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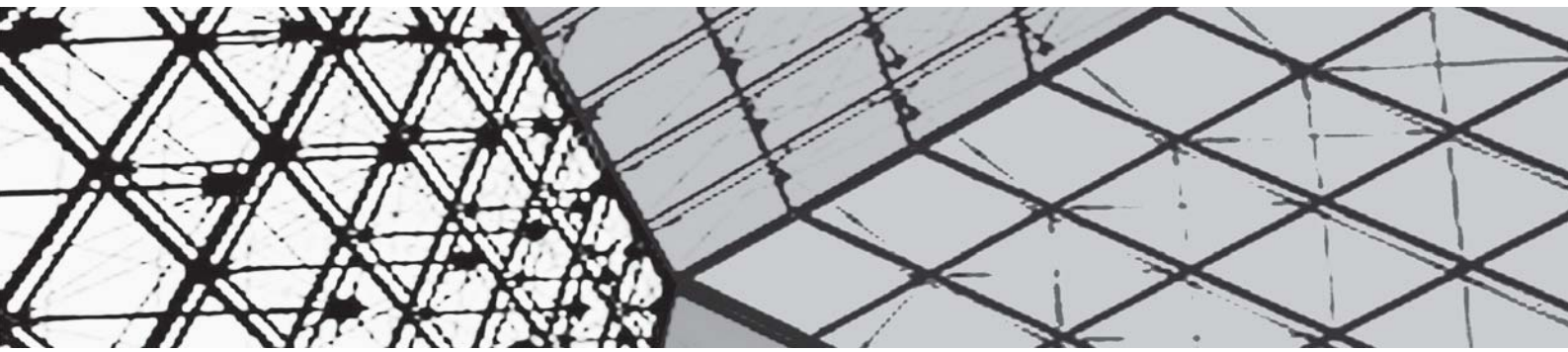

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Abstract

To create sustainability in a community, architects need to integrate the concept of sustainable community development in their actions both as citizens and professionals. While the role of architects as professionals can be defined as a process to preserve, improve and create the required quality of built environment under the particular condition of each community, in an ideal and sustainable world their role as citizens should be to become sustainable members of their own community. This paper aims to consider ways in which architects can fulfill both roles and thus act for community sustainability. Although this analysis is idealistic rather than realistic it does suggest principles on which architects can base their actions in sustainable community development, related to realization of their roles and responsibility, personal self-improvement, professional and citizen actions for a sustainable community, and collaborative development. These principles interrelate with and influence each other. Although architects' roles in sustainable community development can vary with the particular situation, their actions as professionals and citizens always overlap. To strengthen architects' actions for sustainable community development, continual encouragement and development at personal and collaborative levels is required.

บทคัดย่อ

ในกระบวนการสร้างสรรค์ความยั่งยืนให้เกิดขึ้นในชุมชนนั้น สถาปนิกควรจะต้องผสานแนวความคิดเรื่องการพัฒนาชุมชนอย่างยั่งยืนเข้าไปในทุกกิจกรรมของตน ทั้งในส่วนของกิจกรรมทางวิชาชีพและการปฏิบัติตนในชีวิตประจำวัน ในฐานะผู้ปฏิบัติวิชาชีพ บทบาทของสถาปนิกจะเกี่ยวข้องโดยตรงกับกระบวนการรักษา พัฒนา และสร้างสรรค์สิ่งแวดล้อมทางกายภาพที่มีคุณภาพภายใต้ปัจจัยเฉพาะของชุมชนนั้น ๆ สำหรับบทบาทในฐานะพลเมืองของสถาปนิกคือการเป็นสมาชิกผู้มีความรับผิดชอบ และปฏิบัติตนเพื่อสร้างสรรค์ความยั่งยืนในชุมชน บทความนี้มุ่งจะนำเสนอแนวทางการปฏิบัติตนของสถาปนิกในการพัฒนาชุมชนอย่างยั่งยืน และเสนอหลักการปฏิบัติตนของสถาปนิก อันได้แก่การตระหนักถึงบทบาทและหน้าที่ การพัฒนาศักยภาพส่วนบุคคล การปฏิบัติวิชาชีพเพื่อการพัฒนาชุมชนอย่างยั่งยืน บทบาทหน้าที่ในการเป็นพลเมือง และการผสานงานร่วมมือเพื่อการพัฒนา หลักการดังกล่าวมีความสัมพันธ์และส่งผลซึ่งกันและกัน ถึงแม้ว่าบทบาทการปฏิบัติตัวของสถาปนิกจะแตกต่างกันตามแต่สถานการณ์ บทบาทดังกล่าวจะซ้อนทับระหว่างการเป็นผู้ปฏิบัติวิชาชีพและสมาชิกของชุมชนของสถาปนิกอยู่ตลอดเวลา นอกจากการพัฒนาตนอย่างต่อเนื่องแล้ว การปฏิบัติตนเพื่อสร้างสรรค์ความยั่งยืนในชุมชนยังจำเป็นต้องอาศัยการสนับสนุนและร่วมมือของหลาย ๆ ฝ่าย เพื่อให้สามารถปฏิบัติงานได้สำเร็จและเป็นส่วนหนึ่งในการพัฒนาชุมชนให้เกิดความยั่งยืนสืบต่อไป

Keywords

Architect Roles (บทบาทสถาปนิก)
Sustainable Community Development (การพัฒนาชุมชนอย่างยั่งยืน)
Professional Practices (การปฏิบัติวิชาชีพ)
Citizen Actions (หน้าที่พลเมือง)
Guidelines for Architects' Actions (แนวทางการปฏิบัติของสถาปนิก)

1. Roles of Architects in Sustainable Community Development

Community development can be defined as the change or growth of a community over a period of time so that it becomes more advanced, impressive, successful, stronger or complete. This implies the pattern of community development is dependent on the visions and actions of community members and the circumstances. While urban communities have recently shown rapid development to become larger, more intensive, or more complex, some rural communities have preserved (or sustained) their traditional pattern of living over many years. The modern meaning of 'sustainable community development' has come to signify the changes that move a community towards sustainability. Basically these changes relate to attempts to maintain or sustain the ecosystem rather than the modern view that development relies on growth whatever the environmental cost. The phrase also describes development moving from a less sustainable condition to a more sustainable situation, or so-called 'weak' to 'strong' sustainability (Crane & Rumage, 2000).

In addition, sustainable community development involves a holistic view of community, embracing nature, culture, and politics, as well as economy. These issues are temporal and complex with multiple possible outcomes. However, it is clear that the level of sustainability is linked to activities in the community. Each individual has responsibility through their own actions to shape the community and its future. This means development begins at the individual level. Because people both live in a specific community as well as in the natural world, as is recognized in all communities around the world which use 'sustainable community' as a benchmark (Barton, 2000; Hockerton Housing Project, 2001; Pease, 1993), a sustainable community can never evolve if community members ignore the relationship between man and community as well as man and nature.

Apart from community members, the built environment is also a fundamental component of every community. The works of the architectural profession, which vary from design to planning, obviously support the physical development of a community. As professionals, architects have responsibility through their own actions for the creation of the community of which they are a part or with which they work. The relationships between people and place as well as people and people are basic concerns for architects. However, the influence architects have over community development is dependent on their position relative to it. Architects who live in a community where they do not have a chance to create any built environment have to use the built environments created by other architects and can only be influential as a citizen of that community. At the same time, they will be acting as professionals and then their practices affect people beyond the geographical boundary of the community in which they live.

