

# Area Based Demonstration / Exhibition: Adaptive Management and Learning in Municipal and Development Organizations

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This presentation and paper reports on the research regarding more sustainable community planning and design and specifically a case of Egebjerggård, Ballerup, Denmark. (van Vliet 2000). The current phase of inquiry will examine implementation of the BO01 European Housing Exhibition in Malmö, SK. The completed research concerned the carrying out of demonstration community projects as a core strategy for municipal capacity building and advancing policy development for sustainable urban development and improved practice. The type of demonstration is an area-based, site specific planning and design process and built project involving a cluster of beneficial innovations with the purpose to test and support adoption. This strategic focus on testing and supporting adoption is under appreciated in practice.

# 1. Background

Over the past decade much of the sustainable community planning and design discourse has been about prescribing and defining ends. This has involved propositions, indicators, performance objectives etc. A very large gap continues to exist between our better defined goals for sustainability and the ways and means to achieve them. This is particularly the case in North American municipal planning practice (Duany et al 2000; Chen 2000). Multiple barriers continue to be encountered when implementation attempts are made. Innovation lethargy continues in municipal and development organizations within the residential delivery system. (This term refers to the partnership system in all its links that occurs with variation but involving many of the same agencies, roles, tasks and responsibilities whether a municipality in the region of København or Vancouver Canada.)

My inquiry considering an area based implementation in Ballerup addressed the question: "In what ways can demonstration projects increase social learning of effective planning, design and policy alternatives that assist in developing sustainable urban communities?" (van Vliet 2000)

This is important since as we know, there is a critical need to get beyond the normative theoretical concepts - make sustainable urban planning and design a reality. The research analysed if and how demonstration -- as one pathway -- can repair this theory-policy-practice disjuncture. The research suggests the gap between 'what we know' and 'what we need to know' can be addressed through a more experimental framework and through purposeful demonstration-diffusion. The purposes, benefits and returns from demonstration outlined in the document serve as a general argument for proceeding with a neighbourhood scale, fully-featured demonstration project, in many other cities.

My inquiry presents an argument for an expanded notion of demonstration and that its strategic role in sustainable community development should be more widely recognized and invested in. A proper demonstration initiative can be pathway to overcoming barriers and a locus for policy development that will contribute to changing attitudes and the actions of citizenry and authorities, corporations, professions and citizenry to the requirements of sustainable urban development. It is the frontier of new procedures at the edge of municipal, private and civic sectors; where emerging practices, and policy development influence normal operations and social learning, accelerates improvement in key areas of planning practice by identifying strategic methodological issues, developing tools and processes for conceptualizing and testing options in practice. An effective demonstration can be looked upon as a sort of staging area and half way house between implementation and general policy making. It is a zone for social and developmental learning.

At the centre is a cycle representing the main action processes that occur in the operations and among the partners of the residential community planning and delivery system. These are shown as a process of learning and development in the transition process toward sustainability. The main partners / actors: municipal planning, local resident actions, developer initiatives, and the public are on part of the model. Information, expertise (capacity), changing attitudes and actions reflected in new patterns are the other. Each of these could be broken down into further sectors but it is the intent here to keep the model simple. Most problem issues identified can all be assigned and located within these eight processes. The model presents a view where area based development, pilot and demonstration projects (at

the centre) play an important role. This is a cycle of induction and production occurring in both directions and across sectors. Both cause and effect and the actors change from side to side. These are reciprocal facilitative processes. At its base is a social learning paradigm. As Friedmann (1987) has explained the social learning paradigm has an important role for social mobilization. For example co-operation between designers, researchers, builders, municipal agents and building suppliers has served to increase government-industry dialogue. This have also tended to soften the risks for the developer and to hold down costs by sharing resources and discovering innovative approaches.

