43. BUE-FISC – 2010

"GREEN" ARCHITECTURE PRACTICE:

A TOOL FOR THE CREATION OF "GREEN" COMMUNITIES

Dr. Dalia Abdelaziz Elsorady

Lecturer, Department of Architectural Engineering, Pharos University in Alexandria
dsorady@gmail.com

ABSTRACT:

Both "green" architecture and sustainability are not technological, but ethical issues, and the question is not what technology we need in order to preserve our physical existence, but what further fundamental change we need in order to integrate our existence along with technology as a result of our "green" minds. "Green" architects perceiving themselves as mere professionals obeying the rules of society, hence obligated to their professional responsibilities and ethics, dispose of the limited potential of being beneficial to planetary ecology. Architects need to create "green" practices to provide space for extensive creative collaboration where people can together explore new meanings and values, create new knowledge, learn the respect for the world, and gain responsibility for the environment and communities they have helped to create. Thus, not eco-effective technology, but a redesigned mind, should be the theme of environmental responsibility, and also an objective of "green" architecture.

The objectives of this paper are, to achieve a high level of sensitivity to the geographical and cultural context, to examine the knowledge of all parties involved and build new knowledge, to spread ecological awareness, and to harmonize communities and their relationships with their environment. The "greenness" of Hassan Fathy's practice lies in his dedication to care for the environment of his neighborhood and his desire to inspire people, which are the key elements of an enriched mission of deliberative practice contributing to the creation of sustainable communities. The research is limited to the role of "Green" architecture within society, the architects' enriched mission and environmental ethics, the architects practice, the architects and their interrelation with their communities within the focus on Hassan Fathy and his impact on his students and community.

1. INTRODUCTION:

Terms like "green architecture", "sustainable design", "ecological design", "eco-design" identify an architectural design approach, which is concerned with architecture's environmental impact. We all possess at least a vague picture of what "green" architecture means, likewise we have some understanding of what ecology or environmental responsibility is. Hearing that a building is "green," we automatically picture photovoltaic panels, rainwater collectors, passive cooling systems, radiant heat gain control, non-toxic materials, local building materials, or grass on a roof. We refer to certain features and qualities which that building possesses, but not the people involved in creation or use of that building-we fictitiously replace environmental responsibility from ourselves upon the objects we use, although environmental responsibility should be placed on humans who build and/or use the buildings.

2. GREEN ARCHITECTURE DESIGN AND PRACTICE

We can find several definitions of an "ecological design." For instance, according to Sim Van Der Ryn and Stuart Cowan it is "any form of design that minimizes environmentally destructive impacts by integrating itself with living processes" (Ryn and Cowan, 1996); and Peter Graham presents "Eco-design" as "designing in accordance with ecologically sustainable development principles" (Graham, 2003). "Green" design understood as the technological challenge of decreasing environmental impacts of the building is a product of our perception that technology is an object of humans' mastering. However, technology constructs the human understanding of reality, which determines all aspects of our behavior; it is the essence of our humanity. Technology deforms the understanding of reality by hiding the substantial information, energy, and matter that flows within technological structures and processes, which results in unawareness of our influence on natural processes.

"Green" architects should assign for themselves obligations to society and the environment larger than those posed on them through professional status in order to get the "green" message across the un-ecological frameworks, as well as to prevent danger of which society is largely unaware. The first thing to do is to place the sustainability and "green" architecture discourse in the realm of ethics. The reason why architects should accept responsibilities is that they, as creative people, possess the talent of observation given by nature which allows them to recognize the inner un-ecological drives of society and they are privileged in having the tool of architecture to present and heal them.

2.1 The role of Green Architecture Practice

"Green" architecture aspiring to trigger fundamental changes in thinking, can hardly accomplish its mission solely by the means of designing "green" buildings. The major objective of "green" practice should not be to design "green" buildings, but to offer space where people can discover new values, mutual interdependence, inevitable dependence on planetary ecology, the flaws of society, and build strong local identities. In David Orr's words, "green" design is not about "how to produce ecologically benign products .., but how to make decent communities in which people grow to be responsible citizens", (Orr, 2002).

