

THE MEDINA, THE HAMMĀM AND THE FUTURE OF SUSTAINABILITY

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Abstract

The Islamic Mediterranean city faces increasing pressures from without and within. It is faced with the question of how to support the valued institutions and traditions of the past, while confronting the influences and pressures of the present and the opportunities of the future. The hammām has been centered on a venerable tradition from the past that is both a building as well as a cultural tradition and that is trying to survive in a modern world. Hence, each of these historic building should be seen as cultural heritage sites. One of the given aspects of this study has been the question of conservation and preservation of these once elegant buildings, the hammāms.

Strategies for the restoration of these buildings thus become the precondition for many of our other considerations. At the opposite extreme of building restoration considerations is the question of sustainability. Therefore the other major issue looked at in this study is: how can we develop scenarios that propose a sustainable future for these hammāms. Scenarios that are both respectful and supportive of the historic local culture yet also create a viable strategy for developing a sustainable mode of contemporary life. It was the ambitious charge of our research to explore the territory between these two questions.

Keywords:

Medina, hammām; mediterranean; sustainability.

Introduction

In a rapidly changing, "globalized" world, all existing institutions are being challenged. In developing countries and traditional societies these new outside pressures can be quite threatening to established values and ways of life. The widespread theory, particularly as it has been foisted upon developing countries, has been that a country either sign on to the program of globalization or it will be left behind; it either makes the required "structural adjustments" and reforms its laws and institutions to support the globalization of its economy or its economy will decline and be relegated to poverty and the backwaters of history. The supposed benefits to signing on to the "Washington Consensus," include a rapidly growing economy as multinational corporations gain access to the local economy and build factories, provide jobs, increase trade both exports and imports, and create new wealth that rapidly raises living standards. Unfortunately, to the dismay of many

developing countries that have succumbed to the temptations of corporate capitalism, the outcomes have often been quite different. The more common effect has been a degradation of the environment and the exploitation of natural resources, greater wealth for the few, but greater poverty for the masses, and perhaps most disturbing of all, the loss of local values and traditions without there being any meaningful replacement. The recent massive collapse of U.S. markets and financial institutions and the ways in which this collapse has telescoped through the world's economies has precipitated the almost instantaneous death of the previously universal assumptions of global capitalism. While modernization where it has occurred has brought with it a surge of rising expectations among the people for a better life, any small benefits that have been won are accompanied by a constellation of new problems that have not been seen before and for which there seems to be no solution. It is no wonder that in the Islamic world where Western style modernization has threatened and weakened traditional values and practices, there is a growing sense of resentment and alienation. With the American system now discredited as a model as well as a path for development, a new space of opportunity is opened for development in the Islamic world.

The above issues are a long way from the initial concerns of the HAMMAM project. If the global pressures of corporate capitalism are thought of as a "top-down" phenomenon, then the HAMMAM project should be thought of as a "bottom-up" endeavor. "Bottom-up," because in each of the case studies selected, the study started with an elegant, albeit modest building which presence in the urban environment

has been on the decline. Hence and as a beginning point, the following question was asked: "What positive influence can a program starting with the hammām and its uses have in influencing the immediate neighborhood and beyond?" How can the hammām, both the building and its societal and functional role, be the catalyst for value-rich societal as well as urban evolution?

Looking to the Traditional Medina as a Proto-Sustainable Model

It is increasingly acknowledged that the most harmful and most dangerous contributions to the unsustainability of the planet have come from the most "advanced" countries- Western Europe and even more so the United States, and that the greatest harm is being visited upon the environment through exploitation by corporate capitalism. It is also true that the lowest per capita load on the environment comes from those developing countries that have not yet fully succumbed or fully succeeded in adopting the Western program of globalization. What is largely missing from the development discussion is that these traditional cultures, having developed over centuries and having retained many of their original patterns and structures, are a lot closer to a sustainable relationship with their environment than are modern "advanced" nations. As every historic town and city had of necessity developed and maintained a balanced relationship with the resources gathered from its surrounding countryside, nearly sustainable resource patterns were always a precondition for long term survivability. These patterns of resource use over hundreds of years would become

embedded in the local craft traditions and the local culture. In a world that has long since abandoned the ancient wisdom embodied in traditional cultures and replaced it with a system of temporary prosperity but longer term unsustainability, there is much to learn from these traditional patterns and wisdom traditions in our postmodern quest for sustainability.

