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Fès and its Medina: a key-case study of architectural contamination

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Abstract

The Fès Medina, UNESCO site, represents today a key case study to acknowledge the contamination of architectural and urban heritage. The Medina is a unique example in the Mediterranean area of an intact Islamic urban centre of large dimensions, characterized by a drift road system and ancestral construction techniques: tadelakt, raw earth, fired bricks, lime mortar. Today the city of Fès grows outside its Medina, with a strong western character: boulevard instead of small-market streets, reinforced concrete instead of Atlas stones. The thrust of modern ville, which began with the French colonialism, is also changing the Medina: the absence of an up-to-date plan for the maintenance and protection of the historic centre and its tangible and intangible heritage, is driving rapid change in the ancient Islamic core, contaminating usual techniques and materials with more western uses. This form of contamination can be considered a form of wealth, when studied and organized. The city is into a seismic area, and the use of innovative materials can improve parts of Medina in abandonment conditions or hydrogeological risks, while maintaining the use of more traditional techniques by respecting historic buildings and the urban form. In conclusion, the proposal for a studied and well-planned contamination between innovative techniques and traditional knowledge can lead to a more modern but not different Medina, and can address necessities of a contemporary society, whose heritage is effectively protected.

Keywords: heritage, contamination, Medina, Andalusian architecture, tapia.

1. Fès, a key case study in the Islamic city

Fès, one of the most important cities of Morocco, represents an interesting and fragile example of ancient Islamic city. The historic part of Fès, named *Medina*, the core of the city, is one of the most ancient in Morocco – one of the four ‘Imperial cities’ of Moroccan reign – and an outstanding model of old Islamic city in Africa. The Medina was declared UNESCO site in 1981.

A team of international actors, including University of ‘Sapienza’, deeply studied the core of Medina during a survey campaign: several restoration activities of the principal monuments were undertaken and the ancient core was fully mapped in 1984 [1]; currently the constraints of protection of the architectural heritage still consider the work carried out in that mapping. This paper aims to carry out, improve and enrich that previous study in order to outline new ideas for the protection of the Medina, for the enhancement and sustainable tourists’ fruition of the core, including the safeguard of the architectural heritage.

Medina, a word which literally means “old city”, is a medieval urban part built in Fès at the end of VIII century of the Christian era by a descendant of the Prophet, named Idrīs ibn Idrīs (later Idrīs I) on the right bank of the river Fās (*Wadi Fās*); later, his son Idrīs II, completed the construction of the actual core on the left part of the river named that al-‘Āliya – ‘the Supreme’, name actually used - and here established the capital of his dynasty in 809 [2].

The Medina grew up quickly, and yet in 857 built its University, the al-Qarawiyyin Mosque [fig. 1] founded by a woman and today the "oldest educational institution in the world" [3]; in the following centuries, Fès became the capital during several dynasties of Moroccan sultans and kings, who enriched the city with mosques, madrasas and palaces. It's important to remember how the last sultan of Granada, Boabdil or Muhammad XII, settled there in exile with his refined Nasrida court in the late fifteenth century, and then a part of the community of Sephardic Jews moved up in Fès during the XVI century, followed in the years by the *moriscos* (Muslim forcedly converted) from the region of Andalusia of Spain; the new settlement increased the artistic production of the city with Andalusians characters and forms, very peculiar and appreciated for being different from the rest of the country. The city hosts a Royal Palace and it was the capital of Morocco until 1912, when the capital was moved to Rabat, and Fès eventually conserved the title of religious capital. The Medina is divided by the *wadi*, the river from the Atlas Mountains, and it's commonly called *Fes el-Bali*, or the 'Old Fès', in order to distinguish it from the other two districts of the actual Fès, outside Medina's walls: the *Fes el-Jadid*, or 'New Fès', founded in 1276 outside the old walls of the city, and the *Ville nouvelle*, the colonial French district built from 1912, the modern part of the city, in continuous transformation. The medina of Fès represents a unique example among traditional Islamic cities due to high level of preservation [4], which has not changed much from the colonization of the French protectorate. The mixed character of Andalusian architecture between the Qairawàn people' mood of life, dedicated to the development of commerce and arts, created a very refined city, as it's considered in the world of traditional Islamic cities. The secular contamination between different cultures shows how the contamination can be a very positive element, in terms of arts quality of life and mutual tolerance. For this reason, Fès can be considered a significant key-case study, particularly for its architectural contamination.