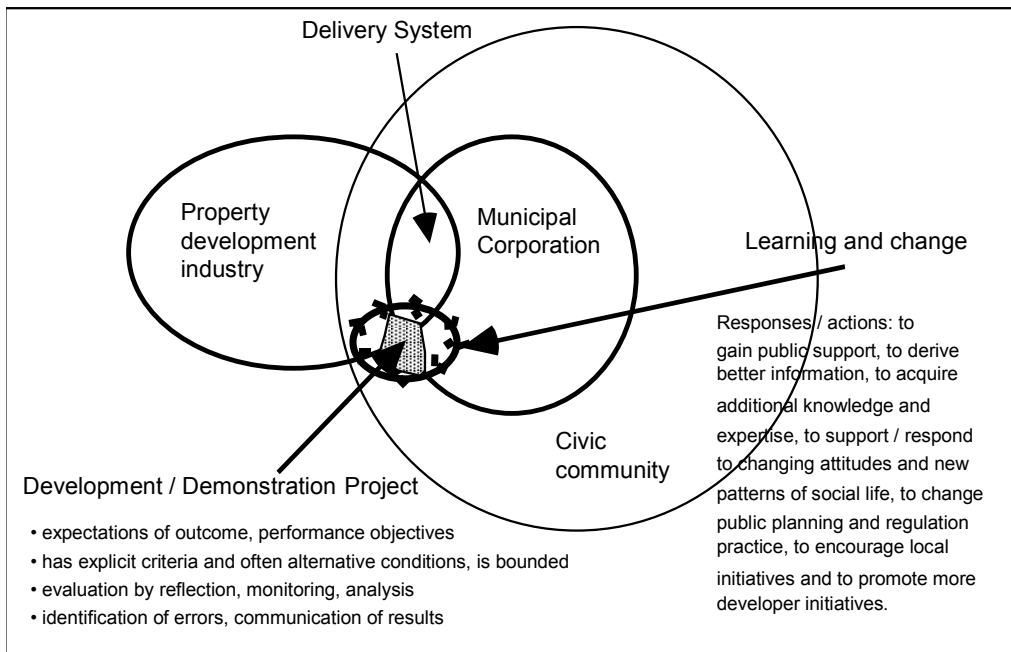


Figure 1: Development Demonstration Project in the Residential Planning and Delivery System. (The System in Transition Adapted from Perks and van Vliet (1994) based on (Helberg 1991).)

This 'cycle' is developed from an early analysis of urban ecology pilot projects by Helberg from the Dansk Byplanlaboratorium. The model and dynamic seemed fine but where could I observe this occurring? I sought to apply this model, in empirical and longitudinal research to consider how barriers to sustainability can be addressed by a demonstration project.

## 2. Innovation and Egebjerggård

There are two kinds of innovation - a problem-centred element; improving the efficiency, quality, productivity and design of existing products, technologies and services. The other is a mission-directed element; doing new things first and best - creating the new innovation. Innovation involves creativity and enterprise to turn inventions into marketable products and services, and support their diffusion. Urban innovation consists of creative new concepts along with coalitions for their implementation for the transformation and improvement of quality of life in cities including conditions for city development (Batten et al 2000; Hall and Landry 1999). Innovations referred to in the research are those practices, behaviours, standards, regulations and procedures in the case study that are in turn implemented elsewhere and or that become regularized or adopted as norms in the municipality and beyond.

In progress toward goals of sustainability integrating environmental, economic and social considerations into planning systems Denmark is noted for its strategies and instruments and Danish municipalities are considered among the lead agents (EU 1994). A significant feature of Danish municipal planning are the numerous pilot and demonstration projects in local communities for developing and promoting the operational principles of sustainability. (See Munkstrup and Sørensen 1995). Among the best practice examples is a new neighbourhood in Ballerup.

Egebjerggård is a 782 unit, 38 ha. mixed use, urban extension and neighbourhood intensification project located in the municipality of Ballerup (50,000 population) 15 km northwest of København. A new pattern for 'integrated neighbourhoods' emerged through public debate, design competition, experiment and an innovative system of planning guidelines and regulation. Egebjerggård was the venue of an international building exhibition in 1996. Construction of dwellings started in June 1988 and by the end of 1997, the planning was complete and all the housing schemes in the urban quarter's four stages were nearly finished. Limited selective infill is occurring on a few sites reserved for commercial or institutional use. I monitored the project and results during the course of construction. (see van Vliet 2000)