It is always dangerous and of limited utility to rely on historic analogies and comparisons, yet at times they can act as short-cuts to rapidly understand and convey complex ideas. As architects and urban designers, we have studied medieval Italian hill-towns in Europe as well as their southern Mediterranean counterpart, the Islamic medina. Over many years we have visited and lived in such towns and have been continually enamored by the urbanity and sheer beauty that are to be found in these places. For many years even foreigners have retired here, because of the way of life that is possible in these attractive, eminently livable towns. The buildings, the streets and piazzas have not been "designed" in the modern sense, but have evolved often over thousands of years and through a number of different cultures and historic periods. Through them all, the rich and varied urban fabric as it has been maintained and rebuilt has been highly responsive to human needs and evolving institutions. The modern embarrassment has been that we architects and urban designers have rarely been able to design streets, neighborhoods and cities with the same level of responsiveness, human accommodation or artfulness as is to be found in virtually every such medina and medieval settlement. Our particular field of study and expertise is in urban sustainability. It is not possible to think of either the European medieval town or the Islamic medina

as projecting the issues and characteristics of sustainability: their history is too bloody, too often under despotic rule, oppression, inequality, exploitation, wars, disease and famine. But there is one characteristic they have had, and that is persistence. They have found a way to persist over hundreds and sometimes thousands of years, they become candidates for a new designation that of "Proto-Sustainability".

Proto-Sustainability, as it has been used in this study, means that however the town has been governed or whatever inequities it has suffered over time, it has evolved a way of managing itself so that its material needs have been in balance with the resources it has husbanded and that this balance-seeking process has occurred almost entirely at the local level. In such places the great majority of food, fuel, water, building materials, and other goods and services, have been generated locally by locally-evolved farming methods and craft and service enterprises. These local services have also evolved in such a way that their mode of operation and their interaction within the whole urban-rural dynamic has found a way of maintaining a balance within the carrying capacity of the local environment. Amazingly, it would be difficult to find any town or city in the modern world that would be able to operate on the same basis. Of course, today everything is connected to everything else so there is seemingly no need or reason for any town to wish to operate on this basis. Over centuries we have evolved systems of transportation, communication and trade working through common currencies within a largely free market system that encourages specialization and makes it possible to produce goods almost anywhere and to purchase them virtually

anywhere as well.

Yet the challenge of sustainability or more precisely, the sustainable city-region is to forge a way – this time under the rule of social and environmental equity - where the given region, on a net basis, is again operating within its fair share of the earth's bounty on a regenerative basis. As we have no modern models that we may observe where this condition prevails, it may be useful to observe those places where at least proto-sustainability may have been practiced. We have thus found it helpful to look to historic city-regions – the European medieval town and in particular within the HAMMAM project, the Islamic medina, for patterns and to seek clues as to how these material and energy balances may have been achieved in the past and how the network of human activities served to both work within the local carrying capacity as well as to maintain its balances, as a preliminary model of how we might begin to research a modern city-region able to demonstrate some of the same characteristics, but now propelled by the creativity of stakeholder participation and by equity in all its dimensions.

It is widely understood in the developed West that major structural changes will need to be instituted for towns and cities to be put on a sustainable course. But corporate capitalism, the “operating system” that drives the metabolism of our urban centers, has become fundamentally unsustainable. There are thus no existing models for how such a transformation might be accomplished or what the resulting system might look like. It is with this in mind that we have reason to turn to the Medinas of the developing world to examine the still existing life patterns that are remnants of a proto-sustainable past to research how they once worked and

to project how an updated version of these successful metabolic processes might become the basis for a new sustainable city – both as a sustainability-oriented operating system, a sustainable urban form and a sustainable way of life.

The Hammām as a Grounding Point for Sustainability Studies in the Medina

Carrying out this line of inquiry led to prove the Islamic hammām as being an excellent grounding point to study sustainability in the medina. As one of the key elements and institutions in the historic Islamic city it is a useful tie-in to both the traditions as well as the urban form of the traditional city. Of the major institutions of the historic Islamic city that manifest as buildings with an urban presence, i.e. the mosque, the madrasa, the library and the hammām, the hammām is the most secular and also the most cryptic – the most hidden. Although the hammām is a large, elegant building with a complex architecture, magnificent spaces and an important communal function, it is often invisible in the city and its entrance is usually hidden on a back street or alley. It has no windows although glass globes, arranged in intricate geometries within networks of masonry domes and vaults, bathe the interiors with a glorious light.