Accordingly, the roles of architects in sustainable community development can be fundamentally part of the process to stimulate community movement from 'weak' to 'strong' sustainability. Architects need to integrate the concept of sustainable practices in both their roles. Although they might begin by attempting to balance the value systems of economic, social and ecological factors ('weak' sustainability), the final goal should be the creation of a condition where ecological factors are the overarching system ('strong' sustainability).

This article is a theoretical investigation of the roles of architects in sustainable community development. It is based on analysis and synthesis of ideas from literature related to sustainable architectural practices and behaviors. The aim is to show what could and should happen if there is a

real move towards making a sustainable world. This means that to some people the suggestions made here seem overly idealistic. However, if the people of the world are truly to live within the resources available something along the lines of actions suggested in this article will need to occur, although these suggestions will need to be further developed to respond to particular situations. The roles of architects are first divided into categories. The first category is about the actions of architects that are working in the profession, and is mainly about improvement of existing and creation of sustainable built environments. The second deals with the responsibility of being a citizen in the places in which architects live.

As members of a community, architects have to communicate and have contact with many people as they meet, talk, trade, provide or obtain services, or become involved in activities with others. As design professionals, architects also have to work with and for other people. Unlike other artists, architects must have clients before they can practice (Chappell & Willis, 1992). The demand on the built environment to support users' activities leads clients to hire architects to design or plan. In turn, their practices respond to both clients' and users' needs and affect the users' emotions and actions. Moreover, in the design and construction process, architects have to work with other professionals, such as engineers, specialists, developers, and builders. As a result, architects' actions in both citizen and professional roles are dominantly part of social systems.

Because the creation of a built environment consumes energy and resources and also affects immediate and more distant environments, architects also have responsibility through their actions for changes that could happen to ecological features and systems. Since environmental issues, such as depletion of natural resources, can occur both close to and far from home, architects impact on larger systems than those to which they belong. The architect's responsibility, thus, is not only the health and safety of anyone using their design products, but also extends to the affect of their creations on the environment at both local and global levels.

The roles of architect as professional and citizen in social and ecological systems are shown in Figure 1. This figure is based on the 'strong' sustainability approach, in which society is a part of the ecological system. Even though architects' actions are primarily related to social systems, the effects of their actions, including inputs and outputs from their activities and behaviors and the impact of their built environment creations, relate to environmental issues.

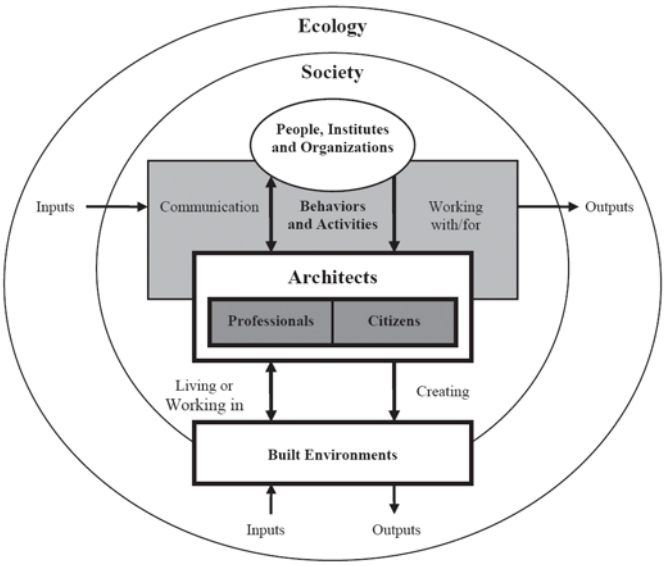

Figure 1. Relationships of architects' roles with their social and ecological systems.

1.1 Professional Roles of Architects in Sustainable Community Development

Although architects are normally recognized as designers or planners, the actions taken by them in creating a sustainable community can be distinguished from conventional practices thus signifying they are specialist sustainable designers. Typically, while sustainability should be the goal, the various design strategies that are used need to be suitable for the particular situation of the community.

In the creation of a sustainable community, the primary principle should be designing with and for places (McLennan, 2004; Van der Ryn & Cowan, 1996). This design approach requires consideration of social and ecological factors throughout the planning and design process. Data have to be gathered about the community, such as existing conditions, lifestyles, culture, and the limit of natural resources. This information can be used as the basis for planning and design. For instance, owing to its being well adapted to local conditions and culture, vernacular architecture can be an inspiration or model for design.

Involvement of local people in the design and planning process is an alternative design strategy for moving towards the sustainable condition. Architects can gain the necessary knowledge from user involvement to ensure that their design or planning will meet intended objectives in the most effective way (Wates & Knevitt, 1987). This route can begin at the stage of setting goals and strategies and continue until and beyond the time the users are in occupation. The degree of user participation can range from informing, to consulting, partnerships, controlling, or even designing, planning and building (Wulz, 1990). Through a participatory process, all participants can share their knowledge and experiences with others, gain motivation, and learn how others overcome obstacles and apply this knowledge to their situation. This process increases people's awareness of responsibility for decision making (Sanoff, 1990b) and can make community members proud of their community and willing to care for and look after it (Wates & Knevitt, 1987). After the architects have finished their task, the local people can thus manage, evaluate, maintain and adjust the design product to meet changes in their needs (Sanoff, 1990a, 2000). Architects need to learn from what has been successful (and unsuccessful) and apply this knowledge to future projects.

Unlike local people, who often tend to have experience limited to a particular set of community circumstances, architects can provide an overview of issues related to the project or offer experience in a specialized field (Day, 2003). Because architects have the ability to understand the consequences of the design process (McCamant et al., 1994) and think spatially (Day, 2003), they can advise and educate local people in any additions or improvements to their physical environment. Their knowledge and experiences can assist the community in their decisions and initiatives. The role model of the 'facilitator' approach, which is described as the 'I-give-them-what-we-can' approach to practice (Burgess, 1983; Garrott, 1983) can be applied to the architectural profession. Unlike the egoist – 'give-them-what-I-want' and the pragmatist – 'give-them-what-they-want', the facilitator approach tends to value both architects' and other individuals' vision within the design development process. The facilitator architect should have a clear understanding of the values which exist within the context in which he or she practices and interprets them within the constraints of the particular project (Garrott, 1983). Making a process work effectively, as suggested by Wates and Knevitt (1987), the roles of professionals, whether architects, planners or others, *"means using their knowledge and skills to help people to solve their own problems rather than dispensing wisdom and solutions from a distance; becoming enablers*

and educators rather than preachers and providers; assisting people in their own homes and neighbourhoods to understand their problems and devising solutions to help them solve them."

Furthermore, because the community consists of many stakeholders, the actions of architects should not only be limited to the rich and powerful, but should also extend to ordinary people or even people with limited opportunities, such as low-income or homeless people. Meanwhile, the voluntary sector, in which citizens join together to undertake some particular task with no personal financial gain outside the government framework, can be an alternative client for architects to work with in the community (Wates & Knevitt, 1987). This is also true of other community development groups, such as housing cooperatives, development trusts, and special groups that come together for community projects such as making a community centre, playground or streetscape.

Because problems in the creation of sustainable built environments for a community are various and skills and the knowledge required to solve them differ from place to place and from one situation to another, sustainable design requires multidisciplinary considerations throughout the process of design and planning. Factors relating to natural environments, built environments, and human ecological conditions should be considered, analyzed and synthesized within sustainable parameters (Martin, 2001). Although no architect can know about or have skills in everything and all architects can only provide services relevant to their capabilities, to improve their potential in designing for sustainable communities, architects should have as much skill and knowledge of the sustainable design and planning process as possible. This includes the process of creating sustainable built environments that can satisfy and support functional and spiritual community needs and also the process that assists in strengthening the community.