### Evaluative Framework

The evaluative framework developed and applied in the analysis of the Egebjerggård neighbourhood revealed a good example of practice at the neighbourhood scale and at the housing cluster scale (most notable is the Skotteparken scheme recognized in a number of awards (- European Solar Prize, UN Habitat Best Practice). Egebjerggård and its urban development context of Ballerup and in the larger institutional environment in Denmark, proved to be issues-rich, making it an informative vehicle for conveying ideas and concepts about planning practice and social learning, in integrating environmental, social and economic concerns and policies. Egebjerggård incorporated a wide set of desirable performance characteristics as simultaneous initiatives in each of the three fields of action and building enunciated in the analytical framework employed. (The range of innovative features conceivably represented in such a project constitute the detailed evaluative framework (Appendix Q) This is reported in a 50+ page table and

in Appendix X Part 1 (Ballerup / Egebjerggård) the CD Rom Case Study under the headings:

1. Urban design and Urban Technology (1.1 Land Use, to 1.7 Mobility)
2. Local Democracy and Environmental Communication
3. Urban Economy, Ecology and Political Administration

The analysis described an integrated policy-planning-design and ecological approach operational at the local level. The inter-disciplinary 'networking' of several distinctive professional practices is essential to overcome implementation thresholds for the objectives of effectiveness, economical efficiency, social receptivity, and political practicability (Hahn and Simonis 1991:19). The Hahn conception derives from urban restructuring and renewal.) The study shows how this activity can occur in a new neighbourhood development. The case study shows that socially - and environmentally -responsible neighbourhoods can be planned and successfully implemented.

## Tracking innovations, their diffusion and impact

Given the size of the development project (782 new units), the number and types of innovations were potentially many and diverse. Many innovations did appear in the neighbourhood, both in products (technologies and structures) and processes (planning, implementation and management). In looking at the Egebjerggård I was interested in determining the ways a demonstration project can influence change towards sustainable community planning and design.

Egebjerggård has had an increasing profile over the period of its development and the full extent of the dissemination of information and experience is impossible to identify precisely. International dissemination by visitors has certainly occurred (Zinn 1995).

The sequential steps of social change: invention / innovation, diffusion and consequences were explored in the field research regarding the case study project and context. I considered the questions:

*What examples are there of the extent of diffusion of experience and practices? What mechanisms exist for diffusion? Were they effective?*

I asked key informants if they could identify features in Egebjerggård that they considered to be new, and if, where and how these features may have 'influenced' practice elsewhere. Responses were compiled in a list of innovations, augmented by those from my observations and those collected indirectly from other interviews and conversations with key agents. (By 'new' is meant innovative; new in practice not usually a new invention.) Key informants tended to mention independent examples from their area of responsibility. During interviews in 1994, I observed that a number of key agents had not yet identified the diffusion aspect and explicit changes in practice as a 'substantive outcome' to their work in the neighbourhood. The project implementation had been to that time a very dynamic and demanding process not subject to analysis of this type. The municipal architect planner with responsibility for Egebjerggård (T. Zinn) was to later prepare an evaluation which would include consideration of this issue, and requested my observations.

Diffusion of innovations and dissemination of experience has occurred since the implementation of Phase I. The innovations incorporated in Egebjerggård are numerous, varied and have appeared successively over the period of development. The exhibition of May 24 - June 23 1996, albeit a concentrated and directed opportunity for a large number of agents to come into contact with the innovations, was just one period in the long

process. I first review the characteristics in Egebjerggård that have supported the adoption of innovations. I then consider evidence of diffusion for a number of specific innovations.

Innovations have spread through peer networks, with re-invention occurring as the innovations are modified by users to fit their particular conditions. Decision making is widely shared; the 'adopters' making many interrelated decisions. This can make identification of innovations and tracing their origins difficult. In many cases, adopters served as their own change agents. For example, a developer or design engineer would go on to incorporate innovations in subsequent projects. The innovation would change due to changed context, program, new implementation partners, and market.

Diffusion of planning and design innovations and dissemination of post-construction experience has occurred since the neighbourhood's first phase. I described these innovations across four categories to explain how the innovation relates to regulatory change, administrative practices, and behavioural and structural change (see van Vliet 2000: Appendix S3). The study identified instances where the Ballerup project had a clear, acknowledged influence. The case study showed that urban demonstration, when conducted as 'fully-featured' more sustainable design, can widely influence changes towards sustainable community planning and design (see Section 4.1).