In a very conservative culture, where in many places women are veiled and their presence in the public realm is still highly proscribed, the hammām presents the sort of activity and experience that is as essential as it is secret. The observant Muslim is obliged to do his or her ablutions before prayer – particularly before attending the Friday mosque. Islam is a religion

that stresses cleanliness of the body. So the traditional role of the hammāms has been a fundamentally religious one. But in spite of the deep modesty of the culture, the bathing function of the hammām is not a private one. Bodies are bathed and massaged by others, albeit others of the same gender, but others nonetheless. Bathers remove their clothes and wear only robes or towels. This is in stark contrast to how they appear in any public setting or even in the privacy of their family courtyard. This is such a departure from the mores of all other aspects of their daily lives that neighborhood women in our project have objected to hammām settings where it would be possible for a passerby to witness them entering or leaving the local hammām. This makes for the strange (to outsiders at least) situation where people – women especially – are comfortable when in public in their traditional dress, and in private, within the security of the hammām and all its activities, but in the boundary or transition between the two there remains a problem.

In fact, the very private nature of what goes on within the hammāms is also at times problematic. In these traditional towns and societies the possibility of privacy in a semi-private setting creates the prospect of what are considered locally to be illicit activities between consenting adults to take place behind closed doors. This creates the image, whether warranted or not, that the hammām is a place, or more specifically one of the few institutional places, where such activities could occur. If a particular hammām were to gain a bad reputation it could well be shunned by the local people. Even a bad reputation through rumors alone can be very damaging to both a hammām as well as the neighborhood in which it is located.

The Space of the Hammām in the Medina

The fact that the hammām is often a hidden building is not so unusual in an Islamic town or medina. The structure of the medina in many Islamic cities, as, for example, in Fez, is of a very dense, tightly packed system of courtyard dwellings organized along narrow streets or alleys. The streets are too narrow for cars and the major streets are lined with tiny shops. The courtyard houses are rather large with all rooms opening to the central court. There are few if any windows on the street. The entrances on the streets and alleys are usually small (even the entrances to the larger courtyards) and there is little if any public space outside the private or semi-private courtyards. The mosques and medrassas will have sometimes very large courtyards, but these are experienced as semi-public spaces with special entrance gates and are not experienced as being a part of the continuous public paths of the medina.

The medina of Fez does have a number of truly public spaces, but these all seem to be recent interventions carved into the much tighter historic urban fabric. As opposed to the occasional tea house, restaurant or café which operate as private businesses, in most places the hammām is managed privately, but owned by the waqf, a conservative, quasi-public, quasi-religious charitable organization with very old origins in Islamic culture. This ambiguous, in-between status gives the neighborhood and its citizens a sense of co-ownership in the hammām that other businesses and institutions do not have. This multiple identity makes the hammām amenable to become an institution as well as a place and a space in the neighborhood for congregation and for the focus of civil society

processes. With a paucity of public space in the medina, the hammām, by being less constrained than the more religiously oriented institutional spaces, is poised to become a meeting place, where future-oriented, civil society processes could emerge. Such a role for the hammām was high on the agenda of the HAMMAM project. As the project unfolded, many alternative future scenarios emanating from the hammām as a starting point emerged through both expert-guided as well as parallel civil society processes. The scenarios generated from these trans-disciplinary processes presented sustainability-oriented benefits in the realms of economic development, as well as urban and architectural enhancement, social coherence and empowerment and environmental improvement.

The Threat of Globalization to the Traditional Medina

The Islamic city has survived many intrusions through history starting with the Roman and even earlier invasions and moving through various colonial and other hegemonic periods. Current southern Mediterranean cities, to the extent that they have come under the influence of globalist development, are under great threat. This threat has been well typified by Wendell Berry:

...when state and national governments begin to act in effect as agents of the global economy, selling their people for low wages and their people's products for low prices, then the rights and liberties of citizenship must necessarily shrink. (such) A total economy is an unrestrained taking of profits from the disintegration of nations, communities, households, landscapes, and ecosystems. It licenses symbolic or artificial wealth to 'grow' by means of the destruction of the real wealth of all the world. (Berry, 2001)

