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Classification of Afghan Traditional Villages with Investigation of Mud Construction Courtyard House

5. 建築計画 - 3. 計画基礎
Environment　Traditional village　Mud construction
Privacy　Courtyard house　Afghanistan

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1. Introduction

As most Afghan population live in suburb, traditional neighborhood and village then this is important to research about that and find the best solutions for the existing challenges. Also to become basic research for the traditional urbanization in Afghanistan.

The terms Kaley (Pashto) are usually used to mean village. But today it is particularly used to compound names to refer to specific villages. e.g. Durani Kalay and Anduro Kala in Midan wardak province.

The Afghan villages, generally self-sufficient subsistence, typically, a village residence has two, three or four rooms carpeted with rugs, or Gelim, if the owner can afford them. Most villages have guest rooms or guesthouses for the travelers. The village mosque often serves this function, as well as being the jirgah meeting place and seasonal school.

2. Object and goal of research

The purpose of this investigation is to develop a pleasing and livable village Afghan community plan, which responds to the surrounding cultural and physical environments based on the new traditional villages, traditional neighborhood and traditional urban competition program, also to keep traditional housing, which is fitted in environment, and to try upgrade it with new traditional upgraded standards.

3. Method and definition of research

To define this investigation and the method of research in a few words it is based on the well introduction and finding the basic traditional architecture, construction and environmental of traditional village in Afghanistan. The focal point and it will explain step by step and results of all research contain classification of village as the view point of topography, planning, environment with mentioning some characteristics of those area. The important discussion is the numerical calculation and estimation with final conclusion.

4. Classification analysis

Afghan villages have many types of housing, but they have some joints and common characteristics and most Afghan villages usually grew in response to needs for water and defense. In general, there are two types of completely sedentary village settlement-patterns exist: linear and nuclear. The linear type, common in Southeast Asia, occurs along the major rivers, clinging to the watercourses. The nuclear pattern, in which villages cluster like a town, and several village-town cluster surrounding a city, is more common in Afghanistan. As the four main influences (topography, environmental, surrounding local construction material religious and cultural) shaped and classified the Afghan rural traditional houses and villages. To find the reason for the existing shape of village in Afghanistan, we will shortly explain and analyse those influences as following:

4.1. Topography classification

Mountainous terrains with little or no vegetation, typical of an arid country, occupy two thirds of the landscape of Afghanistan. For this reason, the vegetation in these terrains plays a vital role in the ecosystem. For example, if we consider the role of pistachio among hundreds of other floras, we will find out that it not only provides climatic and environmental stabilization over the areas of its growth, but also eases the life of thousands of families by providing them with a natural source of income.

Half of the remaining parts of the country's landscape are deserts, which are hostile environments. The rests are farmlands and pastures. At present, only six percent of the fifteen percent of agricultural land in Afghanistan is under cultivation. In the past thirty years, the agricultural areas have been drastically decreased. It is estimated that we lost thirty percent of our farmlands and pastures, either by abandonment or degradation.

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The farmlands in the province of Kabul have been lost due to degradation resulting from the expansion of the urban institutions. This led to a drastic change of the previously dominant climatic and environmental factors in this region7.

a. Flat inside agriculture Villages

b. Flat inside desert and semi agriculture Villages

c. Hill side Villages

d. Mountain Villages

4.2. (APEC) classification

APEC is Architecture and Planning characteristic, Environmental and Construction system. Afghan traditional architecture takes into account the styles that were popular to an Afghan villages and area. The characteristics of Afghan traditional architecture used by local experimental masons and builders with recommendation, order command and includes a commitment to maintaining a link to the past styles of building, reuse of materials or designing homes and building to stay consistent with the overall building design and construction of the area. This creates a sense of steadiness and connection to the past, which helps the area, maintains its traditional look and feel for the residents of the Afghan rural village community.

Homes that were built in Afghan village communities create the fixture with environment for what a traditional builder and masons seeks to maintain. Particularly those communities that are well over a century, the homes and buildings that are constructed establish the tradition from which traditional architecture seeks to maintain. The structure of doors, windows, building heights and roofing elements are carried forward in new construction in some area and village remain the old tradition, tie the present to the past, maintain a community's tradition and is a good religious, cultural and economical practice. Most villages' houses are made with mud, timber, and clay, which are the local materials, and they are cheap. The villages traditional houses have been made with mud (mud brick, mud pkasa, mud stone masonry and mud with joint wood) as all those are good insulation materials. In all village houses the windows are facing south side to gain the maximum amount of sunlight during the winters.