For the implementors, the Egebjerggård project confirmed a number of their assumptions or design postulates that flowed from earlier projects. These are best summarized in Point Program goals established for the project (See Case Study Part 5 Assessment) and later were all incorporated into the General Municipal Plan 1992-2001 (Ballerup 1992).

- identity and character
- variation in form and households
- mixed ownership
- affordable housing
- environmentally sound materials and approaches
- mixed land use
- integration of works of art
- strengthening the social structure
- crime prevention
- participation of future inhabitants

The other main innovations included those below (from among 28 innovations described) with brief explanation of influence on practice as a result of experience at Egebjerggård.

1. Integrated neighbourhood principles - have been adopted as approach for successive projects in Municipal Plan
2. Local employment - proved viable, acceptable and encouraged elsewhere in municipality
3. Favourable results from Skotteparken project - were further incorporated into a Phase IV scheme, other housing schemes in Denmark and the establishment of two international European networks to build numerous demonstration projects (key role of Cenergia Energy Consultants and the KAB Housing Society)
4. Protection of site and nature corridors - was basis for developing the Municipal Landscape Plan 1997
5. Ecological considerations in local plan - were highly regarded and incorporated into further projects
6. Regulations being performance based - confirmed type of regulations and objectives to use in other projects in Ballerup

In addition, the case study was informative on a number of ways that a project can be useful to increase social learning of effective planning, design and policy alternatives that assist in developing sustainable urban communities. These innovations include:

7. Financing for resource conservation - the pilot project at Egebjerggård was adopted by the Danish Ministry of Housing as a new procedure available for all housing receiving public financing.
8. Urban ecology debate in Housing Societies - led to policy statements and action plans on urban ecology influencing business procedures and management strategy in the two largest third sector developers in Denmark.
9. Professional development and increasing capacity building of municipal staff - has lead to a notably more co-operative cross departmental working environment
10. Public participation in the planning and control process - confirmed the important contribution and new directions public can provide when closely involved in planning
11. Pre-qualification process - project reviews based on multiple criteria is now standard procedure
12. Interdisciplinary and intersectoral cooperation - instances of closer cooperation and collaborative procedures to realize better planning and design in projects.

The case study project was informative on various problems in the development process, finding better ways of dealing with and assessing a range of public policy-design interventions, and exploring the conditions under which such developmental projects should operate. The Ballerup approach became a refining process, building upon accumulations of better-informed and wise practice.

"Systems of diffusions are critical to a learning society." Milbrath (1989)

Notably (and relevant to this workshop), the project implementation sought increased participation / new forms of resident responsibility contributing to some decentralization of power. Taking action at the local level and at the neighbourhood scale provided directions for what works and what does not; and thereby brought out what needed to be modified in the broader municipal plan and the residential delivery system. Thus, the demonstration implementation process informed some structural-organizational change, the reform of goals and processes along with specific planning practices in Ballerup, in the region, and elsewhere in Denmark. (Examples noted in Section 4.1.2, 4.1.3 and Appendix S3.)

Egebjerggård played a significant role in encouraging a new ecological consensus in the context of urban development in Denmark. (This demonstration project was a reference for the Ministry of Housing Urban Ecology Action Plan, the urban ecology debate in Parliament, the Green Municipality Program co-ordinated by the Ministry of Environment (1990-92), the Urban Ecology Network members co-ordinated by the Town Planning Institute (1992-97) and the adoption of ecological policies by third sector and private housing companies.) This is an important contribution, considering the complex and current, problematic situation of city planning everywhere to gain this orientation. As I demonstrated and argued such a project can have an integrative role for the several different actors/agencies involved.

## Limitations

There are limitations to this area of inquiry. The degree of impact is not reliably (comparatively) reportable. A fully convincing reading of the extent of changes in new development settings in Ballerup was limited due to the small amount of new development having occurred in the municipality. A recession occurred in the building sector, particularly the private housing sector. The scarcity of new urban development is, in part, due to Ballerup being considered by developers and pension fund investors as too far from København. Market conditions have changed somewhat since.

There are time lags that occur in an extended implementation process and there are also time lags in diffusion, as change takes time and often requires numerous and different messages and contexts. This has implications for a demonstration project and its evaluation. Its value and extent of contribution cannot always be perceived quickly. An evaluation after more years pass would be expected to produce greater evidence of diffusion. On the other hand, explicit linkages of innovations back to a particular demonstration project and their attribution will get cloudy over time.