Architects should improve their knowledge about strategies for sustainable design. They should know how to gather relevant information for environmental and cultural considerations. Post-occupancy evaluation (POE) (Lord, 2001; Roaf et al., 2004; Van der Voordt & Van Wegen, 2005), which can reveal accomplishments or mistakes, is, as shown above, another critical source of knowledge. POE can be used by architects to evaluate programs as well as design. This information provides data that can help avoid potential errors and select better solutions for new built environments or the refurbishment of existing facilities. Furthermore, architects should be familiar with environmental impact assessment (EIA), life cycle assessment (LCA), building rating systems (e.g. LEED and BREEAM) and environmental regulations in each region (Hengrasmee, 2005; Hyde et al., 2007; Martin, 2001). These design tools and techniques should be selected appropriately and accommodated in every phase of architectural design. For instance, as Hyde et al. (2007) have suggested, goals, environmental briefs, specifying principles, checklists, and design phase rating and benchmarking systems are useful during pre-design and schematic design, while monitoring, surveys of buildings in use, and operational phase rating and benchmarking systems are practical strategies for the post-occupation phase. The information on inputs, outputs, and impacts that can occur in the production of building elements, transportation and storage, site modification and construction, operation, modification and maintenance, reuse, recycling, removal, demolition, recovery, and site rehabilitation, are the basics for designing and planning sustainable built environments. Many of these parameters are outside the normal sphere of the architectural design process. Moreover, architects should also increase their understanding of the environmental performance of buildings, materials, systems and construction, meaning they must be familiar with how buildings work, not just with what they look like.

Furthermore, skills in communication, clarification of values, conflict resolution, and careful analysis are required. This is for dealing with not only clients and users, but also other experts or consultants. Consensus or participation techniques (Day, 2003; Sanoff, 2000), such as awareness methods, group interaction, brainstorming, game simulation, workshops, public forums, and charrettes, can be used for collecting data as well as educating and training participants to create change in their environments. For more effective cooperation, architects should reduce their 'traditional' ego and try to listen to and understand the values and opinions of others.

Because there is no absolute step-by-step solution, architects have to choose and apply their knowledge and skills as fits the particular situation. For example, even though appropriate technologies, dependent on the place, local supply, labor skills, and time availability, are preferable solutions, architects have to define the most appropriate solutions under the constraints of the project (including economic constraints) and conditions of the community. Architects' decisions will also depend on their own values and how they relate these to the community. To lead architects' decisions to become more sustainable, a responsibility for society and environmental ethics should be developed. Along with knowledge and skills, architects must improve their professional ethics and use sustainable development as the objective of their actions.

In summary, the professional role of architects in sustainable community development can be defined as a process of preserving, improving and creating the required quality of built environment under the particular condition of each community along with professional development to enhance such practices.

1.2 Citizen Roles of Architects in Sustainable Community Development

Because architects have to live somewhere, inevitably they are members of the community they live in. Similarly, owing to their actions in creating the physical elements of a community or working for a community, they also have a role in community development. To drive sustainable community development the roles of architects, therefore, are not only as those of being professionals but also of being community members. Unfortunately, the role of an architect as citizen of a community is usually overlooked. This is fundamentally because of lack of realization of the role, lack of skills and opportunity to participate in community development, and discouragement from participation by local organizations (Chansomsak, 2005; Ontario Round Table on Environment and Economy [ORTEE], 1994).

The basic role of architects, as true of all community members, is as a steward of natural resources. Architects should rethink their needs and consumption habits and try to reduce them as much as possible. Conservation methods, such as reuse or recycling of materials and water, should be part of their daily lives. For instance, they can reduce their domestic water use by recycling grey water for washing cars and watering the garden. They should maintain their appliances to extend their useful life and efficiency. Planting a garden, whatever the size, and caring for it can make a support for native flora and fauna and create more pleasant and liveable places.

To strengthen the ability to behave as stewards, architects should also enhance their potential for self-sufficiency. They should try to cut down their daily expenses especially for excessive items, work with honesty and moral integrity, cease selfish competition and taking advantage of others, behave with morality, and abstain from all greed (Chaipattana Foundation, 1999). Moreover, they can

use self-reliant techniques, such as food-growing, and energy production, in their homes. Meanwhile, greening private spaces, sharing facilities and maintenance of public services and common property could be practiced to facilitate the move to a self-sufficient community. Besides doing such things themselves, they can encourage others, such as relatives or friends, to do the same.

In addition, they should be involved in the sustainable community development process and facilitate communities to reach decisions related to care for the local environment, even though they are not directly involved in design or planning of a particular community scheme. This process has been described in many books as a whole process, with the cycle going from visioning to revision (Environs Australia, 1999; Maser, 1997; ORTEE, 1994). In brief, the process of sustainable community development could happen through such actions as: building partnership and setting the vision, planning and acting, evaluating and revising the visions, and plans and actions. In each process, architects could share their knowledge and skills to support decision making and actions.

The first step, initial action, could mean setting up a working group and meetings. For an effective result, this working group should consist of representatives from multi-stakeholders. Apart from their regular work, architects can work as volunteers for the community. Their roles can be as part of a group, participating in discussions with other community members. To collect a wide range of information, each member should have an equal chance to present their opinions and share them with others. Architects, given their education, should respect others, understand and accept what people believe and practice, and agree on the right of participation (Maser, 1997). Human relationship, communication, and participation skills are required. These skills can reduce misunderstandings and conflicts as well as create a sense of community. When the community members have good relationships, they will extend their self-interest to care about other community members and sometimes even the wider society. As suggested by Maser et al. (1998), good communication means *"respect for both listener and speaker, because one must first listen to understand and then speak to be understood."* Being a good communicator, each person should respect others when sharing knowledge and ideas to create better understanding and better solutions for their community.

Agreement is reached through a process of sharing information and vision, discussion, integrating the ideas, and developing consensual problem-solving (Roseland, 2000). Accordingly, consensus decision-making is one recommended method of concluding discussion (Day, 2003; ORTEE, 1994; Roseland, 2000). This method does not mean that the solution has the full agreement of everybody, but rather that there is no substantial disagreement (Roseland, 2000). Nor does it mean compromising, which means abandoning or de-prioritizing the needs, or voting, when sometimes the right of the majority ignores the needs of the minority and leads to confrontation between groups. Consensus is about everybody getting what they have come to want after working together and listening to the whole situation, even though it was not what they originally wanted (Day, 2003).

Although architects may not be members of a working group, they can still help in profiling the community. Their experience can be part of information gathering in evaluation of the community situation. They should cooperate in community surveys, answer questionnaires and interviews, and attend public meetings. In the case where architects live in the community, they can see problems and challenges more clearly. Information gathered will help working groups or organizations that work with the community in understanding the strengths, weaknesses, opportunities, and obstructions in the present situation, which can be a key to developing sustainable actions (ORTEE, 1994).

As in the first step, architects can share their knowledge, skills and experience in the planning and action process. A framework or action plan should be suited to the situation and depend on community based decisions. Again, consensus decision-making can create more effective plans and actions. Because participation can give some sense of ownership and some degree of control (Alexander et al., 1975; Hubner et al., 2005; Sanoff, 2000), this process can assist people in realizing their responsibilities and encourage them to act for developing their community. When architects are involved in the planning and decision-making, they will realize their own responsibility and act properly in both professional and citizen roles, such as participating as a citizen in the design of their environment.