Van Der Ryn and Cowan see ecological design to be both "a profoundly hopeful vision and a pragmatic tool....It provides a new way of *thinking about* design", (Ryn and Cowan, 1996). Eco-efficiency indicates, "that the interests of the technological society have been smuggled

into ecological awareness", (Davison, 2001), and it is up to every architect's individual character to recognize and reveal this. Surely "green" architects will never stop the everyday learning process of how to build and employ united ethics, engage in courageous thinking and a "green" commitment, or how to make the most environmentally and socially healthy decisions. "Sustainability is nothing less…than the craft of moral life", (Davison, 2001).

2.2 From "Green" Building to the "Green" Dweller

One of the Van Der Ryn and Cowan principles of ecological design is "to make nature visible", (Ryn and Cowan, 1996). Van Der Ryn and Cowan argue in their paper that the "green" citizen is more important than the "green" building. This paper does not promote a resistance to "green" technology; its objective is to emphasize the importance of careful deliberation regarding how technology should be employed. "Green" technology must expose nature to the dweller, not keep the dweller at a distance from nature and natural processes. In conventional design "nature and technology are hidden; the design does not teach us over time," while in "green" design "nature and technology are made visible; the design draws us closer to the systems that ultimately sustain us", (Ryn and Cowan, 1996).

The ordinary perception of "green" design encourages us to look at a building as though it was an entity responsible for its environmental impact, and capable of minimizing it. "Green" buildings are designed to accomplish higher energy efficiency, or to decrease matter consumption regardless of the behavior of its users. A design rejecting the importance of human performance within a building is not capable of redesigning the mind because it "does not encourage mindfulness or a sense of responsibility", (Ryn and Cowan, 1996); rather it falsely relieves us of that responsibility.

Davison reminds us that "the promise of liberation in everyday practice is problematic because we are simultaneously liberated from what burdens us and from what we care about" (Davison, 2001). Our involvement in meaningful activities on a daily basis, and our focus on "world-revealing things, instead ... on the objects that produce what we want without our attention, aid, or skill", (Davison, 2001) are the key elements for curing the deformation of our practice.

3. ARCHITECTS' MISSION AND ENVIRONMENTAL ETHICS

Architects, as persons with a large influence on the behavior-determining environment, are among the first individual minds that need to be redesigned. In order to deliver all of the elements of meaningful architecture, in a meaningfully "green" way, architects must accept obligations beyond those assigned to the architectural profession by legal structures, and engage in "an enriched mission" which "in the end, means embracing the professional responsibility to build not only for the moment, but for the ages" (Boyer and Mitgang, 1996).

3.1 Architects' obligations beyond professional responsibility

Architects' responsibilities are derived from the professional status of architectural practice. The status of the profession must meet all of the following requirements:
• "University-level education in a special area of knowledge"
• "Internship and supervised entry-level performance"
• "Knowledge and practices ... for each new situation"
• "Establishment of disciplinary identity and uniqueness of the professional group"

• "Autonomy, earned by the profession and recognized and granted by society through licensing"
• "Having the knowledge and expertise necessary for the well-being of person in society" (Wasserman et al., 2000).

Besides meeting the requirements ensuring knowledge and skills, professionals are also obligated to follow certain ethical standards. For instance, AlA's Code of Ethics and Professional Conduct recognizes five major categories of principles of conduct: "General Obligations, Obligations to the Public, Obligations to the Client, Obligations to the profession, and Obligations to Colleagues" (Wasserman et al., 2000).

According to Hans Jonas, there are certain conditions that must be met in order to assign responsibility. An architect must have an impact on the world; an architect must be in conscious control of his actions; and he/she must be aware of the consequences of his/her deeds (Jonas, 1977). Jonas distinguishes between "the formal responsibility" and "the substantive responsibility" (Jonas, 1977). The first responsibility occurs when an architect formally admits that he/she is responsible for a past action. When it comes to environmental responsibility based on responsibility for the future, only substantive responsibility, which is not concerned with "the ex-post-facto account for what has been done" and emphasizes "the forward determination of what is to do" (Jonas, 1977) is applicable. The responsibility in this sense is moved from "who" is responsible, to "for what" is one responsible, (Jonas, 1977).

The present understanding of responsibility within architectural practice can be largely described as formal responsibility. Forward determination is a crucial element of environmental responsibility. The architect, in the same way as any other member of society, has to assign to him/her substantive responsibility which does not stress "who" is responsible, but "for what" are we responsible altogether.