It is characteristic of any system in flux that it is not always evident what inspires or impels change to take place. While conducting research, I attempted to isolate and identify where the demonstration had been a clearly acknowledged influence.<sup>1</sup> Instances of diffusion and indications of changing practice from phase to phase could be noted. By 1996, there was already evidence of considerable diffusion outside the municipality and, significantly, even outside the country.

The case study project showed that it is possible to advance conditions in planning and procedures on many fronts. Explicit longitudinal tracking of innovations and their adoption over the course and following such demonstration projects appears to be uncommon.

## **Advocating and supporting innovation adoption**

Experiments, pilot projects and demonstration are stages of development as policy experiments (Rondinelli 1983). While demonstration projects may evolve from experimental and pilot phases, demonstrations should be consciously designed from the outset especially to show potential adopters the benefits of employing the innovation, to advocate and test the adoption of innovation. Part of my field inquiry determined how the Egebjerggård project advocated and tested the adoption of innovation. To support adoption, five characteristics - relative advantage, compatibility, complexity, trialability and observability - were identified as criteria in evaluating the demonstration project (van Vliet 2000, section 2.5.1.1). If the demonstration was going to support adoption, these characteristics should have been considered in the planning of a demonstration project; would be in evidence, and, should constitute part of the evaluation. These five characteristics are addressed below. While all five may not necessarily be requirements for a successful innovation or for demonstration, it is likely that their presence or absence would affect the rate at which adoption is supported.

### **Relative advantage**

This implies information on conditions before and after the project being available. It implies an understanding of the situation during formulation of the demonstration project goals and assumes and identifies deficiencies in current conditions which suggest some improvement is required. As Schon (1983:177) advises, detecting failure is essential because if you can't detect failure you cannot learn. Is the innovation better than the status quo? Will people perceive it as better? If not, the innovation will not diffuse quickly, if at all.

Reducing the "cost of change" is one type of relative advantage which offers great leverage. In switching from an old way of doing things to a new way (i.e. by adopting one or a set of innovations), a person must feel that the value added by the new way is greater than the 'cost' of making the change. ('Value' and 'cost' are to be understood in psychological as well as monetary terms.) To promote an innovation, this equation says there are three things you can do: i) Increase or make explicit the perceived value of the new way (as many innovators do), ii) Reduce the perceived value of the old way (as social critics do), iii) Decrease the cost of the change. Political and environmental activists have often ignored the third approach, but business

people know it to be very important ('easy credit', 'simple to use', etc.). A systems perspective suggests using all three approaches, giving attention to the one offering the most leverage.

Currently with more and more people feeling that 'the system isn't working' and with plenty of proven innovations available but not implemented, an important limiting factor is seen to be the 'cost of change'. For example, public opinion polls consistently show that large numbers of people are willing to make changes for the 'good of the environment', also that only a few have actually made these changes to their living patterns. It would seem that finding ways to reduce the perceived cost of these changes or to increase the perceived real benefits could advance the system. For improvement to be apparent, comparative performance data is needed.

In the early planning of Egebjerggård, the deficiencies of the predominant current urban development practice were debated in the invitation for ideas, among competition entries, in the evaluation of proposals, and in early user meetings. The goals established for the project were to counter predominant trends and provide an improved outcome by implementing a more integrated community.

### **Compatibility**

Does the innovation fit with people's past experiences and present needs? In what ways? Without good fit it is less likely to diffuse. Does it require a change in existing values? If a cultural group feel as though they have to become very different people to adopt the innovation, they will be more resistant to it. These are considerations for designers and planners in what, where and how innovations are deployed.

Similarly a good understanding of the existing situation and context is assumed. Making a close fit between the identification of the need and description of the perceived/expected benefit is important. It should be made in understandable terms and convey a vision for a feasible and relatively easy transition to the new condition.

Designers and housing developers became familiar with users needs to the extent that innovations were met with acceptance, or where new behaviours were required, there were procedures in place to provide familiarization and increase compatibility. Seeing innovations as an integrated, accepted part of household and community life during the exhibition tours gave them the appearance of normalcy and compatibility.