Most village roofs are flat because flat roofs give an opportunity for the family to make dry fruits and dry vegetables, and for the males of this house to sleep in summer, but some parts of country have dome, vaults and wind scope type roofs (in north, south and west Afghanistan a). Clustered buildings of this residential area are sharing walls to reduce exposure to cold winds in winter.

The following are main APEC classification and some analysis.

4.2.1. Group A Kala House (Farm House): All Afghan villages, neighborhoods and cities bases and historical backgrounds connect to Kala. Also Kala is the best representative of Afghan traditional architecture and rural, Kala is a big Afghan farmhouse, the characteristic home of the Pashtun farmer, and the symbol of family power and prestige. Usually square some time rectangular in form, it is consist of four massive mud walls with single door in the front. Though now there maybe two or three doors, the front door presents the Kala and is the main entrance of Kala. The size of Kala varies: a small one might for one or two family,

Table1. General Architecture & construction analysis and conclusion

Analysis Fields		GroupA (usage%)	GroupB (usage%)	GroupC (usage%)	GroupD (usage%)	usage% in all country
Walls	W1	30-65	10-15	0	2-5	60
	W2	20-45	15-30	5-10	30-65	75
	W3	0	0	50-90	0	5
	W4	10-20	5-10	5-10	40-75	20
Roofs	R1	40-70	20-30	20-40	30-55	50
	R2	20-30	15-20	0	0	20
	R3	0	30-40	0	0	15
Doors and Windows	DW1	70-95	60-80	75-90	65-85	85
	DW2	2-5	10-20	1-2	1-2	10
	DW3	75-95	60-85	75-90	65-90	95

Table2. Illustration and Specification of symbols table 1

Items	Symbols	Illustration and Specification Elements
Walls	W1	Paksua Mud and Mud plaster wall W = 60-80 cm H = 240-280cm
	W2	Mud brick and Mud plaster wall (inside the room smooth clay traditional finishing) W= 60-80 cm
	W3	Stone, Mud and wooden mix wall W = 60-80 cm H = 240-280cm
	W4	Stone Masonry ,with Mud wall W = 60-80 cm H = 240-280cm
Roofs	R1	Flat ,Wooden timber with wooden board + Clay and Plastic sheet
	R2	Arched ,dome, vaults by mud bricks with local systems
	R3	Arched , dome , vaults by mud bricks with wind scope in roof with local systems
Doors and Windows	DW1	Rectangular wooden doors and windows window H = 60-220 W = 60-300cm door H = 180-220 cm W = 70-220 cm
	DW2	semi secular for arch opening wooden doors and windows window H = 60-220 W = 60-300cm door H = 180-220 cm W = 70-220 cm
	DW3	Rectangular wooden doors and windows window H = 60-220 W = 60-300cm door H = 180-220 cm W = 70 - 220 cm with a special carving and decoration.

Table3. General Environmental and Illuminations analysis

Analysis Fields		GroupA (usage%)	GroupB (usage%)	GroupC (usage%)	GroupD (usage%)	usage% in all country
Heating	H1	20-60	10-12	10-12	2-5	55
	H2	14-40	15-30	5-10	30-65	70
	H3	20-25	10-15	30-50	40-60	60
Cooling	C1	100	100	100	100	100
	C2	0	40-70	0	0	10
Ventilation and Lighting	VL1	45-75	30-40	50-80	30-40	45
	VL2	15-30	20-30	25-30	10-20	85
	VL3	100	100	100	100	100
	VL4	0	100	0	0	15

Table4. Illustration and Specification of symbols table 3

Items	Symbols	Illustration and Specification Elements
Heating	H1	Tawkhana (Under floor traditional heating system) Plus Sandala and Manqal (Japanese KOTAS)
	H2	Wooden Steel stove Plus Sandalaee and Manqal (Japanese KOTAS)
	H3	Wooden Steel stove
Cooling	C1	Natural window cooling
	C2	Natural Badgir (Wind scope chimney) Plus window cooling
Ventilation and Lighting	VL1	Night lighting Kerosene Lamp and candle
	VL2	Gas , Solar lighting and some other
	VL3	Natural windows and doors lighting and ventilation
	VL4	Natural windows and doors and Natural Badgir (Wind scope chimney)

and the larger one for more families. Afghan Kala is similar in concept to the fortress or castle in Europe[1].

4.2.2. Group B Kandahar & Herat Houses (Aiwan and wind scope house): In this Afghan village and house group we have chosen mainly large, baked-brick houses. Since the climate in summer is hot and dry, and since there is no mechanical air-conditioning, the south building mass is built over a half-basement, which is used as a place to take siestas. However, the north and east masses are also raised above the level of the court, with the chambers traditionally serving as aiwans through the opening of screens (most of which have been replaced with brick infill walls now). A narrow, deep aiwan in the center of the north building mass contains stairs that connect to the roof, allowing it to be used for sleeping in hot weather.