2. An exemplary urban design

The city form shows how the union of different cultures under a common faith, or commerce and mutual help – the Jewish district, *milla*, and the rest of the city – can create a unique example of perfect structure and organization of urban society, that has not changed much the medina from its origin until the French protectorate [5].

The composed and refined organization of traditional Islamic society is well reflected in Fès' urban design. The traditional Islamic city has not changed much since the construction of La Mecca and Baghdad, built by the caliph al-Mansûr in the VIII century in a circular, ideal and geometrical form, with the mosques and caliphal palaces at the center, and the rest of the city developed in circles [6].

Fès, founded nearly forty years after Baghdad, adopted this circular form, which is not as rigorous as Italian Renaissance' cities, but modeled on the orography of the semidesert territory under the Atlas Mountains.

The mosque, or madrasas - Koranic schools - are at the center of the Islamic urban structure. They form the centerpiece and the preferred centrality, as places of prayer and spaces of 'secular' meeting; they are open to men and women and are very popular, because of the prescribed *ṣalāt*, the canonical prayer which must be recited five times a-day by every believer. Mosques constitute what, in the European city, is the square in front of the churchyard or state building. This testifies the importance that religion and faith have in the life of believers, and the central and structuring role that they play in Islamic societies. It is not a coincidence that the mosque is often surrounded by a continuous ring road, from which a swarm of roads define and structure the city: "Friday mosque is always the center of the Islamic city, without necessarily occupying its geometric center and without isolating itself from the urban fabric" [7]. Therefore, it is clear that the centrality of the faith is a leading theme both in Islamic society and in the urban design of its city: the mosque, with its large courtyards and arcades used for prayer, represents the meeting place and socialization par excellence, since it becomes the only 'island' of public empty space within the urban structure.

In addition, the mosque is also the driving force behind the city's expansions: on its sides the urban agglomeration grows according to an annular trend or by aggregations of districts, settling on the sides of the streets, which are both market and city traffic distribution axes. The roads often follow the orographic trend of the land, in order to take advantage of the slopes due to water needs and water distribution; sometimes, they look at the four cardinal points, thus inserting themselves in the Roman tradition (*cardo* and *decumanus*). Generally, there is a primary road network, *ash-shari* and *ad-darb*, which connects the main entrances of the city with each other and with the urban center, generally identified by the Friday mosque, the most important; yet there are many exceptions and this network can be modified in different ways, generally starting from the environment and from the exploitation of groundwater. On the sides of the streets individual districts and neighborhoods grow, "always distinct and separated by ethnicity and professions, but in an organic whole that shuns its geometric simplism" [8]. In Fès, the different professions give the name to some of the 18 districts which divided the medina at the time of French protectorate [9], and still are perpetuated today.

This multiple composition design, the neighborhoods linked to a single craft or a manufacture, follow a centrifugal trend from the mosque according to the position they occupy within society: for example, the sellers of ointments and perfumes, as well as bakers [fig. 2], are located near the mosque, due to their social importance - bread and soap are the basis of the Muslim faith: the bread for physical nourishment, the soap for personal hygiene which the faithful must observe daily, especially before prayer, always preceded by a short ablution.

Gradually moving away from the mosque, where there are also the most important public buildings - madrasas, universities, palaces of power of the sultan or caliph - there is a change in the artisanal panorama and commercial activities: jewelers give way to resellers of ceramics and fabrics, then to resellers of less valuable material, up to brick kilns, factories and the manufacturing industry. In the case of Fès, a traditional and old manufacturing activity, which takes place far from the mosque, is represented by the numerous tanneries of animal skins, and use the nearby *oued* to wash the hides.