When conducting planning or other activities, a third step of evaluation and review should be carried out. Architects who take part in a working group can participate in making decisions about evaluation and choosing appropriate methods. They can collect and analyze information and present the results. Data from an evaluation should provide an indication of what direction should be taken and be used for reviewing the whole process from visioning, planning and acting, to evaluating. The knowledge of past successes can give the group confidence to establish new projects and it helps to encourage more people to become involved in the group and community activities (ORTEE, 1994). Moreover, in the case where architects or designers have design products in the community or are involved in planning or living in that community, they will have a chance to evaluate their products and find out the problems which can happen in design, construction, and the post-occupancy process. Examples of architects and designers who live in the community that they have been involved in designing and planning are Max Lindegger, the co-founder and one of the design team, who lives in the Crystal Waters ecovillage in Australia (Jackson & Svensson, 2002) and Bill Dunster Architects who moved to the Beddington Zero Energy Development (BedZED) in the UK, which they designed, to set up their offices (Dunster et al., 2008).

Meanwhile, architects who do not join a working group can also be involved in the montoring process through their action as design or social critics. Through their experience and knowledge of designing the physical environment, they are in a unique position to observe the physical and social results of community or government programs and private investment decisions, as they affect quality of life in the community (Carter, 1983). However, critiques can create both negative and positive effects. Critiques are normally helpful when indicating the problems and suggesting possible solutions. Because of the different values of observers or an unclear perception of the situation, some comments can present incomplete information to the public as well as create stresses or unpleasant feelings for members of a working group. For example, owing to conflicts between professionals and community members, some architects have commented that projects in which community members have been directly involved do not represent the creative or aesthetic values of mainstream architecture. It perhaps makes architects who work with such a community unwilling to continue with the work because they are afraid of the consequences. Because group actions are typically set up by the voluntary sector, negative effects of critique discourage people, organizations and architects from working for others and their community. To create positive effects, critics should have an understanding of the particular constraints and obstructions. They should respect other opinions and actions and be conscious of and have responsibility for the negative effects of their comments. Involvement in community actions by critics should enhance their responsibility and lead them to be careful in what they comment on.

In conclusion, each community member has different roles and responsibilities, depending on their position and experience. Each role interlinks and supports others. Because architects typically have particular knowledge and experience in designing and planning, their skills can assist sustainable community development in creating physical amenities. However, each individual role is only a part of the whole picture, as only participation and community unity in pursuing the same common goal creates whole community development. Hence an architect should not act alone but should participate in community activities and use his or her potential in facilitating communities to reach the sustainable condition.

2. Principles for Architect Actions in Sustainable Community Development

Although every architect could participate in the move to sustainability in all the communities in which they are involved, both as a professional and a citizen, not all recognize their ability or are concerned about the effects of their actions on society and ecology. To bring architects a step closer to understanding the way to act for community sustainability, this section proposes principles for advancing their potential and practice (Chansomsak & Vale, 2007).

Because architects have to cope with many issues that affect their decision-making and actions and their actions are also associated with multi-stakeholders, the suggested principles have been organized into two groups; personal performance and collaborative performance. The first group places a focus on actions that architects can do by themselves independent of external factors. The principles in this group are prerequisites that an architect should meet before dealing with other people. They include realization of their roles and responsibility as well as personal self-improvement (see 2.1-2.2). The other group, collaborative performance, primarily refers to actions or decisions when architects interact with or rely on other people and the circumstances of a community. This part consists of three principles, professional practices, citizen actions, and collaboration and development (see 2.3-2.5). All the five principles interrelate and influence each other, as well as forming the path for an architect to act as part of sustainable community development.

Since the intention to act usually requires some personal reasoning to support what to do or not to do, without an understanding of the importance of their roles and responsibilities in a community it is difficult to drive architects to work for it. For all five principles, realization of roles and responsibility is basically recognized as the important first step on which the others are based.

2.1 First Principle: Realization of Roles and Responsibility of the Individual in Sustainable Community Development

Generally, people with a greater sense of personal responsibility and strong attitudes towards sustainability are more likely to engage in sustainable behaviors and practices (Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002). Similarly, architects who realize their roles and responsibility in creation of sustainable community tend to embrace concern for their actions and their effects on social and ecological systems in a community, and participate in maintaining the sustainability of the community or in helping a community develop towards a more sustainable condition. In the community in which they live, the advantages of their actions, such as appropriate aesthetics, comfort, lower operating costs, or strong community relationships, can directly improve their and other community members' quality of life. In the case where they work for other communities, besides enhancing sustainable conditions in those communities, because the relationship between communities can support the sustainable

situation of all communities, the advantages realized will come back to the community in which they live. Besides the direct benefits from their actions, their exemplar roles can be models for other followers.

To strengthen architects' awareness of their roles and responsibility, other people and organizations in the society should promote the necessities and advantages of this change for architects and the environment. This can subsequently shape the patterns of individual behaviors and professional practices. For example, architectural media and organizations should publish the advantages for successful architectural practice of solving social and environmental problems, and clients should look for sustainable design services as well as impel governments and professional institutions to introduce responsible legislation to control and support these services. Eventually, the demand for sustainable actions and other influences will drive architects to realize the necessity for changing their roles to support sustainable community development, or at least to do less destruction of community sustainability.

2.2 Second Principle: Personal Self-improvement

After architects have realized their roles and responsibility, they have to prepare themselves to be ready to participate in sustainable community development. In addition, they should continue to develop their actions for sustainable community. These actions are here called 'self-improvement' and will enhance an architect's intention and ability to act for sustainability. Basically, self-improvement can be divided into three components; attitudes, knowledge, and skills. These three elements are presented here as being separate, but in practice they interconnected and cannot be split clearly. To improve the practices of architects, all of these elements should be developed simultaneously.

2.2.1 Improvement in Attitudes

Attitudes are defined as the favorable or unfavorable feelings of individuals with regard to objects, issues or taking action (Hwang et al., 2000; Kollmuss & Agyeman, 2002). They are related to ethics and values, and used for judging what architects should do or not do. There are two types of attitudes that relate to architects' roles in sustainable community development, these being attitudes towards their professional practices and attitudes towards environment and sustainability.

Architects' attitudes to their professional practices are mainly focused on how professionals should act with each other, their clients and the larger community. Because of being empowered to act on the client's behalf, architects should provide the services they judge best for the client. Although architects' services normally serve a particular client, because their actions affect the building users and other people in society, architects also have responsibility to the public. Consequently, like other professions, the public pledge can be seen as the foundation of the architectural profession (Koehn, 1994).

Attitudes towards environment and sustainability are factors that examine what human behavior can or should be with respect to a moral interaction with the natural world (Fox, 2000; Naess, 1995; Orr, 1992; Williamson et al., 2003). However, attitudes vary according to the viewpoints taken, these being frequently categorized according to the dialectics of environmental and sustainability paradigms, such as 'deep' and 'shallow' ecology (Naess, 1995; Williamson et al., 2003), 'ecological' and 'economic/technological' sustainability (Orr, 1992; Verhagen, 2004), and 'strong' and 'weak' sustainability (Bosselmann, 2002; Hart, 1999; Turner, 1993).

To improve actions, architects should develop their attitudes towards 'ecological' or 'strong' sustainability. They should be concerned with the

concepts of 'intragenerational and intergenerational equity', and also expand their care to encompass interspecies justice, including that of a non-human nature. Furthermore, they should move beyond self-interest to care about other people in their community and examine ethical questions and practices. In addition, architects should develop the idea that they have an ability to bring about community development through their practices and behaviors and expand their public pledge to include creating sustainable places, and use of the architectural process and communal activities to enhance participants' attitudes and actions for sustainability.