In a report of the International Forum on Globalization entitled, *Alternatives to Economic Globalization*, the key ingredients of the globalization model are outlined as 1) hypergrowth, 2) privatization and commodification, 3) economic and cultural homogenization, and 4) export-oriented trade and investment (IFG, 2002). Of particular concern to the current discussion are hypergrowth and economic and cultural homogenization. Hypergrowth is necessary in the economic globalization model because of its extractive nature and its singular ability to value increased capital. The CEO of a corporation is charged with the single responsibility of increasing the value of the corporation's stock. Because ecological and social concerns carry no inherent value in this system, any damage to them is considered to be an external cost, or a cost that is not accountable by the corporation. The hypergrowth model is fueled by a constant global search for cheaper labor sources, cheaper natural resources, fewer restrictions on exploitative activities and new markets. Thus, another limiting factor to a corporation's market is the influences of local culture. Many of the threats facing the countries of the world today and particularly those in the Islamic world are threats to the local traditions and the local way of life. The specificity of culture translates to diverse preferences from food and clothes to music and architecture. In light of this, it has become important for corporations to push toward a global monoculture—a desire for hundreds of historically unique nations to eat at the same fast food restaurants, wear the same designer clothes, watch the same films and television, and build the same kinds of unsustainable cities.

The homogeneity that this produces means that corporations can translate their production

and marketing almost anywhere in the world to produce "economies of scale" at the cost of the destruction of local culture and knowledge. Included is the destruction of the historic knowledge of living within the limits of the natural environment, developed and practiced over many generations. But while these threats are deeply felt, they are often not so noticeable in every day life because corporate capitalist development often provides short term benefits in the form of increases in income, jobs and material goods which serve as temporarily substitutes for that which has been replaced.

Accordingly, in terms of long term survivability, it appears that the modern city that develops least is also the city that is the least unsustainable. But what about the many pressures for development? The real question is not if development will occur. It is rather how it will occur. The so-called developed countries are fully developed and committed to an unsustainable way of managing their economies, and although they have now become well aware of this situation, their attempts to make a transition to a sustainable operating system fall far short of what it will take to do so. On the other hand, the countries of the developing world, although they have been greatly tempted by the development model being promoted by Europe and the United States and have already taken the first steps on the corporate capitalist path, are not yet fully committed to it and in any case still have a long way to go to fully implement the Western program. Moreover, there is rapidly growing uneasiness and resistance to accepting the idea that following in the path of these unsustainable programs is inevitable. The reasons for this uneasiness are no doubt many.

Corporate capitalism is clearly a threat to local traditions, local cultures and local economies as well as to the environment at every scale – local to global. Islamic cultures struggle with the question of how to maintain and advance their values in a modernizing world that promises increasing material well being. It seems that increasing wealth and material comfort should also make it more affordable to pursue their preferred values and way of life, but this is clearly not the case. Western style wealth is not culturally neutral.

Is this a problem only for the developing world or are the wealthier countries in a similar situation? Lord Bertrand Russell once said, "If they should raise the temperature of my bath water one degree every half hour, I shouldn't know when to scream." In Europe and the U.S. the transition to a system of corporate capitalism has occurred over many decades. As our level of material prosperity has slowly increased, we have only gradually lost our grounding in the non-material things that make life worth living. In contrast, in developing countries, change has happened extremely rapidly. Peoples and cultures have lost a major part of their traditions and cultures within the space of a single generation. This condition gives rise to the terrible conflict where individuals, while being fully desirous of the material benefits that corporate globalization may bring, at the same time are thoroughly horrified with the fact that this new model is completely unable to contain or support any values or system of values other than its own proliferation.

Although we live in a modern world where growth and development is almost universally considered as an unalloyed good, the warning

signs have been with us for a long time. In the United Nation Development Program's 1996 Human Development Report, five types of harmful growth were identified (UNDP, 1996). They included:

- *Jobless Growth* – where the overall economy grows, but does not expand the opportunities for employment.
- *Ruthless Growth* – where the fruits of economic growth mostly benefit the rich.
- *Voiceless Growth* – where growth in the economy has not been accompanied by an extension of democracy or empowerment.
- *Rootless Growth* – where growth causes people's cultural identity to wither
- *Futureless Growth* – where the present generation squanders resources needed by future generations.