From a spatial point of view, these neighborhoods appear irregular, furrowed by a dense vein of small streets, squeezed between tall buildings or covered by vaults and planks. The 'tunnel character' of these streets, which often narrow as we move away from the souk or the main street and ultimately lead to a typically Islamic *cul-de-sac* [10], can be explained by the purely distributive function, destined to few families, living by the street itself. Conceived as a semi-private space, these small streets lead exclusively to individual homes doorstep, and for this reason their purely 'residential' character does not require larger sizing. Main streets can be recognized for their commercial character: the souks, markets and distribution axes of pedestrian traffic, where circulation is allowed only on foot or through cargo animals, such as mules and donkeys.

The souk is a section of road with a quite large section allowing the simultaneous passage of three, four pedestrians, often covered by wooden grates, palm leaves or masonry vaults. Therefore, the souk is sheltered from the sun, on its sides has artisan shops, manufactures or small - medium scale commercial businesses, often consisting of a craftsman with one or more apprentices. Life happens 'in the light of the sun': the wide artisan production is added to the sale; the loading and unloading of goods produced in the outermost belt of the city can take place in certain time slots, but always by means of carts, mules or cargo animals. The souk opens from the first light of dawn and closes at sunset; often it remains completely closed on Friday, the holy day.

On Friday, most of the population gather in prayer in the most important mosques, called Friday mosques, such as the al-Qarawiyyin or al-Ándalus mosque. These sacred buildings, due to their character of urban centrality, are necessarily large, often built through regular modules - a typically Andalusian construction technique [11] as can be seen in the mosques of Cordoba and Seville - and with large courtyards with basins and fountains to complete the ritual ablutions. They are the place of socialization par excellence, one of the very few public spaces (together with the souks) where women are admitted.

From above, the perception of the medina is of a dense city, with a few occasional large spaces closed by walls and roofs with regular modules - the Friday mosques - and a huge amount of small spaces closed by walls, the patios, whose size varies depending on the importance of the building or the family that lives there. However, the apparent disorder of the ancient city, is mitigated by the patio, perceptible only from above: it is a single space cell closed by walls, whose summation forms entire neighbourhoods and districts equal to each other. From a social point of view, the patio represents a clan or a different tribe. Each neighbourhood, for its similar character in the spatial conformation and in the external appearance of the rather monotonous buildings, characterized only by the different shops that overlook the streets and by the clothing of the residents, attests the basic egalitarianism of the Islamic society [12] and its social organization based on the distinction by ethnicity and professions. It is therefore evident that it is not the general aspect of the neighbourhood that reveals where we are, but rather the clothes, the dialect and the language of the inhabitants, the goods displayed for sale in every small business overlooking the street, or, for some rich families, the architectural details that soften the doors and fixtures of the houses.

This 'subdued' external aspect, often lacking of decorations, is widespread throughout the medina and counter with the interior richness of arcades, mosaics, carvings and plaster inlays that can be admired in the rooms overlooking the patio; the origin of this character, different from that of the buildings of the European city, sinks into Muslim customs and etiquette, showing off the wealth of the family on the facade, that could be offensive towards those with less economic means.

So, the patio becomes the scenography of the richness, taste and tribal origins of the family and constitute a little oasis of peace and silence comparing to chaos of the near souk; the difference between interior and exterior of the patio in terms of sounds, scents and movement it's quite impressive. The custom of decorating the patio of private houses and public buildings with glazed majolica, plaster inlays and cedar wood carvings [fig.3], as well as inserting a small fountain or a well in the centre of the courtyard, is typically Andalusian [13], as well as the decorative patterns found in mosques, madrasas and religious buildings. This Andalusian character perfectly shows the

architectural contamination, diffused in every part of the urban design, and it becomes clear constructions techniques and decorative elements of the building heritage.