4.2.3. Group C Nuristan Village House (Hillside House): The traditional timber, clay and stone houses and villages and architecture of Nuristan are one of the most stunning of the many indigenous forms of housing found in Afghanistan. Houses are of post and beam construction. The spaces between the timber frameworks are filled with small stones, and a clay-plaster coating is applied to the area of the stone only, leaving the timbers exposed. Only the solid wooden upper facade, and the interior columns of a home are carved. This facade is made up of wooden beams, sills, window posts and a variety of panels fitted between the supporting members. A typical arcade may be twenty to thirty feet in length, and every section of the facade of a landowner's home may be elaborately carved.

4.2.4. Group D Salang and Panjshir Village and Houses (Mountain Villages): These houses have good harmony with surrounding topography and have direct response to the site. The houses built by the native stone seem like part of the rock cliffs that thrust upward out of the gorge. This type of housing reflects little feeling for community, rather, the needs of the individual. The roof of this type of housing is not for access to a neighbor's home but serves as a patio for the private use1.

This type of housing has close plan, and the heavy stonewalls that are pierced by small wooden windows at the entrance, which is usually from hillside and rear leads to the main living areas. Most of the family activities, however, take place inside the house because of cold weather.

5. Comparative investigation of village traditional mud construction courtyard house

The religious, social and physical conditions outlined above set the scene for the constitution of living patterns in Afghanistan. In particular, the tendency of families to become extended (even to tribal units) and for women rarely to go out in public have led to the development of open-air courtyards where domestic activities may be pursued most of the year[2].

The courtyard house has long served as the setting for all the diversity of living in the traditional Afghanistan houses, a fact borne out by the extension of the word Kala or hawili (courtyard of house) to include both, house and home. What, then, is the pattern or organization of the diverse daily activities in such spaces[2].

We will begin our exploration as comparative investigation of Separated Courtyard Type (SCT) and Center Courtyard Type (CCT) mud construction village in Afghanistan.

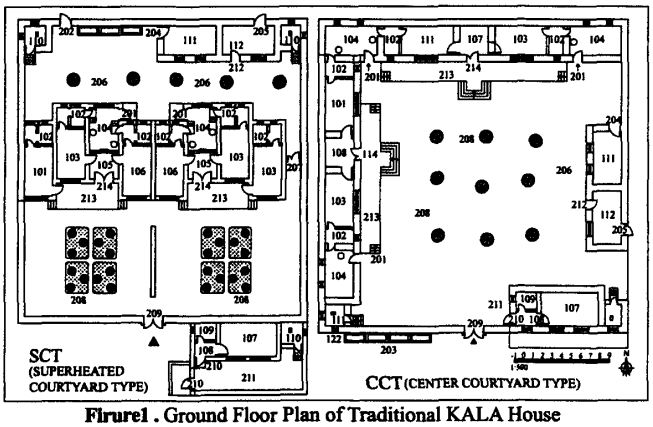
In this final section, we mainly analyze the traditional mud construction houses by looking at the use of the courtyard in the center of all elements and the courtyards which are separated into service courtyard, living courtyard and guest yard. The analyses regarding many factors such as privacy, security, vision and so on. The result shows us that, compared

Table5 . General Comparative Analysis of Inside Area and Rooms of Superheated Courtyard Type (SCT) & Center Courtyard Type (CCT)