All of these syndromes are painfully familiar to not only people in developing countries, but as global capitalism secures its hegemony, these phenomena are becoming increasingly prevalent even in the most developed countries. There is good reason to suspect that these forms of harmful growth that are a direct function of the Globalization project, are one of the root causes of oppositional and terroristic movements that have become a major threat in both the Islamic world as well as in the West. Margaret Thatcher famously proclaimed in her familiar acronym, "TINA" - "There Is No Alternative." i.e. there is no alternative to global capitalism. The major question of this paper and indeed of the HAMMAM project is; "Is there an alternative, and if so where do we look to find it? Can we find not just weaknesses, but strengths and even alternatives by addressing the future of the Islamic city through the window of the hammām,

its traditional neighborhood, the medina within which it is located and in the Islamic culture in which it is situated?"

Lack of Suitable Sustainability Models in the West

Having been so thoroughly shaped for so long by the forces of global capitalism, the European or Western city remains largely silent on the question of sustainability. Yes, particularly in Europe, many improvements have been made to the city. We may call them Sustainability Oriented improvements, but they fall quantitatively far short, but more importantly structurally inappropriate for what would be required if those cities were to actually operate on a sustainable basis. To give some idea of the magnitude of the problem, the Global Footprint Network has done pioneering work in determining the magnitude of the effects of our way of life on the earth and its resources. Its Ecological Footprint method is a determination of the land area (footprint) or what they call "appropriated environmental space" that would be required to support the material lives (food, fuel, materials) of a particular country on a continuing basis. When they do the calculations for the whole planet, it is no surprise that the amount of land available for the 6.3 billion people (in 2003) on the planet is greatly exceeded by the amount of biologically productive land that their lifestyles require to support it on a continuing basis (Global Footprint Network, 2006). This means that in conducting our current way of life we of necessity are drawing down the "natural capital" of the environment and loading the environment with harmful substances. We are living unsustainably

on borrowed time. The Network has done calculations for the footprints of many countries on a per capita basis. Interestingly, most of the South Mediterranean countries in our HAMMAM project fall within a narrow range of .9 hectares per capita to 2.1 hectares per capita. This range is below what the Network calculates is the unsustainable global average of 2.2 hectares per capita. Following is a list of a few of their per capita footprint by country calculations:

Country	hectares per capita
India	0.8
Morocco	0.9
China	1.3
Egypt	1.4
Algeria	1.6
Syria	1.7
Turkey	2.1
World	2.2
Austria	4.9
France	5.6
United Kingdom	5.6
Canada	7.6
United States of America	9.6

Table 1: Footprints of selected countries on a per capita basis.

There is still much debate over how to interpret figures such as these as well as just what methods and assumptions should be made in determining how many people the Earth's ecosystem can support on a sustainable basis and at what level of material comfort, but looking at the situation using the Footprint Network's method, an

Austrian lifestyle places more than four times the load on the environment as does an Egyptian's and an American's lifestyle causes six times the environmental load as an Algerian's.

There are different ways to react to this data. The most obvious is to note that the results seem unsurprising: It appears in this listing that the poorer countries require the fewest land based resources to support the lifestyle of the average citizen while the wealthier countries require many times the land area to supply the average citizen with his/her material needs as well as to balance out the harmful byproducts of their consumptive lifestyles. However, more careful consideration would suggest that the people in the U.S in many significant respects are not nearly as well off as people in a number of European countries. Moreover they are not even the most comfortable and certainly not the happiest. Conventional development models stress economic growth as the ultimate objective and measure, often expressed as GDP or Gross Domestic Product. GDP closely tracks the above table with the highest GDP's tending to be the most unsustainable while the lowest GDP's in a material and environmental sense tend to be the least unsustainable.

There is an interesting concept developed by the king of the small, undeveloped country of Bhutan in 1972 called "Gross National Happiness"(Bakshi, 2005). The concept of GNH is based on the premise that true development of human society takes place when material and spiritual development occur side by side to complement and reinforce each other. The four pillars of GNH are the promotion of equitable and sustainable socio-economic development, preservation and promotion of cultural values,

conservation of the natural environment, and establishment of good governance. Another alternative to GDP developed by Clifford Cobb is the Genuine Progress Indicator or GPI. GPI is equal to personal/household consumption expenditures, plus the value of household work not counted in GDP, plus the value of volunteer contribution work; minus the crime factor, the environmental degradation factor, the family breakdown factor, the overextended worker stress factor, exploding consumer debt, and inequality of distribution of wealth and income (Cobb, et al., 1995). The GPI avoids many of the obvious shortcomings of GDP but is neither an indicator nor a guide to the realization of sustainability. It is however evidence that increasingly we understand that placing a massive load on the environment cannot be considered a badge of honor although perversely, according to current economic thinking its conjoined twin, high GDP, is almost always considered a positive indicator. While it is not presently a crime to live in a way that prevents our descendants from enjoying comparable lifestyles - as individuals we hardly seem to have much choice - such crimes against the future on a massive scale are certainly among the most harmful and most threatening offences being perpetrated today.