3. Techniques, traditional materials and heritage of the Medina

The andalusian-islamic character of Fès, is a tangible element of its unique building culture and it can be found in most of the architectural heritage of the city. The present paragraph discussion, based on the observation of Fès masonry, aims to depict the wide scenario of the displayed techniques. It does not claim to comprehend all of them, as the focus has been cast on earthen building cultures. In addition, the description of masonries, does not derive from laboratory tests, but from a careful interpretation of the traces and signs printed on the matter which constitute the main evidence. There will be comparisons with Spanish historical earthen constructions, significant for the understanding of Islamic and Andalusian intimate relationship.

The boundary walls of the Fès Medina, the main defensive structure of the old town, ensemble a real palimpsest of the original and vibrant contamination of Arabs-Andalusians techniques and allow an interesting and tangible legibility of both the cultures. An example of Arabs-Andalusians contamination is provided by the city of Chefchaouen founded in the 15th century which displays a contamination of Spanish and Arabs know-how. Formal and technological contamination of materials between Islamic and Andalusian techniques can be recognized in the Moroccan *ksar* and in the Spanish fortified complex: the Alcàzar. A multidisciplinary investigation on Andalusian military heritage has been recently carried out to define suitable intervention criteria and compatible restoration methodologies for buildings with *tapia* technique [14]. As an example, the *Castillo de la Mola* in Alicante, Andalusia, which has Islamic origins, built between XII-XIII century, presents a contamination of several building techniques, including *tapial de hormigon de cal* and *tapia calicostrada* which both incorporate lime [15]. *Alleuh*, is the name used for this traditional building technique, (in South of Morocco), which can be assimilated to the western rammed earth-pisè-tapial construction [16].

The tapial reinforced with lime is one of the typical constructive culture, displayed in the walls of the medina of Fès, (which dates back in the XV century) and clearly in most of Arabs defensive structures: it is made through the technical process of rammed earth combined with lime to improve mechanical resistance of clay, the binding material. The construction of the wall is realized through a timber formwork named '*tapial*'. Earth is leveled by compressing the layer of earth with a wooden pestle. The earth must be in a humid state, and it can be processed along with pebbles or pulverized stone and assure an optimal material density and compressive strength. The effect of a correct compression allows a reduction of water absorption, as the clay particles are less permeable, avoiding also the erosion of the structure. Clay holds all the particles of the internal material components, and its balanced ratio with the other aggregates creates a stable matrix, with water resistance properties. Tapial formwork can be made with one wooden plank or with assembled ones, and by doing so its pattern is 'printed' on the wall.

Some portions of the walls in the old town of Fès show this particular technique, pisè-tapia, while others are characterized by a combination of different building materials, essentially being formed by earth and reinforced with other binders, such as gypsum, which facilitates the compression of the material itself especially in the corners of the formwork. Concrete should be highly deprecated as it is not compatible with traditional earthen techniques, however it is often used to stabilize earth in modern interventions. The palimpsest of the walls of Fès, also shows *tapia* with stone as a base foundation, called '*Muro de tapia con basamento de silleria*', which protects the structure from capillary rise of water. An andalusian model of this technique is represented by the *Murallas del Alcazar Viejo* de Cordoba [17], which has been restored in 2000-2005 with a specific focus on the tower of Belèn. Stone also improves mechanical resistance of earth in the weakest points of the structure such as corners. Stones can also be part of the internal masonry bond together with lime mortar while having earth displayed at the exterior façade. In the Andalusian version this last technique is called '*tapia con piedras y mortero de cal en su interior*' and can be found in the Castell Vell de Castellòn, in the region of Castilla (near Valencia, a city which had an important Islamic influence between the VIII-XII centuries, called Balansiya, under the Arabs's control).