### **Complexity**

Innovations are often perceived by individuals as an inter-related bundle or complex of new ideas rather than singular elements (Rogers and Shoemaker 1971:153). How difficult is the innovation to understand and apply? The more difficult, the slower the adoption process.

A demonstration project for a more sustainable neighbourhood presents a complex package or multiples of innovations. Some researchers recommend that a package of innovations should be studied rather than conceiving each innovation as a discreet unit for analysis. The package approach however (as one would expect from predominant atomistic studies) has seldom been studied in diffusion research even though it may intuitively seem to make sense. Integrated neighbourhood schemes and urban ecology attempts are exactly this type of synthesis, where multiple innovative features are advocated. Even the individual dwelling unit scale is a system of multiple innovations. How can this be done? Determining which innovations seem to 'bundle together' and how they can be 'tracked' presents a number of methodological problems.

The complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption. That is, complexity impedes the rate of adoption. Multiple ingredients of sustainable

technologies or landscape processes can often be complex. Strategies suggested to overcome the perception of complexity include:

- Implementors of a demonstration project may want to present apparently complex innovations as easy to understand in use. Many widely diffused technologies while they may be very complex, are easy to operate, user friendly, attractive and affordable (e.g. a video camera). Another example of this could be photovoltaic cells to charge an electric car; you just have to plug it in.
- Innovations may be grouped for better communication where technologies can be considered as system components, labeled and clearly explained. This corresponds to the principle that one does not need to know how a complex technology works in order to benefit from it or readily use it. For example the integrated solar / pulse / district heating system, in the Skotteparken scheme (#13) is complex, but as far as the resident is concerned the control is a normal thermostat adjustment.
- At the time of the exhibition, the innovation could be described simply, using familiar terms. The technology would be demonstrated in everyday use by residents treating it as a new norm rather than something strange. While the example of the heating system is complex, nevertheless residents have been able to manage it, resulting in successive annual decreases in energy consumption.

### **Trialability**

Can people first 'try out' the innovation? This ability is positively related to its rate of adoption. Having to commit to it all at once may make them more cautious. A demonstration project can be viewed as a framework, venue or platform for trialability. Supportive strategies include:

- The community plan, building schemes, systems and residents represent opportunities for innovations to be tried out. Hands-on experience at the demonstration allows the potential adopter to try out the innovations and to contemplate their applicability to their life. At the exhibition they can identify with the residents and their environment, have an opportunity to dialogue with them. This opens up the possibility of informed choice. A full scale (1:1) model allows a person to walk (cycle, drive) down the street, enter a courtyard or home to contemplate, compare and contrast what it is like to live there, and to hear the views of the residents. The exhibition period is an opportunity for visitors to inquire about experiences, and consider themselves using the innovations.
- Trials can be undertaken in the planning phase, in workshops and during project tours, while speaking with experienced users etc.
- A range or mix of applications, under varying conditions of context, tenure or income, etc., is another way to convey trialability. Increased choices within one neighbourhood supports ready comparison and evaluation.

### **Observability**

The observability of an innovation as perceived by members of a social system, is positively related to its rate of adoption. How visible are the results of an innovation? If people adopt it, can the difference be discerned by others? Observability can be the most obvious characteristic of a demonstration. Egebjerggård, particularly during the exhibition period, was a deliberate attempt by the municipality and delivery system agents to increase the observability of a diverse set of innovations.

I distinguished between material and non-material innovations. The innovations selected for tracking in the field research were those with a readily identifiable object component indicative of their observability. This characteristic has continued relevance in explaining their rate of adoption. Demonstration directly follows the principle that 'the easier it is for an individual to see the results of an innovation, the more likely s/he is to adopt' (Rogers and Shoemaker 1971:157). Buildings and surroundings that 'teach'

sustainability reflect and encourage positive, mutually-supportive relationships between the built and natural environments. Since the landscape of Egebjerggård represents a higher level of system complexity than does a 'cosmetic' landscape (Hough 1984) or the general conception of 'open space', and because it incorporates ecological relationships that may be invisible or difficult to observe, this could present obstacles to their acceptance.<sup>2</sup> Making such an urban context readily observable and understandable by means of interpretation and experience can help to counteract this problem. The stress is on visible techniques particularly regarding infrastructure and connectivity in community programming.