3.2 Why Architects should accept the obligation?

A "green" architect should accept the obligation to spread ecological awareness as his/her moral duty, rather than as a professional responsibility for two reasons.

First, it is an element of moral obligation which can serve as a substantial base for meaningful environmental responsibility.

Second, an architect possesses the talent to observe the flaws of the technological perception of environmental responsibility, and possesses the tools to reveal the outcomes of his/her deliberations within architecture and architectural practice.

However, in order to engage in natural substantive responsibility, the fact that an architect possesses the legal right to influence society arising from his/her professional status, should not be his/her prior motivation. He/she should not feel obligated to do so because he/she possesses a legal tool, but because he/she possesses the natural talents to do so, given to him/her by nature, not by technological structures. According to Alexander, the architect's greatest virtue is his/her creativity which arises from "his capacity to observe correctly and deeply" (Alexander, 1977).

In order to observe, recognize, and reveal technologically deformed values and the meaning of existence within society, "green" architects must examine the interrelationships of social, economic, and political structures and relate them to the information, matter, and energy flows sustaining our physical existence. Architects should be among the first ones who recognize moral obligations because they are additionally privileged in having the tools of modeling the environment and the mind, which in turn allows them to implement the ideals of environmental responsibility into everyday practice.

3.3 Architects and Ethical Dilemmas Discourse

Tom Spector claims "neither aesthetic priority, functional priority, nor something in-between have provided an adequate framework for evaluating conflicts in architectural judgment", (Spector, 2001). Since these can easily get into an unsolvable conflict of value priorities, the only "source of judgment is one's ethics", (Spector, 2001). As much as an architect's ethics are perhaps the most reliable platform within "non-green" architecture, they are the only reliable platform within "green" architecture. The task for the "green" architect is not only to be sensitive to the ethical dimensions of "green" architecture, but also to recognize what his/her ethics should be sensitive to. "Architecture- from design and decision processes, to theoretical studies, education, and built works - as a discipline, is a collection of practices that is inherently ethical: directed to the well-being of humankind", (Wasserman et al., 2000).

Spector's thought gains even more significance when it comes to "green" architecture because of at least four reasons.

First, the issue of environmental responsibility must enter the realm of united ethics, avoiding any divisions.

Second, the discussion about the ethical dilemmas of green architectural design must become fruitful in order to find alternatives other than technological solutions.

Third, since the establishment of any kind of universal form of "green" architecture would be neither possible nor desirable due to the recognized uniqueness of every single design dilemma, responsibility must be replaced from the generally ethical standards to the architect's individual ethical standards.

Finally, the architect's professional practice, as a space where inter-human communication takes place, offers more opportunities to redesign human minds than a building does, hence architectural practice must be the most important object of ethical consideration. (Spector, 2001). Likewise Kohak finds no guidelines as to how the debate about ethical dilemmas of design and architectural practice should be conducted or how new values can be spread within society, (Kohak, 2000).

Since the major objective of this paper is to reveal that the importance of "green" ethical practice precedes the importance of "green" building. Therefore, an architect's extensive cooperation with individual or collective clients, various communities, or administrative structures can offer space and time more sufficient for the introduction of environmental ethics to society than mere interaction with a "green" building.

3.4 Architects and the Moral Practice

"Green" architecture, as a discipline contributing to environmental preservation, does not lie within "green" buildings but within "green" architectural practice. This means that the major subject matter of "green" architecture should be the process in which a building is designed, used, and understood, which can provide a higher degree of usefulness in the environmental and social "greening" of the world. This belief in general based on the six premises previously examined.

First, we live in a technological society and thus technology is source of our spiritual deformation.

Second, the sole "greening" of technology cannot provide a sufficient solution to environmental degradation.

Third, since it would be neither possible nor wise for society to reject technology per se, "green" technology must remain a part of our strategies for "greening" the planet, however, not without a critical examination of our relationship with it but as a tool enabling us to materialize our new perception of environmental responsibility.

Fourth, not buildings, but the mind must become an object of "green" architecture. Therefore "green" architecture must, besides the physical performance of designed objects, become more focused on its potential to introduce environmental ethics to the public.

Fifth, knowledge, its system of values and technological structures do not represent a solid foundation upon which a new environmental ethical responsibility can be established by architects.