The external walls of Fès, in Place Boujloud, a northern area of the city, present a similar technique, built on a thick stone calcareous foundation [fig.4]. Another usual manner of building the fortress is the application layers of fired bricks inside the tapial formwork along with a layer of lime mortar. During the tapial compression process lime flows on top of the bricks which are embedded into the final masonry. The thickness of the mortar, fired bricks, stone shape the esthetical appearance of this type of masonry, developed with a vibrant horizontal design. It is also a common practice to build portion of the medina fortified walls by mixing together all the outlined techniques, obtaining a sort of so-called '*tapia con verdugadas*' [18], which presents layers of bricks and stone incorporated in the masonry, useful to fill up the holes created during the construction phases.

As it has been deeply pointed out, the intangible contamination of cultures becomes a tangible aspect of Fès in its built heritage: materials play a vital role. Civil buildings are mostly made out of calcareous

stone and residential houses in the overcrowded central core are also made with fired bricks. Carved wood forms the ceilings (performing as roofs) of the narrow streets of the medina. Therefore, apart from the wall structure, earthen masonry is highly featured in the Jewish quarter of Fès, the '*Milla*' (*mellah*) where houses are mostly made out of tapia and mixed techniques, considering that this part of the town used to be a poorer and neglected area. Earthen structures need to be protected from rain and moisture, therefore a good treatment of the surface should be assured, such as coats and plastering works, in order to prevent the progressive loss of material (a process often visible in many portions of the ancient Fès structures) [fig.5]. Not just the Milla, but also civil buildings of the medina are in a critical conservation state: the towers which are part of the defensive structure show a visible deterioration process. The damaged structures allowed the study and investigation of the internal composition of the wall, showing the variety of the internal masonry and mixture of techniques [fig.6]. Walls can have different patterns and could have horizontal (*masbout*), [19] oblique or herringbone (*opus spicatum*) rows of bricks, and often relieving arches. The '*opus spicatum*' is represented by fired bricks laid out to produce opposing shear plane faces and alternating horizontal bricks, and thus increasing the relative surface area. The fired bricks and the stones are kept together by clayey mortar which constitutes the binding element while the aggregates it has been observed to be represented by pulverized local stone. The alternation of layers of bricks improve mechanical resistance of the masonry: especially in seismic areas it is very much recommended to insert fired bricks layer inside the masonry, as they work to level the surface and they perform as orthostats and bracing system. The civil buildings in the medina are Fès, are normally characterized by homogeneous plastering: a light okra color earthen plaster stabilized with lime covers the facades. In fact, lime is added to ensure better mechanical response of the structure as well as surface's waterproofing.

Adobe, *toub*, (mud bricks) [20] are less present in the medina of Fès, as fired bricks constitute the essence of built heritage there, while they become an important building technique in the Draa Valley, especially in courtyard houses.

It is evident that clay, is the main ingredient of most of the built heritage of the medina: fired bricks, *lajour*, are widely present in the urban tissue and as part of columns or walls in the courtyard houses. Generally, all the constructions sites and the manufactured interventions are made by a local workers (*bennai*) coordinated by the master builder (*m'alle m'bennai*), who supervise the technical operations. The fabrication of bricks normally occurs between summer and autumn, because only in this period of the year bricks can be cured and dried completely. Each kiln, used to fire bricks, can host from 15.000 to 40.000 pieces, and artisanal manufacturing methods don't always guarantee the best aesthetic. However, the external surface will be covered by the typical plaster made out of oily lime (*jir*) [21], while the internal walls are coated with stuccoes, tiles, plasterwork. A typical Moroccan plastering technique '*Tadelakt*' (very popular in Southern Morocco) requires the use of lime putty, deriving from the slaked lime, along with aggregate, in the form of lime sand. The '*tadelakt*' master must demonstrate precision and patience as the manufacturing process is very delicate: three layers of coats need to be overlaid on the wall, and the use of specific instrument, such as trowels and with a smooth stone to burnish of the surface. After it dries it is possible to apply soap which creates a hydrophobic layer on the surface, *calcium stearate*, [22] due to the interaction between soap and lime. Terracotta is widely used as a decorative element, applied on floorings, renderings and finishes: the composition of clay and the other aggregates would still be the same used for masonry, but the manufacturing precision that the design requires has to be much higher. Terracotta tiles (*zellija*), for instance, are made by using formwork (called *qaleb*) which allows the fabrication of two pieces with a dimension of 1,5 x 11,5 x 11,5 cm. After the cut, the tile has to be dried in the sun, and then cooked in the kiln for two times, at different temperatures. The *zellija* can be shaped according to the design that they need to form, in order to create the desired mosaic pattern. Mosaic floors are often combined with marble sheets put in place by marble workers (*Rekhaimiya*). A similar version of *zellija* is the *bejmat*, which is used for external floorings, normally in the riad alleys. Moreover, clay is the main material used to consolidate parapets or flowerbeds, in the shape of a parallelepiped brick (*hosar*), molded by hand, as well as used for roof tiles (called *garmud*). After the firing and the enameling treatment artisans prepare a layer of earth and lime to install the roof-tiles [23].