In the developed countries the choices appear to be limited to lowering the rate of unsustainable forces and activities- that is, lowering the rate at which things are getting worse. When a system that has been working relatively well for a long period of time slowly drifts into the clearly unsustainable realm, it is extremely difficult to "undevelop" it, much less to completely change its operating system as well as the components it operates. It would be difficult to imagine

any acceptable political approach that could accomplish this. However, in the developing world the situation is completely different.

In a country that has been operating within or near its fair share of earth's resources, although perhaps at too low a level of material comfort, there is far more room to develop. Its choice is either to mimic the unsustainable development path of the wealthier countries, or to forge a rather different path, uniquely crafted to respond to local circumstances, traditions, values, resources, and guided by the principles of sustainability. That is to say, by establishing a process that guides development by making sure that development and its effects on the environment, its appropriated environmental space, or ecological footprint, remains within what the Footprint Network used to call its "fair earth share" or what we have called its Sustainable Area Budget (SAB) (Levine, et al., 2000). The SAB concept is simple in principle. It posits that each person is entitled to be sustained by his or her fair share of the earth's bounty- land, water and air-on a renewable, regenerative basis. This means that each one of us is entitled to the usage of one 6.6 billionth of the Earth's renewable resources as long as we do not degrade them in the process. As there is yet no account of such a principle in international jurisprudence or treaty, for the present it will be more conservative to apply the principle on a country or a regional basis. The SAB for a town then, is in the same proportion of the country's total land area as the proportion of the town's population is to the country's total population. Working from the same data as that used by the Global Footprint Network we would aggregate the SAB's of the inhabitants of a city-region to obtain the SAB land budget of the region. This

is the land based budget within which on a net basis all the material and energy needs of the city-region are to be satisfied. What was once a problem so vast that it could not conceivably be solved - balancing the activities of 6.6 billion people over the whole globe to operate within the carrying capacity of the Earth's natural environment – the SAB method defines a problem that can be meaningfully resolved by balancing the activities of a community of people within nature's capacities within a defined geographic area, the Sustainable Area Budget of a city-region.

The Hammām as Generator of Sustainable Civil Society Processes in the Medina and the Medina as the Model for Sustainability in Developing Countries

In the HAMMAM project we have worked from a strong traditional base. Starting with existing buildings and an institution, both in need of rejuvenation, we seek to see where we can go and how far we can go in reviving them and without violating their essential character, bringing them up to date and speculating how such a revival might become generative beyond the immediate focus. Could we go from the building to the public space and the neighborhood, the district and the city? Could we go from the social movement that champions the revival of the hammām practice to the revival of civil society practices in the neighborhood to those of the city at large? Could we do all this within the context of sustainability principles so that increasing civil society wealth as well as material wealth can be self-generating in ways that do not export problems beyond the local context or into the

future? Our researches suggested that indeed all these things could be possible, both in the context of the Islamic medina and, by example, in the historic centers to be found in other developing countries as well.

Conclusion

There exists today in the great cities of the Islamic world, an opportunity that is not available in the developed countries. The first part of this opportunity is that there is the “space” to develop. There is a space of possibilities (Levine et al., 2003) that the developed world does not have. Development will happen to fill this space– it is just a question of what kind of development. The second is that because of the background of a strong moral tradition rooted in Islam, progress and change based upon so-called “market forces” are not automatically accepted, but are assessed critically and sometimes resisted – for better or worse – in relation to how they support traditional norms. Thirdly, there seems to be a desire to find a path that is different from that of the wealthier countries – a path that is grounded in values rather than in the path guided by solely global economic pressures. These characteristics make it possible for development in these societies to create programs of urban sustainability in ways that would not be possible in either Europe or the US. The HAMMAM project presents the first small hints of how such a process might begin, through the renovation and recasting of both the physical as well as institutional aspects of the hammām to become a generator of sustainable civil society processes in the medina.