Sixth, since architecture in its physical form has very limited opportunities for spreading deep ecological awareness, architects must understand that further opportunities for fulfilling their mission lie within their everyday architectural practices.

According to David Orr, only knowledge conducted in a common language with a "high level of honesty" can influence the way people think (Orr, 2002). Therefore, honesty of the mean of communication is the essential element of honesty needed with others and collaborative creativity.

4. ARCHITECTS AND THEIR COMMUNITIES

All parties must also accept that their role is not only to bring their ideas, but also to bring a willingness to fundamentally reconsider standpoints, alternative attitudes and, most importantly, values. Therefore, in this collective learning-in-action form of creative Participatory Action-Research (PAR), "we may not only argue to test strategies for maximum gain, but we may make and act on new agreements, transforming ourselves and others in the process" (Forester, 1999).

4.1 The Participatory Action-Research

The objectives of PAR (Participatory Action-Research) proposed in this paper to be a "green" authentic ethical form of architectural practice are, to achieve a high level of sensitivity to the geographical and cultural context, to examine the knowledge of all parties involved and build new knowledge, to spread ecological awareness, and to harmonize communities and their relationships with their environment. Architects as mediators of PAR within the design process must remind themselves that their objective is not just to learn about people and educate them, but that people must be encouraged to become active participants bringing their own visions to the design process", (Smith, 1997).

One of David Orr's characteristics of green design states, "ecological design is a community process that aims to increase local flexibility by building connections between people, between people and the ecology of their places, and between people and their history", (Orr, 2002). Alexander suggests, "participation is inherently good because it brings people together, involves them in their world; and creates feeling between people and the world around them, because it is a world which they have helped to make", (Alexander et al., 1977). Local identity, a significant part of environmental responsibility, requires identification with both the spatial and social dimension of the community.

4.2 The participation of the community in the design process

The community must be involved in the design process from the very beginning not only because "direct action which is performed late in the planning process has much less chance of being successful than a direct action which proceeds at the early stages of planning", (Naess, 1989). Architects must realize that community participation within the early stages of

the design process benefits not only the environment and the community, but also architects and their clients. It can be a source of inspiration, and "the process of participation tends to create places which are better adapted to human functions than those created by a centrally administrated planning process", (Alexander et al., 1977). PAR can serve as a space for deeper cooperation between interdisciplinary partnerships on both educational and professional levels, as well as deepen levels of cooperation between educational institutions and practitioners.

However, architecture should "challenge the status quo into making responsible environmental and social changes" hence, architectural education should expand from the drawing boards to practice and build "a moral sense of service to community", (Oppenheimer, 2002). Another problem with higher education is that according to David Orr, students exposed to the "fear of failure, financial dependency, and the asymmetrical power relationships", (Orr, 2002). The other problem with the architectural profession is its strong disciplinary isolation that, according to Boyer and Mitgang's survey, starts on campuses. They conclude that instead of segregating students of architecture from other disciplines, they should be encouraged to take multi-disciplinary classes, (Boyer and Mitgang, 1996). A holistic perception and capability of interdisciplinary cooperation is essential for efficient communication with clients and communities in practice.

5. THE "GREEN" ARCHITECTURAL PRACTICE OF HASSAN FATHY

This paper suggests that more possibilities for "green" architecture lie in a "green" architectural practice than in a "green" building. The "greenness" of Hassan Fathy's practice lies in his dedication to care for the environment of his neighborhood and his desire to inspire people, which are the key elements of an enriched mission of deliberative practice contributing to the creation of sustainable communities, (Steele, 1997). "An architect is in a unique position to revive people's faith in their own culture" and further Fathy added "it is the responsibility of the modern architect to find a remedy. He must renew architecture from the moment when it was abandoned; and he must try to bridge the existing gap in its development by analyzing the elements of change, applying modern techniques to modify the valid methods established by our ancestors, and then developing new solutions that satisfy modern needs", (Fathy, 1986). Fathy, has created a group of people (mostly architects) who physically build the buildings they have designed (fig, 1). This approach allows them to extend space for exploration and learning from the drawing board to the physical space of the construction site, which in turn helps them to recognize elements that are invisible from behind a drawing board and find the most appropriate solutions for a particular site, (Ibrahim, 1992).