There are at least two groups of actors related to any sustainable community attempt: those residents and users 'within' the community and those who observe the scheme from the outside, either in person (visitors) or via media presentations. Different sets of meanings may evolve for the same community. For either the internal 'players' or the 'external' observers, the visibility of the community and its ability to shape and contribute images is critical to its experiential impact and the rate at which it will be emulated. Peter Hall has concluded, based on a survey of databases, that a key area for a next innovation wave is in terms of distribution and dissemination. Their 'visibility strategy' (Hall and Landry 1997 p. 80) was identified earlier by a number of influential theorists and practitioners as a key characteristic to support understanding and adoption (Deelstra *et al* 1991; Hahn and Simonis 1991).

## **An effective demonstration**

The experience in Egebjerggård indicates that people can be moved by a good demonstration exhibition (expressions of learning are found in section 6.4.3.3 regarding change in mindset, reflecting fresh perceptions and change of theory-in-use following social learning theory discussed in Section 2.5.2.) Adoption of innovations by 'clients' (residents, builders, developers, other system agents) was also positively linked to a set of eight characteristics (effort made in contacting, client orientation, compatibility with client needs, empathy with clients, identification between agent with client, credibility, working through opinion leaders and the clients' ability to evaluate innovations) discussed in Section 4.2.3 and Figure 4.6. Numerous approaches that are supportive of adoption in a demonstration project in general (and specifically in Egebjerggård) were identified. Psychological / positional variables inducing individuals to adopt innovations in a demonstration neighbourhood initiative are also provided (Figure 4.7).

## **Scale**

The scale of a project is important to test the system; projects have to be sufficient in scale to force a review of resources allocation; in turn requiring that departments encounter the barriers and come to appreciate some of the contradictions and the differences in their present agendas. This requires a political dialogue, green thinking, synergy, short distances between overlapping roles in institutions, common references, and sharing of experience through new forms of engagement.

The Egebjerggård case analysis shows how, within a single built area, the many components for improved sustainability can inter-relate. While examples of good practice identified from a survey of disparate projects and locales can be inspiring (the UNCH documentation 1996), such does not necessarily make the conception of a synthesis less difficult or even resolvable. The case analysis referred to the connections and relationships between the micro and the macro scale for policy, operations, design, and

functioning. The scalar range was from the household through to municipal operations; from local neighbourhood association through to national policy agents.

## **A good change agent**

A neighbourhood scale demonstration project of ecological scope has the potential to become a change agent on a large scale and thus have wide influence on practice. Moreover, a project of this type plays a central part in a process of individual and social learning and social innovation. The Egebjerggård case provided an example in which the municipal organization assumed a proactive, project-specific position that resulted in multi-faceted innovation and a wide diffusion of improved practices. The case incorporated a number of features that could be seen to stimulate a societal development improving project conditions for sustainable development. The municipal organization's capacities to take on further tasks have increased and new opportunities have appeared (the greater application of ecological considerations in the Østerjhøj neighbourhood and the more integrated rail transit oriented development at Måløv). The case study shows that attention to design quality, the involvement of research agencies and the design professions can result in advancements in practice and significant increase in dialogue and knowledge that otherwise would have been unlikely to occur in a similar period of time. Further, it shows how these advancements have been operationalized at the local authority level. The case described a municipal planning department with an urban design role that has expanded in scope and is now better integrated in the planning process. Perhaps more importantly, the findings highlight a crucial role for research and development to discover local solutions. Local here means novel approaches adapted to particular conditions and operating at the neighbourhood scale. Such a role is marginal or non-existent in planning practice of many other municipalities .

## **Role of Experimentation**

Egebjerggård and other projects suggest town planning can perform as a pro-active and thoroughly experimental, integrative planning-design process. The Egebjerggård planning group took an active stance, with far greater responsibility and capacity than merely 'affirming community goals' or solving technical and land use problems. The planners sought to share relevant knowledge in the interest of improving decisions about the future. In this process, the planner's role in linking knowledge and collective action is an active one, requiring professional capacity and assumption of a responsibility not customarily associated with technocratic practice.