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Richard S. Levine

From early in his architectural career, Prof. Richard S. Levine has been a pioneer and advocate for sustainability-oriented architecture in the United States. He has over 200 publications on solar energy and sustainability research and projects. He has conducted sustainable city research and projects in Italy, Austria, China, the Middle East as well as in Kentucky. In the

mid 1980's, Prof. Levine, along with his colleague Ernest J. Yanarella, started the Center for Sustainable Cities (CSC) at the University of Kentucky, to study and advance the theory of sustainability. Partnering with Dr. Heidi Dumreicher, director of Oikodrom: the Vienna Institute for Urban Sustainability, the CSC pinpointed the scale of the city or city-region as the scale at which homeostatic relationships between social, environmental and economic issues could reach a necessary critical mass, a pivotal discovery which led to the eventual formation of the Operational Definition of Sustainability. In the early 1990's, the CSC and Oikodrom partnered up again to work on a series of three commissioned design studies for a neighborhood-as-a-hill to be built over the Westbahnhof rail-yard using a coupled-pan space-frame system patented by Prof. Levine. The City-as-a-Hill urban form, the Sustainable Urban Implantation, the Partnerland Principle, the Sustainable Area Budget, the Operation Definition of Sustainability, and many other sustainable urban design principles were bolstered by the Westbahnhof project and continue to be studied and expanded upon today. From 2002-2005, Prof. Levine was the sole American researcher in the European Commission sponsored SUCCESS project which studied rural villages in six Chinese provinces from a sustainability perspective. In 2005, the CSC Design Studio (CSCDS) was formed as an extension of the CSC and Prof. Levine's private architectural practice. In 2007, the CSCDS, headed by Prof. Levine, organized a system-dynamics modeling seminar in Fez, Morocco, as one of the concluding meetings for the recently completed European Commission sponsored HAMMAM project (2005-2007) that studied traditional Islamic bath houses in five Mediterranean countries.

Michael T. Hughes

Michael T. Hughes joined the Center for Sustainable Cities (CSC) as an undergraduate student in architecture under the tutelage of Prof. Richard S. Levine in 2003, and was later brought in as a design and research associate at the CSC Design Studio (CSCDS). For his master's thesis, in conjunction with

the CSCDS, Mr. Hughes' coordinated a series of sustainability-oriented urban design scenarios for the city of Martin, Kentucky, which earned him his M. ARCH degree in 2005. Mr. Hughes' undergraduate thesis for a City-as-a-Hill, entitled "Sustainable Reclamation: An Urban Model for Coal Country," was designed to be built over an un-reclaimed coal strip-mining site in Whitesburg, Kentucky. His study was later picked up by the CSCDS and received accolades as a finalist in the RIBA-USA International Design Competition, *Building A Sustainable World: Life in the Balance in 2007*. Mr. Hughes was one of the head designers for the "Sustainable-Public Administration Town-as-a-Hill" which was entered into an international urban design competition in for a new administrative city in South Korea. With the CSCDS, Mr. Hughes has co-authored over sixteen published papers and articles, aided in the system-dynamics modeling for the European Commission sponsored SUCCESS and HAMMAM projects, and presented his research in the US and Turkey.

Casey Ryan Mather

Casey Ryan Mather joined the Center for Sustainable Cities (CSC) as an undergraduate student in architecture under the tutelage of Prof. Richard S. Levine in 2003, and was later brought in as a design and research associate at the CSC Design Studio (CSCDS). For his undergraduate thesis, in conjunction with the CSCDS, Mr. Mather co-designed several sustainability-oriented urban design scenarios for the relocation of downtown Martin, Kentucky. For his master's thesis, also in conjunction with the CSCDS, Mr. Mather was one of the head designers for the "Sustainable-Public Administration Town-as-a-Hill." This project was entered into an international urban design competition for a new administrative city in South Korea, and earned him his M. ARCH degree in 2007. Mr. Mather later joined in further elaborating upon the City-as-a-Hill study, entitled "Sustainable Reclamation: An Urban Model for Coal Country," designed to be built over an un-reclaimed coal strip-mining site in Whitesburg, Kentucky. This project received accolades as a finalist

in the RIBA-USA International Design Competition, *Building a Sustainable World: Life in the Balance in 2007*. With his associates in the CSCDS, Mr. Mather has co-authored over sixteen published papers and articles, aided in the system-dynamics modeling for the European Commission sponsored SUCCESS and HAMMAM projects, and presented his research in the US and China.