First, and perhaps the most important aspect of Hassan Fathy's work, was his perception of his role and his dedication to it.

Second, Fathy believed that every project is so unique that a design must be approached as "an experiment [starting] from scratch." On the other hand, a dedication to non-instrumental values can be traced in the example when Fathy suggested to a young architect who implemented some "green" features into his design should try to influence his client to follow this "green" path more deeply because it is simply a good practice to do.

The third "green" aspect of Fathy's work is the fact that he had created his own structure of work, allowing him to modify a project during construction according to newly recognized variables and newly developed ideas, (Khlousy, 1993).

Fourth, Fathi had created an environment capable of serving as a matrix for explorative thinking in his practice and helped it emerge on the neighborhood level as well, (Serageldin, 2007). Just a short interaction with Fathy's team reveals that the form of relationship upon

which their work was driven is that of friendship. Fathy's objective was "to educate the public about the collaborative role of the architect in not only the making of buildings but of culture and meaning in contemporary society", (Ibrahim, 1992).

The fifth aspect of Fathy's work that could be considered "green," is his attempt to communicate as a human being rather than as a professional.

The last, but not least important aspect of Fathy's work that could be considered "green" in respect to the beliefs expressed in this paper is the fact that he bridged a gap between architectural education and architectural practice, (Ibrahim, 1992 and Serageldin, 2007).

6. DISCUSSION

Not only architects are obliged to recognize the importance of community participation within "green" design, but also the public should recognize the importance of architects' participation within the processes forming their environment. This means that each member of society recognizes his/her obligations toward the environment emphasizing what humankind as a whole is responsible for. The same model of responsibility must be applied when it comes to understanding what kind of responsibility an architect should accept. Only if his/her obligation to both arises from the heart and character, not from a socially constructed means of responsibility, will his/her approach to responsibility become solid and independent of unstable and unfavorable socially constructed legal responsibilities.

The educational process is mostly based on the context-free design which removes any appreciation of the social context from the design process. Architectural education in addition
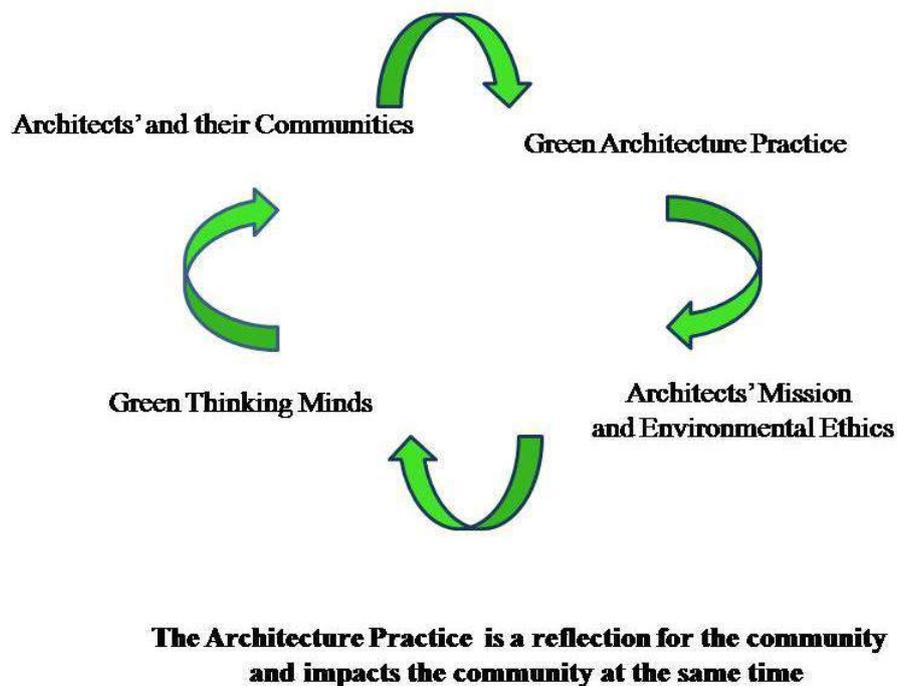

Fig1. The Green Architecture Practice impacts the minds and is reflected on the whole community

to a technological problem-solving perception of design may include the aspect of ethics and social responsibility. Education of architects may not only be for competence but also for community engagement which is surely one of the highest priorities for architecture schools in the coming years. Architecture students and practitioners may not be encouraged to create just great buildings, but more importantly "wholesome communities", (Boyer and Mitgang, 1996). The final issue worth mention in respect to the architect's ability, or rather disability, to work with communities is the segregation within the discipline of architecture itself. As long as architects do not behave as members of a sustainable community, it is impossible for them to get the architecture profession back to the status of community leaders.