With the encouragement of other people, as discussed in the first principle, architects and others in their profession should publicly pledge to work for a sustainable community. While some implementation of ethics, such as regulations and professional guidelines, are used to control architects' practices and everyday activities, each architect should improve their own attitudes beyond those enshrined in the law, and work for a sustainable community from their own inclination rather than just a duty of care (Williamson et al., 2003).

2.2.2 Improvement in Knowledge

Apart from their attitudes, architects should improve their knowledge about sustainable issues and action strategies. Knowledge about the issues encompasses basic environmental concepts, causes of environmental and social problems, as well as strategies for sustainable design, such as environmental regulations, life cycle assessment methodologies, and the environmental performance of built environment components and systems. Knowledge of action strategies is related to information on how people act to lower their impact on the environment and reduce social problems. These supplements will assist architects to work for sustainable community. In the process of sustainable community development architects have to work with other professionals and specific experts, such as government officers, developers, economists, lawyers, biologists, botanists, and energy or environmental auditors, so they should have a broad knowledge base or familiarity with the process of those actions that make collaborative work successful.

To improve their knowledge, first architects have to know what kinds of knowledge they should have. For example, in terms of professional practice, knowledge includes information on materials, construction, assessment and evaluation methods, as well as information related to the particular places where they are working or living. Secondly, they should learn how to search for the information they want. Architects must also develop knowledge based on their own experience. To avoid potential errors and reach better solutions, they can learn from both their accomplishments and mistakes. The typical method is by making notes or records of their experiences and using them to create their own appropriate processes and techniques. However, this does require architects to revisit their previous projects or activities to find out what works and what is less successful. This is easier to achieve when an architect works in the community where he or she lives. In addition, architects can gain knowledge from secondary sources of information, such as verbal communication, publications and other media. At present, many individuals and organizations have only been provided with a great deal of theoretical information and claimed examples of sustainable design and practices (European Commission et al.,1999; Gauzin-Muller, 2002; McLennan, 2004; Reardon, 2001; Rocky Mountain Institute, 1995; Vale, B. & Vale, R., 1991; Van der Ryn & Cowan, 1996; Williamson et al., 2003; Zeiher, 1996). Lastly, after architects have obtained knowledge about sustainable issues and action strategies, they should analyze, evaluate and develop it as practical knowledge that can be applied to their professional practice and everyday life.

2.2.3 Improvement in Skills

In addition to knowledge, architects should acquire the wide range of skills needed to apply knowledge in real situations. These skills include the ability to create sustainable design, the ability to understand the circumstances of projects, activities, and the community, knowledge gathering skills, skills of communication and collaboration, and adaptation skills.

The only way to improve skills is through training and practice. Therefore, skill improvement is precisely related to actions taken in both professional and citizen roles. However, practice alone cannot improve skills. Enhancing skills also require analysis, evaluation, and revision. These processes assist architects to understand their position, disposition, and actions more clearly. In turn, skill improvement will assist architects in defining what kinds of knowledge they should have and also be a part of attitude improvement by promoting, at the same time, a sense of duty and realization of their ability to act for change. As a result, knowledge accretion and skill improvement are interconnected and are also a reflection on and assistance for realization of architects' roles and responsibilities.

2.3 Third Principle: Professional Practices for a Sustainable Community

Because architects have to work and communicate with other people, apart from personal performance enshrined in the first and second principles that are mainly related to cognitive and effectiveness factors (awareness, knowledge, attitudes, and responsibility), many situational factors, such as economic constraints, social and cultural pressures, and opportunities to choose and act, influence decisions and actions (Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002). Since these situational factors either counteract or strengthen the intention to act and feasibility of the action, architects inevitably deal with these factors, while at the same time integrating the concept of sustainable community in their practice.

In terms of professional practice, actions of architects for sustainable community development could be simply defined as a process of creating sustainable built environments and conditions in the community. Their knowledge of and skills related to the sustainable design process and cooperative development are applied to assist a community to reach a more sustainable situation. Because there are no universals, architects have to adapt their practices to the particular condition of each community.

General issues involved in sustainable design and planning are management of settlement development patterns, ecosystem conservation, materials conservation, water conservation, energy conservation, creation of healthy human ecology, promotion of positive communal culture, and improvement of economic activities. The suggested strategies related to these issues are presented in Table 1. These are derived from reviewing publications about sustainable architectural practices and re-organized in an action-base approach. Table 1 is not absolute or comprehensive, but illustrates the possibilities for practice and its relationships with broader issues. Each strategy is categorized based on its main and direct end-use effects on a particular issue. To reduce repetition, subsequent effects of a strategy that impact on others are not included.

For example, though reducing the use of petroleum also reduces water requirements, strategies for reducing petroleum consumption, such as less private vehicle use and favoring pedestrians, cycling and public transport, are only categorized as an energy conservation issue, despite their implications for water use.

It appears that most strategies can affect more than one issue. For example, design for mixed households can promote healthy and liveable environments in the community and enhance

interactions between occupants, which are part of a desirable communal culture. The strategy can also be suitable for settlement development in particular areas, whether urban or suburban. While some issues, such as ecosystem conservation, water conservation, and energy conservation, are directly related to ecological factors, issues like communal culture and economic activities tend to connect with social factors. However, more social interaction can lead to satisfaction with a lifestyle that is less dependent on consumption of goods, which lowers environmental impact. This suggests a healthy human ecology is based on both ecological and social factors. To help a community achieve a sustainable condition, an architect should be concerned with all of these issues concurrently. Because sometimes issues are in conflict and cannot necessarily be incorporated in the same project, the architect must analyze the situation and make the best decisions, for the community and its circumstances.

2.4 Fourth Principle: Citizen Actions for a Sustainable Community

As previously discussed, architects also have a role as members of their own community. Apart from their responsibility and duty to practice as professionals, architects should be citizens who act for sustainability and assist other people, institutions, and the whole community to achieve a sustainable condition. As citizens, they have responsibility for change in the community. They should carry out sustainable behaviors and act as stewards of their community.

Table 2 illustrates the issues and suggested strategies for citizen actions. Again these strategies are categorized based on the main direct end-use affects and organized in an action-based approach. A strategy could support several issues at the same time, but may also not be applicable in every situation. The decision to use a strategy also depends on personal preferences, knowledge, skills and abilities. Except for personal choices and obligations, many activities require support from other people to provide products and services or to work together on the same activities. Architects, like other citizens, should not practice alone but should cooperate with community members and institutions to create whole community development.

2.5 Fifth Principle: Collaborative Development

To facilitate practices in professional and citizen roles, local institutions and people, including architects, should collaborate with one another to create a sustainable community. Each citizen should undertake self-improvement by being more self-reliant, encouraging appropriate morals and ethics, and having involvement in social activities to improve the community condition, while other people and institutions can instill sustainably responsive attitudes and behaviors through supportive conditions and constructive activities. Local people and institutions can enhance a strong relationship within the community. Although the family is the prime focus, encouragement of friendship or kinship is a process in the development of partnerships. Religious organizations, voluntary organizations, schools, mass media, and local governments can play a key role in this development. These organizations can create community sustainable development programs and activities that encourage and assist local people to carry on their sustainable behaviors.