4. Resources and critical issues. An idea for a well-planned contamination

Starting from the Medina's mapping of 1984, made by the Ministère de l'Habitat et de l'Aménagement du Territoire, the Bureau Sauvegarde Medina de Fès and its Delegation, the Department of Industrial Design and Building production of University of Rome "La Sapienza", the Ecole Nationale de l'Architecture de Rabat, the Ecole d'Architecture de Normandie and the Centre de Recherches architecturales de Hadara of Morocco [24], worked to propose a better enhancement of the Medina including the management and protection of its architectural heritage, including the development of a sustainable tourist fruition.

Today, the Medina it's an incredible example of out-of-time city, as we seen, very refined and organized in every aspect of its life, as centuries of tradition and religion have taught. However,

compared to other imperial Moroccan cities, as Marrakesh or Meknes, Fès does not have a specific strategy tourism empowerment and, in the other hand, it does not have a form of protection from globalization and its excesses; The old architectural heritage management and conservation plan is not fully accessible and does not permit an easy comprehension of the heritage itself. Our proposal, followed by an investigation-trip organized by the PDTA - Department of Planning, Design and Technology of Architecture of Sapienza University of Rome (25-29th November 2019), focused on the importance to preserve the contamination between two visions of the city, as a crystallized traditional Islamic core and a contemporary city which aims to valorize its own heritage.

A well-planned contamination strategy starts from visioning the city as an economic engine and simultaneously a protected world; an urban operative plan, a superior tool of heritage protection, as the exemplary Carta of Gubbio [25] for the protection and valorization of the historic centers in Italy, can be a good reference element and can guide a sustainable fruition of the medina.

The municipal actors, as the Bureau Sauvegarde Medina de Fès, can lead and direct the process for an operative plan through projects integrated in the urban frame. Assuming the urban society of Fès as very well structured but not very comprehensible to the not Islamic foreigners, the plan can have the contamination process as one of its principal character, never omitting the respect of the tradition and culture of Fès and the Islamic religion. It is significant to outline the fact that in 2003 UNESCO has adopted the Convention for the Safeguarding of the Intangible Cultural Heritage which establishes the importance of all those cultural practices, rituals, traditional craftsmanship typical of a specific culture. The article 15th of the Convention highlights the '*participation of communities, groups and individuals*' as a key element of heritage safeguarding. It recites: "*Within the framework of its safeguarding activities of the intangible cultural heritage, each State Party shall endeavour to ensure the widest possible participation of communities, groups and, where appropriate, individuals that create, maintain and transmit such heritage, and to involve them actively in its management.*" [26]

In such a way, it is essential to guarantee community engagement in the management proposal: for instance local info-point of the medina could distribute city maps to help tourists with the orientation, and realize leaflets on Islamic religious practice taking place over the day, which strongly characterize everyday souks life. Connecting central mosques with recognizable signs in the larger streets, or providing public lighting, can be a useful tool for tourists who does not speak Arabic or French. Mosques, often seen as the most attractive sites in Fès could be open also to non-believers in specific times of the day and could be comfortably viewed within guided tours. Tourism and foreign fruition must be sustainable, administered respectfully, as required for an UNESCO site.