Before architects can become capable of teaching the public to enjoy being part of a community, architects may: first enjoy being part of a sustainable community of architects. They are encouraged to build a cooperative system, a unified profession, (Boyer and Mitgang, 1996), binding architectural education and practice. This, however, is not possible as long as architects see themselves firstly as competitors on the market and the attitude of senior architects towards interns is recommended to be changed. As long as the profession's internal discord and deformed value priorities is the message architects are sending to the public, they may not be able to provide an example of a sustainable community, nor gain the reliability and public trust they need as mediators of a collective collaborative exploration.

Davison's idea that "the moral challenge posed by the ideal of sustainability, its undoubted capacity to call us forth to respond to the deformation of our world, is firstly that of bringing [a commerce of sustenance] out into the arenas of public discussion" (Davison, 2001) will become central to the "green" architecture discourse. Not technologically challenging "green" buildings, but morally challenging "green" practices composed of extensive public discussion needs to become the objective of "green" architecture.

The main aspects of Fathy's work, based on the theoretical part of this paper, represent the "greenness" of his approach. The most important aspects of Hassan Fathy's work, were his perception of his role and his dedication to it, the creation of his own structure of work, the creation of an environment capable of serving as a fertile matrix for explorative thinking in his practice, his attempt to communicate as a human being rather than as a professional in addition to the fact that he bridged a gap between architectural education and architectural practice.

7. CONCLUSION

This paper calls for a deeper reevaluation of "green" technology within the wider contexts of planetary ecology and the ecology of the mind. The objective of such a reevaluation is to reveal the fact that the technological perception of "green" architecture, which dismisses the human responsibility for the environmental impacts of a building, is the result of our unawareness of our technological deformation. Both "green" architecture and sustainability are not technological, but ethical issues, and the question is not what technology we need in order to preserve our physical existence, but what further fundamental change we need in order to preserve our spiritual existence along with technology and from which our physical survival will arise as a result of our "green" minds and accordingly "green" communities.

7.1. General Findings and Outcome

Hassan Fathy as one of the well known "green" architects had a different opinion on what should be the objective of the transition between the school of architecture and architectural practice. One part of his mission was to empower a younger generation of architects to

continue to dream and learn. The example of personal commitment that Fathy demonstrated surely represented for his students, a space for dreaming, thinking, and learning. This can be seen as the possibility to set up a foundation for a creative, committed, and collaborative community of architects who will be an essential source of inspiration in upcoming eras.

The role of the "green" architect is to create space where people will rebuild their social links and local identities and enjoy the collective cooperation of taking care of their environment. As well, such space should inspire people to learn how to create economically and politically self sustaining local democracies dependent upon local resources, to be able to proactively defend themselves and their environment against economically and politically powerful structures threatening their well-being, the well-being of other cultures, and the well-being of other forms of life. If "green" architects manage to do all this, part of it, or even just strive to make this their inner intention, their contribution to environmental preservation will be considerably larger than any single "green" building they will ever build which will be directly reflected on the whole community.

7.2. Recommendations

It is not important how sophisticated the "green" methods that architects develop because only a genuineness of their commitment can justify the "greenness" of their deeds. Thus this paper proposes measures to achieve "green" architecture practice, "green" thinking minds and accordingly "green" communities such as;

- We need to see that "green" design, concerned with environmental impacts should not be applied through isolated practices.
- Extensive public discussion and open-minded collaboration are the realms where architectural practice should be placed.
- The objective of a "green" design process should be to approach as many minds as possible and to inspire them to critically think about their values and to seek alternatives other than ones provided to them by science, the economy, and political administrations.
- Architects accustomed to unsustainable practices, rooted at every level in competition and driven by a desire for career success, need to restructure themselves and their practices by teaching young generations of architects about the values that fundamentally sustain our spiritual and physical existence such as honesty, solidarity, and respect for everybody and all elements of planetary ecology.
- The role of the "green" architect is to create space where people will rebuild their social links and local identities and enjoy the collective cooperation of taking care of their environment. As well, such space will inspire people to learn how to create economically and politically self sustaining communities dependent upon local resources, to be able to proactively defend themselves and their environment against economically and politically powerful structures.