Local institutions should furthermore give good governance and consolidation for a strong community foundation. They should work together to form a united, whole as this cohesion is the key to the development of a sustainable community. In many cases, local governments have major responsibility in the development of the community. At the same time, central government can support sustainable development in the community by

Table 1 Strategies and issues for sustainable architectural practices.

Suggested Strategies	Consideration Issues							
	Patterns of Settlement Development	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Healthy Human Ecology	Communal Culture	Economic Activities
Programming and Planning								
Programming and designing with respect to existing pattern of settlement development	X						X	X
Site selection, such as brownfield sites in redevelopment areas [I] and avoiding site with significance for biodiversity	X	X						
Site and existing local ecosystem analysis	X	X	X	X	X	X	X	X
Zoning and land use analysis and management	X	X	X	X	X	X	X	X
Planning strategies for reducing environmental impacts								
Compact city [I]: close-knit and liveable community, mixed land use, and higher density pattern (U/S) [II]	X	X			X	X	X	X
Re-urbanization and re-development urban infill (U/S) [II]	X	X			X	X	X	X
Small-scale self-sufficient community (S/R) [II]	X	X			X	X	X	X
Planning to conserve natural environments								
Preservation area for wildlife (S/R) [II]	X	X						
Reducing site impacts/ability to biodegrade	X	X		X				
Conserving watersheds and wetlands	X	X		X				
Conserving rural populations, productive land (S/R) [II], forestry	X	X		X			X	X
Include social and environmental impacts in feasibility study	X						X	X
User participation in community planning processes, such as community planning controls and community building program	X						X	
Community and Site Design								
Mixed use developments	X	X			X	X	X	X
Mixed households	X					X	X	
Liveable community	X					X	X	
Historic or community landmark preservation, natural conservation and tourism [I]	X						X	
Encouraging local culture, such as spirituality [I], art and crafts	X						X	
Encouraging local business and services	X						X	X
Design with respect to ecological features, such as topographical contours and landscape feature	X	X		X				
Preserving and creating active green space [III] such as parks, green ways, and urban agriculture (U) [II]	X	X		X		X	X	X

Note: [I] The strategy can be applied in particular places or situations.

[II] U = Urban area, S = Suburban area, R = Rural area.

[III] In this sense active means working, so green space might be for storm water management, for local food growing, for sport, and in some instances activities could overlap in the same space.

Table 1 Strategies and issues for sustainable architectural practices. (cont.)

Suggested Strategies	Consideration Issues							
	Patterns of Settlement Development	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Healthy Human Ecology	Communal Culture	Economic Activities
Community and Site Design (cont.)								
Reducing private vehicle use		X			X	X	X	X
Encouraging pedestrians, cycling, and public transport								
Providing pedestrian areas		X			X	X	X	X
Providing cycling facilities, such as bicycle storage		X			X		X	X
Providing convenient access to public spaces and facilities, via safe and pleasant paths and green corridors		X			X	X	X	X
Planting vegetation								
Planting native or local vegetation		X		X		X		
Planting vegetation to create natural shelter and shade		X			X	X		
Maintenance of natural vegetation to maintain capacity of hydrological cycle and promote natural habitats		X		X				
Protection and maintenance of surface and groundwater quality and quantity		X		X				
Energy-conscious urban planning and site planning, such as avoiding overshadowing [I], solar access to streets and public spaces, and wind blocks					X	X		
Local-food production, such as household food-growing, street farming, city farming (U/S) [II], and permaculture (S/R) [II]					X		X	X
Encouraging community member involvement in decision-making and design of their environment							X	
Technical facilitation in community building program							X	
Building Configuration and Design Consideration								
Holistic design approach and collaboration between professions	X	X	X	X	X	X	X	X
Design for minimizing construction footprint								
Planning compact, higher average densities (U/S) [II], vertical city (U) [II], and multi-story residences (U/S) [II]		X					X	
Sharing common spaces, facilities and external spaces		X					X	
Renovation - adaptation of existing building to new uses, up-grading and design for adaptability		X	X					
Careful design of building configuration, for instance, orientation, building size, and forms		X	X	X	X			

Note: [I] The strategy can be applied in particular places or situations.

[II] U = Urban area, S = Suburban area, R = Rural area.

Table 1 Strategies and issues for sustainable architectural practices. (cont.)

Suggested Strategies	Consideration Issues								
	Patterns of Settlement Development	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Healthy Human Ecology	Communal Culture	Economic Activities
Building Configuration and Design Consideration (cont.)								
Using natural lighting and natural ventilation whenever feasible					X	X		X
Passive heating and cooling design					X	X		X
Designing building components responding to climate, such as sun shading, added insulation, double skin external walls[I], etc.					X			X
Design to minimize waste, for instance, using modules of sheet materials and eliminating unnecessary finishes and other products		X	X		X			
Providing space for food production[I]		X						X
Providing space for energy generators on sites or buildings[I]					X			X
Design for healthy environments								
Promoting good indoor air quality, especially using natural ventilation					X	X		
Design for thermal, acoustic, and visual comfort						X		
Providing connection between interior and exterior						X		
Reducing impact of electromagnetic fields (EMFs)						X		
Design for physical comfort and safety								
Design with ergonomic concerns and avoidance of overcrowding						X		
Accommodating people with different physical abilities, such as babies, elderly and handicapped people						X		
Providing a safe environment, accessibility, and fire exits						X		
Avoiding giving opportunities for crime						X		
Design for maximizing the job/service autonomy of each area		X				X	X	X
Design for maintenance and longevity		X	X	X	X	X		
Learning from vernacular patterns		X	X	X	X	X	X	
Enhancing public image								
Providing social spaces, such as green open spaces, meeting spaces and playgrounds						X	X	
Local characteristics, for example, regionalism, vernacular architecture, and local materials and construction							X	X
Using local materials and crafts for built environment elements							X	X
Encouraging future user involvement in decision-making and design of their environment[I]							X	

Note: [I] The strategy can be applied in particular places or situations.

Table 1 Strategies and issues for sustainable architectural practices. (cont.)

Suggested Strategies	Consideration Issues								
	Patterns of Settlement Development	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Healthy Human Ecology	Communal Culture	Economic Activities
Building Component Selection								
Choosing materials and products with low embodied energy		X	X		X			X
Choosing local materials and products to reduce transport energy and associated CO_2		X	X		X			X
Choosing components that produce less greenhouse gases in extraction and manufacture		X	X					
Choosing components that produce less pollution in extraction manufacture, and use		X	X			X		
Using renewable or plentiful materials		X	X					
Using recycled materials or materials that can be recycled			X		X			
Using non-toxic materials, such as natural materials and biodegradable materials						X		
Appropriate provision for possible future services			X	X	X	X		X
Rain water collection				X				X
Reuse water onsite				X				X
Grey water management or central water waste management [I]				X				X
Water saver appliances, such as low-flow showerheads and low flush toilets				X				X
Using non-polluting energy source		X				X		
Central hydroelectricity or other sources of renewable energy [I]					X			
On site energy production, such as solar energy and biomass					X			X
Using energy generators, such as solar panels, as building elements [I]					X			X
Use of energy efficient systems and appliances					X			X
Construction								
Selection of modes of construction that create less impact on the environment		X	X	X	X			
Waste materials management		X	X			X		
Avoiding potential polluted water and ground and whenever possible use environmentally friendly chemical and cleaning agents		X		X		X		
Careful construction supervision to prevent pollution and effects on the community during construction			X			X		
Self-builders or local labor							X	X

Note: [I] The strategy can be applied in particular places or situations.

Table 1 Strategies and issues for sustainable architectural practices. (cont.)