Moreover, a well-planned contamination of foreigners and locals, tourism and cultural trips, can assure the protection and, most important of all, the comprehension of the culture and the history of Fès. Guided itineraries for the whole appreciation of both urban and rural landscapes of Fès could be enhanced by local associations.

The valorisation process starts by engaging local community and practitioners (master builders and artisans), with small-scale regeneration initiatives and socially sustainable conservation projects respecting historic buildings, traditional techniques and the urban form. For example, local artisans or restores could effectively contribute to the restoration of the medina buildings, comprehending plastering and stucco works, that need to constantly be maintained. Other strategies of community involvement could be represented by educational and training courses to meet the needs of different age groups, from the primary schools to Universities' students. Education and learning by doing approaches are very powerful opportunities for every realm, needing to guide a social empowerment.

It is important to stress the comprehension and discovery of Fès heritage and architecture, the cultural contamination expressed in the vibrant use of constructive techniques. This could be done through practical workshops organized by the municipality or by local associations (many of them are already active in gourmet and cultural initiatives especially for tourists), but what is really essential is to revive artisanal and traditional economy, in a suitable and sustainable methodology in step with the times. This is a delicate challenge for all the small and articulated historical villages, from urban to rural ones, and the Fès Medina could be perceived as a small fortified core, structured in souks. The discovery of the earthen (pisè, tapial with lime, stone masonry) and mixed techniques visible in every part of the medina of Fès should be acknowledged by the inhabitants, and valorised through schemes of cooperation with Universities and professionals by mutual agreement with local artisans and masters. Conservation and restoration initiatives are essential roles to address a long-term sustainable development when they are led from the inside of a society: this requires a sensitive and long pathway, as the real change is in the hands of communities, guided by structured programs, funded by public funds and supported by the municipality, NGO'S or private companies. The heritage itself could be a source of economic growth when it is preserved and really perceived as a tool of social upgrade.

5. Conclusions

The contamination is often a pervasive, interdisciplinary aspect that connects many customs, traditions, manners, and refines them, thus creating a richer culture and civilization and making the

Medina of Fès an exemplary city, at the national and international scale. In the case of the medina, the contamination between different cultures - Moroccan, Andalusian, Arab and Jewish - creates an architectural and urban product of the highest quality, unique in the world, as recognized by UNESCO in 1981. Therefore, the present paper highlighted the necessity to establish a better comprehension of earthen building cultures of the medina and the contamination between Islamic-Andalusian intangible heritage through a holistic plan, which implements the existing one, and it is capable of integrating the urban pattern. This goal intended to be achieved through a participative process with local associations from different souks, municipal actors, Universities. In conclusion, the proposed strategy, stresses the need to preserve Moroccan, Andalusian, Arab and Jewish cultural contamination process, while addressing necessities of a contemporary society and assuring the protection of its tangible and intangible heritage.

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Fig. 1: The Medina view from tanneries, with the green glazed roofs of the al-Qarawiyyin Mosque and University. In the left side, it's visible the Atlas mountain chain and the minaret of al-Ándalus mosque.



Fig. 2: The bakery and pastries souk near the Friday Mosque, with the wooden grates covering.



Fig. 3: Traditional cedar wood carving with Nasrid motifs (Fatima's hands, curves geometrically repeated) in the Ál-Andalus district, very similar to the fortress-palace of Alhambra of Granada, Spain.



Fig. 4: The ancient walls of Fès, Place Boujloud.



Fig. 5: A damaged earthen structure of the Milla (Jewish) district.



Fig. 6: Details of the earthen masonry of a fortified structure (northern district).