Hopefully, within the "green" practice process people will become open to more ecological value priorities, and recognize the aspects of life that fundamentally sustain their physical and spiritual existence through the rediscovery of the interconnectedness of the planetary processes.

References

1. Alexander. C. (1979). **The Timeless Way of Building**. Oxford University Press. New York. U.S.A.

2. Alexander. C. Ishikawa. S. and Murray S. (1977). **A Pattern Language: Towns, Buildings, Construction.** Oxford University Press. New York. U.S.A.

3. Boyer. E. and Mitgang. L. (1996). **Building Community: A New Future for Architecture Education and Practice**. Carnegie. Princeton. U.S.A.

4. Davison. A. (2001). **Technology and the Contested Meanings of Sustainability**. State University of NewYork. Albany. New York. U.S.A.

5. Fathy. H. (1973). **Architecture for the Poor- An experiment in rural Egypt**, Chicago University, Chicago. U.S.A.

6. Fathy. H. **Architecture and Environment**. Accessed on 17th June, 2010. http://www.egyptarch.com/egyptarchitect1/hasanfathi/articles/hfenviroment.htm

7. Fathy. H. (1986). **Natural Energy and Vernacular Architecture: Principles and Examples with Reference to Hot Arid Climates**, edited by Walter Shearer and Abd-el-rahman Ahmed Sultan. The United Nations University. Chicago. U.S.A.

8. Forester. J. (1999). **The Deliberative Practitioner: Encouraging Participatory Planning Processes**. MITP. Cambridge. Massachusetts. U.S.A.

9. Graham. P. (2003). **Building Ecology: First Principles for a Sustainable Built Environment.** Blackwell. Oxford. U.K.

10. Ibrahim, A., **Arab Architects- Hassan Fathy.** Planning and Architectural Studies Center. Cairo. Egypt. (In Arabic).

11. Jonas. H. (1977). "The Concept of Responsibility: An Inquiry In to the Foundations of an Ethics For Our Age." **Knowledge Value and Belief**. Ed. H. Tristram Engelhardt Jr. and Daniel Callahan. Hastings. NewYork. U.S.A.

12. Khlousy. M. (1993). **Hassan Fathy.** Dar Kabes. Beirut. Lebanon. (In Arabic).

13. Kohak, E. (2000). **The Green Halo: A Bird's-Eye View of Ecological Ethics.** Open Court. Chicago. U.S.A.

14. Naess. A. (1989). **Ecology, Community and Lifestyle**. Trans. and Ed. David Rothenberg. Cambridge UP. Cambridge. U.S.A.

15. Oppenheimer, A. and Hursley. T. (2002). **Rural Studio: Samuel Mockbee and an Architecture of Decency**. Princeton Architectural Press. New York. U.S.A.

16. Orr. D. (1992). **Ecological Literacy: Education and the Transition to a Postmodern World.** State University of New York. Albany. New York. U.S.A.

17. Orr. D. (2002). **The Nature of Design: Ecology, Culture, and Human Intention**. Oxford University Press. New York. U.S.A.

18. Serageldin. I. (2007). **Hassan Fathy**. The Bibliotheca Alexandrina. Alexandria. Egypt.

19. Smith. S. (1997). "Deepening Participatory Action-Research". **Nurtured by Knowledge: Learning to Do Participatory Action-Research.** Apex Press. New York.U.S.A. 173-263.

20. Steele. J. (1997). **An Architecture for People: The Complete Works of Hassan** , Thames & Hudson Ltd. London. U.K.

21. Spector. Tom. (2001). **The Ethical Architect: The Dilemma of Contemporary Practice.** Princeton Architectural Press. New York. U.S.A.

22. Van Der Ryn, S.and Cowan. S. (1996). **Ecological Design**. Island Press. Washington. U.S.A.

23. Wasserman. B. Sullivan. P. and Palermo. G. (2000). **Ethics and the Practice of Architecture**. John Wiley & Sons Inc. New York. U.S.A.