Suggested Strategies	Consideration Issues							
	Patterns of Settlement Development	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Healthy Human Ecology	Communal Culture	Economic Activities
Operation								
Provision of training or a guide for the occupants and non-technical building manger on the operation and environmental performance of the building or site		X	X	X	X	X	X	X
Encouraging pedestrians, cycling, and public transport, while discouraging private vehicle use		X			X	X	X	X
Promoting waste reduction and recycling of wastes for building users			X				X	
Encouraging recycle and reuse businesses and community-based social marketing program in material management practices [I]			X					X
Composting organic materials to create natural fertilizer [I]			X					X
Promoting water conservation awareness, monitoring and targeting, identification and avoidance of leakage				X			X	X
Promoting energy conservation awareness and using energy management systems, monitoring and controls					X		X	X
Facility management		X	X	X	X	X		X
Frequent maintenance and assessment		X	X	X	X	X	X	X
Occupant and community member participation in built-environment maintenance, management, and evaluation							X	
Using built environments as educational tools with explicit explanations or demonstrations of systems used [I]		X	X	X	X	X	X	
Regulation and Assessment								
Building codes and regulations	X	X			X	X	X	X
Environmental laws and regulations	X	X	X	X	X	X		
Social cost and benefit analysis								X
Life-cycle costing (LCC)								X
Life-cycle assessment (LCA), including life-cycle greenhouse gas analysis and life-cycle pollution impact analysis		X	X	X	X			X
Environmental impact assessment (EIA)		X		X		X		X
Environmental auditing		X	X	X	X	X		X
Energy auditing of existing buildings					X			X
Eco-labeling and building evaluation systems (e.g. BREEM, LEED, GBC, NABERS, and Green Star)	X	X	X	X	X	X	X	X
Post occupancy evaluation (POE)				X	X	X	X	X

Source: (Barton, 2000; Beately & Manning, 1997; Brebbia et al., 2000; CMHC, 2000; Davis, 2005; Edwards, 1999, 2001; European Commission et al., 1999; Gauzin-Muller, 2002; Hengrasmee, 2005; Hyde et al., 2007; Kwok & Grondzik, 2007; Maiellaro, 2001; Reardon, 2001; Roaf et al., 2004; Rocky Mountain Institute, 1995; Roelofs, 1996; Sassi, 2006; Smith et al., 1998; Vale, B. & Vale, R., 1991; Van der Ryn & Cowan, 1996; Williamson, 2003; Zeiher, 1996;)

Note: [I] The strategy can be applied in particular places or situations.

Table 2 Strategies and issues for sustainable citizen actions.

Suggested Strategies	Consideration Issues						
	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Strengthening Community	Heath Issues	Self-reliance
Consumption Habits							
Minimizing needs and consumption habits and cutting down daily expenses	X	X	X	X			X
Purchasing green products that produce less greenhouse gases or toxic waste in manufacture	X					X	
Avoiding purchasing products that contain toxic substance and VOCs						X	
Purchasing products selectively to reduce volume and packaging, increase product life and promote use of recycled materials	X	X					
Selecting eco-friendly services, including sustainable design	X	X	X	X	X	X	
Purchasing appliances selectively for product durability and resource use efficiency, such as energy-efficient light bulbs, low-flow fixtures, water-saving appliances, and productive landscaping		X	X	X			X
Purchasing products that are manufactured locally [I]				X	X		X
Purchasing local and/or organic food [I]				X	X	X	X
Reusing products through refillable packages, reuse centers, garage sales, and so on	X	X		X			
Minimizing water use, maximizing reuse of water, and applying grey water and sewage treatment	X		X				X
Minimizing energy use in domestic and work places				X			X
Everyday Activities							
Walking, cycling, or using public transport, rather than private vehicles	X			X		X	
Working from home [I]	X			X		X	
Planting native or local vegetation	X		X			X	
Separating garbage	X	X					
Composting organic materials to create natural fertilizer [I]		X					X
Regularly maintaining appliances and electric and water systems, to increase product life and durability			X	X			X
Switching lights and appliances off, when they are not used			X	X			X
Keeping home and work places clean and healthy						X	X
Practice self-help techniques, such as Do-It-Yourself (DIY)						X	X
Organic gardening or permaculture [I]	X		X			X	X
Using home production techniques, such as growing food [I], making clothes and other home-based products [I], rainwater harvesting [I], and domestic energy production [I]		X	X	X		X	X
Increase sharing of products and services with others					X		X
Reducing selfish competition					X		X
Living and working with honesty and moral integrity							X

Note: [I] The strategy can be applied in particular places or situations.

Table 2 Strategies and issues for sustainable citizen actions. (cont.)

Suggested Strategies	Consideration Issues						
	Ecosystem Conservation	Materials Conservation	Water Conservation	Energy Conservation	Strengthening Community	Heath Issues	Self-reliance
Participation in Sustainable Practices							
Participation in sustainable community development							
Participation in sustainable development programs in the community	X	X	X	X	X	X	X
Possible membership of working group for community development					X		
Sharing vision, knowledge and experience with other community members					X		
Cooperating in a community survey					X		
Participation in community activities and planning	X	X	X	X	X	X	X
Participation in the evaluation and reviewing of community activities and planning					X		
Participation in the monitoring process as social critics					X		
Participation in maintenance and management of public facilities and common property	X	X	X	X	X	X	X
Participation in environmental conservation activities, such as preservation of forests and water resources	X	X	X	X	X		
Demanding transparency, human rights, social justice, and other social improvement issues, such as ending violence and war, and involvement in the sustainable practice networks and monitoring process as social critics					X	X	
Socially responsible investment					X	X	X
Participation in the change of business towards sustainable practices, such as understanding effects of business on the environment, measuring and tracking waste, drafting an environmental-vision statement, and collaborative work to promote sustainability in the workplace	X	X	X	X	X	X	X
Improving knowledge and skills to participate in sustainable practices, such as learning or training in courses in environmental issues	X	X	X	X	X	X	X

Source: (Chaipattana Foundation, 1999; Environs Australia, 1999; Maser, 1997; Maser et al., 1998; ORTEE, 1994; Roseland, 2000; Roseland et al., 1998; Sassi, 2006; Smith & Baird, 2005; Steffen, 2008; Vale, B. & Vale R., 1991, 2007).

providing public facilities to upgrade the quality of life of local people, enhancing coordination among government agencies to eliminate duplication, and decentralizing work and responsibilities to local administrative organizations. Local organizations and governments can work together and offer a source of revenue for community efforts, and provide data to support decision-making (Mattessich & Monsey, 1997). Public participation and transparency of decision-making also encourage local people to be involved in the process as well as being the key to eliminating corruption.

Unfortunately, frequently the inertia of the political and administrative environment is a barrier to collaborative work (ORTEE, 1994). Since conventional government structures are typically based on centralized processes, because of the lack of understanding of and sympathy with local problems, these processes are poorly suited to support community initiatives. Moreover, these structures often have bureaucratic problems, for instance, being inflexible and causing delays. Because the quest for community sustainability requires community based processes, rather than traditional top-down processes, governments at all levels should change their rules to support local decision-making, local initiatives and long-term community development.

