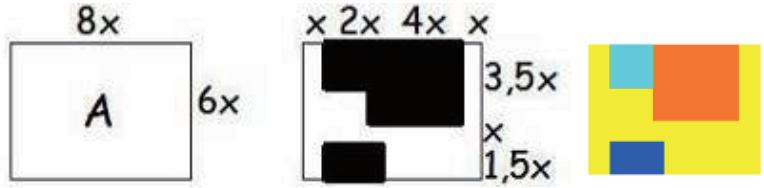

Fig. 3: Formation of the module

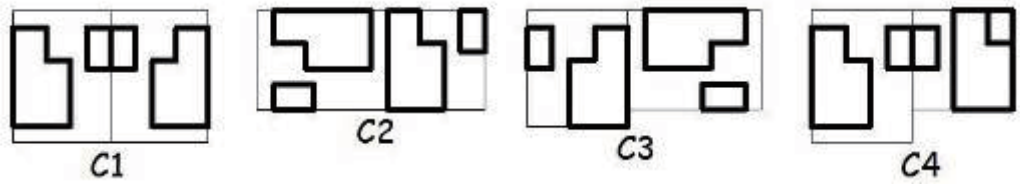

Fig. 4: The relations of the modules

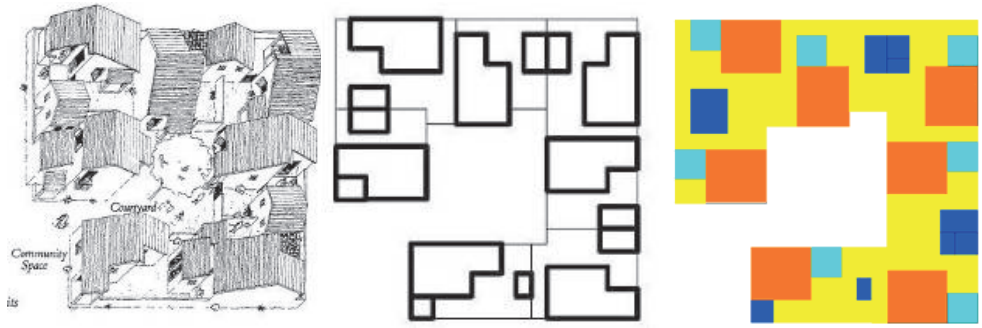

Fig. 5: Generation of the basic group and formation of the community space (first picture [2])

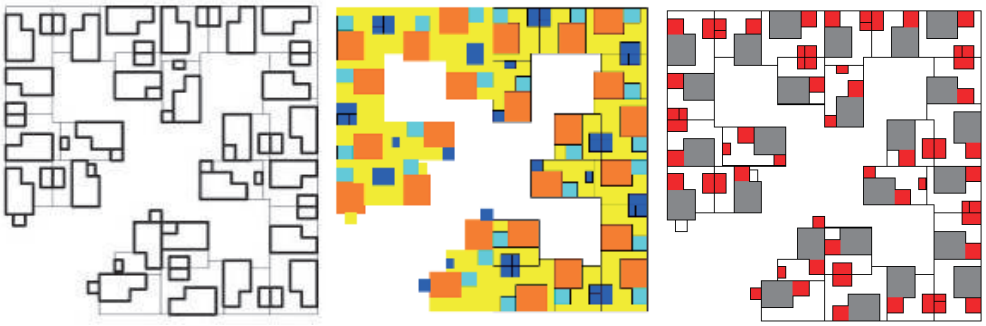

Fig. 6: Generation of the neighborhood

Results and Concluding Remarks

Shape grammars are illustrated generative grammars and deals with geometric elements. Repetitive elements (in Correa's case: houses) can be generated by the rules in this method. Rules must be derived and set in order to understand the language. The inspiration for the architect is based on vernacular and the houses are well acclimatized and cost efficient.

Three types of analyses are done: functional analysis, open-closed relationship analysis, generation method. In the generation method analysis, the examples of linear generations is shown in figure 1 (first three examples), grouped or clustered generations (4th, 5th, 7th and 8th examples) and chainlike generations (6th example). Mostly one or two floored houses are designed. All the houses have their open and closed spaces while on the clustered and chainlike generations community spaces are also formed.

The analytical shape grammar studies can be generated computationally. Computer-based generations have important features one of which is the editable nature of the scripting language. By changing the parameters, and adding randomness, the production space can differ widely and the design can be customized. In this sense, parametrically analyzed projects and derived rules can be used as a base for computer-based generations in the further phases.

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