Room or Area Number	House Type Name / Comparative Percentage / Room Name or Area Name	Suoerheated Courtyard Type (SCT) General Comparative Analysis %										Center Courtyard Type (CCT) General Comparative Analysis %										SCT	CCT
		Privacy	Security	Accessibly	Natural Light	Natural Ventilation	Natural Cons.materia	Natural Insulation	Space Location	All Type of Vision	Comparative Low Cost %	Privacy	Security	Accessibly	Natural Light	Natural Ventilation	Natural Cons.materia	Natural Insulation	Space Location	All Type of Vision	Comparative Low Cost %	Average Total Unit % OF	Average Total Unit % OF
101	Bed Room	100	98	95	96	95	94	96	90	90	71	75	80	95	90	85	91	96	65	65	90	92	83
102	All Bath and Change (6)	99	97	94	94	93	98	92	92	92	75	71	84	96	91	84	96	93	67	64	95	93	82
103	Living Family Room (TAWKONA)	100	96	95	93	95	94	96	95	90	70	75	80	97	94	85	94	96	67	65	96	92	83
104	Tradittional Kitchen (TANWERKONA)	98	97	94	97	93	96	94	92	88	90	89	81	93	95	80	93	97	70	64	88	93	82
105	Foyer and Hall	100	94	95	94	98	94	96	93	99	70	75	80	94	90	85	96	96	65	70	90	95	85
106	Master Bed Room (TAWKONA)	96	95	93	99	95	91	97	92	90	68	75	87	96	97	86	92	90	67	65	93	90	81
107	Guest Main Room	99	98	97	96	99	94	96	98	93	73	76	79	94	92	84	92	94	63	71	90	96	84
108	Guest House Foyer	100	92	95	94	94	99	99	90	94	72	81	86	92	90	87	94	96	65	60	92	92	83
109	Guest House Bath	99	98	99	97	98	91	94	97	97	74	75	80	91	93	83	97	97	69	66	91	92	83
110	All Latrine (3)	94	96	94	98	91	98	96	92	92	75	70	85	94	91	84	94	93	67	66	95	93	82
111	Animal House During Night	98	97	94	89	93	96	94	87	88	90	89	82	93	95	80	93	97	70	64	90	93	83
112	Animal Food (Straw) Room	99	98	91	96	95	98	97	92	92	74	71	85	95	91	84	94	93	67	67	95	93	82
	Net Total Approximately %	98	97	93	96	95	94	96	92	90	76	75	80	96	92	86	94	96	65	70	90	95	84

Table6 . General Comparative Analysis of Outside Area and Access of Superheated Courtyard Type (SCT) & Center Courtyard Type (CCT)

Room or Area Number	House Type Name / Comparative Percentage / Room Name or Area Name	Comparative Analysis % (SCT)						Comparative Analysis % (CCT)						SCT	CCT
		Privacy	Security	Accessibly	Spacel Ocation	Bad Odor	All Type of Vision	Privacy	Security	Accessibly	Bad Odor	Space Location	All Type of Vision	Average Total Unit % OF	Average Total Unit % OF
201	Service Entrance of Kitchen	94	96	94	92	95	92	70	85	94	93	67	66	93	82
202	Service Courtyard Entrance	99	98	91	92	95	92	71	85	95	93	67	67	93	82
203	Animal Sun Gain Area	00	97	94	92	93	88	00	82	93	97	70	64	93	82
204	Animal House Entrance	00	98	95	89	98	90	00	81	95	96	65	65	96	85
205	Animal Straw Entrance	100	98	98	93	94	92	76	86	98	96	63	68	92	83
206	Service Courtyard	97	97	95	92	98	96	75	83	95	96	62	62	93	83
207	From Living to Service Door	96	98	99	98	91	91	00	00	00	00	00	00	00	00
208	Family & Living Courtyard	100	92	92	93	93	96	75	78	91	96	64	64	92	87
209	Main Gate and Entrance	100	98	94	92	95	99	76	80	97	97	65	65	92	85
210	Guest House Entrance	100	97	98	91	95	91	79	79	99	96	67	65	92	83
211	Guest House Courtyard	98	97	87	92	93	88	89	83	93	97	70	64	93	82
212	Daily Straw Carry Entrance	97	99	96	90	97	93	76	72	98	95	63	66	92	83
213	Living Building Veranda	97	97	95	92	98	96	75	83	95	96	62	62	93	83
214	Living Building Entrance	99	98	94	92	95	99	76	80	97	97	65	65	92	85
	Net Total Approximately %	96	96	93	91	94	90	74	79	94	95	64	67	96	80



Firure1 . Ground Floor Plan of Traditional KALA House

with the CCT, the SCT is a little more costly but more environmentally, culturally and has more space usage benefits when the covered and occupied area are the same.

6. CONCLUSION:

Traditional architecture offers much more than some symbols. We should make old bend with new to keep tradition and culture, and to use local cheaper construction materials.

The traditional Houses in Afghanistan, as shown, is a four-sided complex of aiwan-ranges and rooms built in a relaxed composition around a court, regulated by the implicit principle of diurnal rotation. However, in keeping with the commentary above, we do not believe that the cultural order and meaning of diurnal rotation lie in the imitation of nature.

In the cultural history of Afghanistan, these "exemplary situations" can also assuredly be found in the classic four-aiwan court. Here the primary role of architecture as a symbol of cosmic form is more transparent. And through history, its symbolic role as a privileged receptacle has been exploited in numerous large-scale representations. We will end this article by discussing and analyzing two types of courtyard mud construction house. As in this cooperative investigation we analysis the two more common and usable type one. In this two section as inside and outside area by detail.

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