In addition, lack of financial and technical support can also obstruct both sustainable community development and collaborative work. To prevent financial problems, rather than relying on new funds sustainable community actions should be related to rethinking the effective use of limited budgets or money that is already being spent (ORTEE, 1994). In some situations, appropriate local technologies and processes, such as using natural systems and adapting local knowledge and skills, could result in spending less money. Meanwhile, besides providing funds or empowering the community to obtain them, governments, organizations, and professional institutions should provide technical aid services. For instance, while local government can enhance the efficiency of their work in supervising changes in physical environments (Wates & Knevitt, 1987), professional institutions and professionals should provide the necessary technical assistance for the community of which they are a part, or which needs their services. If possible, every community should employ architects who regularly work for them, or at least hire architects to work on or facilitate particular projects. Architects who live or work in a particular community can be one of its best facilitators. Besides involvement in community activities, architects can use their skills and knowledge to help the community create physical amenities. Owing to their particular knowledge and experiences, they can be technical facilitators, design or planning volunteers, members of a decision-making committee, or even representatives of organizations or activity working groups which deal with changes in the physical environment.

To enhance architects' ability to work for or with a community to create sustainability, professional institutions and communities should promote sustainable practices and provide appropriate information and training programs for architects. Information from successful examples, such as the results of using alternative systems and construction materials, as well as analyses of sustainable architecture and communities, should be provided to encourage a basic understanding of sustainable design and planning for architects, public organizations and communities.

Because the standard fees are normally calculated from a percentage of the project cost, the result is 'the greater the clients' expense, the greater the architects' profits.' Sustainable design strategies, such as reducing resources, quantities of materials, and sizes of mechanical systems, may decrease the total cost of construction along with architects' earnings. Moreover, the patterns of standard fees and recommended fee scales

do not support voluntary work or the additional work and time necessary in involving users in the design process, or even gathering necessary data, analyzing, and synthesizing an appropriate solution for particular places and projects. Because of the impact on profit, the environmentally friendly effort is often unattractive to architects. To encourage sustainable design services, re-structuring of the architectural profession is required. While architects should personally embrace social responsibility and environmental ethics in their work, to encourage architects to work with communities, the professional institutes can adjust professional fee scales to take account of the extra time needed to involve end-users (Wates & Knevitt, 1987) and work for sustainable community.

All support from relevant organizations, such as professional institutions, local organizations, and governments, in fostering architects' actions to create sustainability in a community also require a holistic approach. This needs to be based on effective collaborative work, trust and sincere commitment to the community's well-being, as well as on understanding the culture, social structure and issues in the community (Mattessich & Monsey, 1997).

In summary, collaborative work involving all community elements and continual development are obviously keys to creating a sustainable community. The more people work together for sustainability, the more they can develop their activities and processes. Involvement in community activities also encourages a sense of belonging and sharing and acknowledges the concept and the way to achieve sustainability under the particular condition of the community. This also leads individuals and institutions to strengthen belief in their ability to develop their community and be willing to take care of it.

3. Conclusion

Although the roles of architects in sustainable community development could be considered in two separate parts, as citizens and professionals, it is likely that both roles overlap. The two roles support and enhance each other. The right attitude, knowledge, skills, and actions in both roles can assist a community in creating the best solution for its cultural and resource conditions. While architects can design and even construct a particular built environment in a community, they can also be involved in sustainable community processes and creation of consensus decision-making with other community members.

Focusing on change to the built environment of communities, the degree of architects' participation lies between the opposing poles of expert and user assisted design and decision-making (Wulz, 1990). From 'design for communities' (i.e., sustainable design and planning) to 'design with communities' (i.e., participatory design and technical assistance) to 'design by communities' (i.e., taking part as a community member and working with other community members in sustainable community design), the roles of architects will move from being professionals to acting more as citizens. Besides this change to built environment issues, architects can take part in other community activities or sustainable community development programmes.

To strengthen architects' actions for sustainable community development, both internal and external factors should be determined (Hungerford & Volk, 1990; Hwang et al., 2000; Kollmuss & Agyeman, 2002). Beginning with the main internal factor, the intention to act, architects should take their first steps at the level of personal performance principles. They should understand their roles and their potential for undertaking sustainable practice, via actual work and the process of self-improvement. Next they should extend their roles to act with other

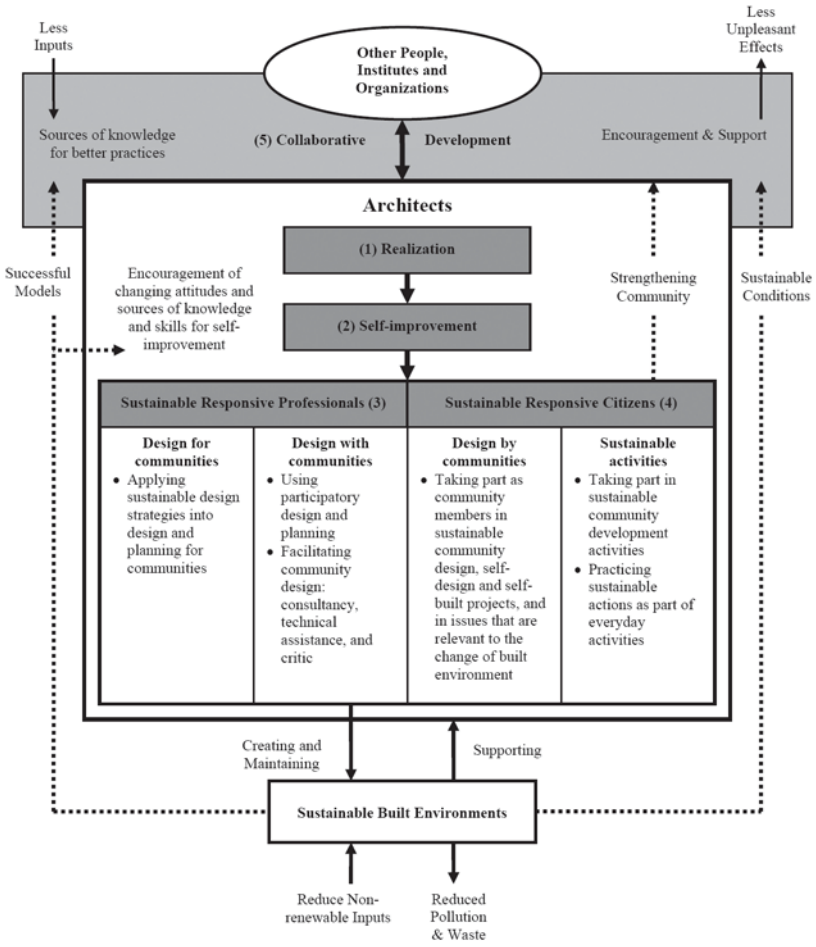

Figure 2. The relationships between the roles of architects and five principles for architect actions in sustainable community development.

people. Nevertheless, architect actions still require encouragement from external factors, including political, social and cultural factors, public demand, and appropriate economic circumstances. At this point, collaborative performance principles will play a key role to support such actions. Moreover, architects' experience in practice with or for other people will in turn become a source of knowledge and changing attitudes. Their sustainably responsive actions, both as professionals and citizens, also create sustainable conditions and support for future practice. The interrelationships between roles and actions also emphasize the necessity for simultaneous performance and continual development at personal and collaborative levels (Figure 2).

Because architects, like other members of a community, have both citizenship and a profession, the roles and actions discussed here could also be applied to other people in society. All community members should accept their obligations to support sustainable community development and go beyond self-interest to care about and work with other people in their community. Furthermore, they should extend their caring to people in other communities and those of the future as well as other creatures and their environment. Because every community has relationships with other communities and the broader community of which it is a part, apart from supporting their own community, the actions of architects in sustainable community development assist in creating sustainable conditions in other communities and the whole world.

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