The case study findings substantiate Lee's (1993:53) view that without experimentation "reliable knowledge accumulates slowly and without reliable knowledge there can be neither social learning nor sustainable development". The research from the case study project together with the assessments derived in other municipal environments where advancements are being made support the proposition that a more experimental framework is essential to developing effective strategies. In this connection, it is clear that municipal administrative means must be strengthened and, in some respects itself become experimental -- including capacity-building, project-based organizational learning, revision of inhibitive, technocratic practices and regulations, training for knowledge assimilation, and flattening managerial structures.

Experimentation is an important pre-condition for developing new planning-design knowledge. In Egebjerggård a progressive, experimental approach was taken; it favoured action, through continuously reifying

experience as the key to learning. It is evident that the Ballerup municipal corporation recognizes the need to invest in social learning as a complementary means of achieving more sustainable community. The social dynamism of learning generated in such a procedural environment can defuse a socially-constructed stalemate. Further an experimental and adaptive approach is needed when we are confronted in the course of action with scientific uncertainty as is the case with sustainable urban development and ecological design.

### 3. An expanded conception of demonstration

In urban planning and architecture, the predominant conception of a demonstration has been as a product for education and a vehicle for dissemination of new norms, mainly through technological innovation. This conception continues to characterize those projects that focus on resource conservation and environmental quality.. Efforts are directed, for example, to heat consumption, energy supply, water consumption, waste water, waste handling, indoor climate, environmentally-friendly materials and recycling, life cycle analysis. Demonstration projects have been referred to in the literature using some broader and instrumental descriptors :

- • a medium for public education and awareness-building and serving to convene experts for evaluative research and appraisal of the projects,
- • leading the way, providing the evidence necessary for inducing more widespread adoption (Knudsen *et al* 1993),
- • an opportunity to have a 1:1 context for comparative study, for analysis 'in situ' where enough of the variables present are understood (Jantzen 1992)
- • for developing and verifying performance standards within experimental projects; and design components to be incorporated into future projects (Dominski *et al* 1992),

Blowers (1993:204-5) declares demonstration projects "more effective than writing and talking in changing attitudes and improving standards generally as a practical example in which theory is tested and opportunities provided for experiment and for generating new ideas".

As important and necessary as these terms for demonstration continue to be, the present research findings point to an expanded conception: a demonstration project can be an effective institutional development instrument; which can be characterized as a 'staging area' or 'halfway house' for organizational change and policy development, and improved, newly-inspired practices in the public and private sectors. These functions in combination with various means of public education make demonstration a significant, even necessary, part of an urban sustainable development strategy.

The Egebjerggård project shows how the process of its implementation changed the institutional systems and the means to realize more sustainable / ecological goals. It was a transformation process, not simply a production process. The thesis argues that projects will be a critical catalyst in developing an improved and restructured organizational procedural planning framework; in this regard demonstration outcomes can be more fully stated as:

- • accelerating improvement in key areas of planning practice by identifying strategic methodological issues, developing tools and processes for conceptualizing and testing options in practice,
- • a way to influence system change towards more sustainable community planning and design as a main instrument of social practice,
- • consensus building as it results from commitment to the process of planning, design and realization,

- • a normative re-educative process, as it can bring people into the change process by explicitly considering their attitudes, values, norms, and social relations and provide them with new information,
- • a more psychologically sophisticated approach to altering resource consumptive behaviour, than the 'rational-economic model' of human behaviour and conservation curtailment directed at the individual,
- • an instrumental factor (with research and exhibitions) in nurturing a rapid development of experimental planning and design,
- • a change agent , in a process of individual and social learning, to speed social change on a large scale,
- • a way to bring about innovation in planning and design, support diffusion of ideas and practices, support institutional change and capacity building to promote sustainability planning,
- • a selection mechanism for the testing of a stock of information and the source of spontaneous mutation - the application of science through creativity and design,
- • an initiative to bring the future into the present (by doing things now that anticipate a possible and appreciable tomorrow),
- • a focus on action and on a positive approach by concretely supporting decisions and action that enhance the environment, human health and community development,
- • a locus for a development-learning organizational model toward a united process of planning, environment and sustainability, a viable tactic to alter the dynamics of the delivery system context,
- • a pathway to overcoming barriers and a venue for policy development contributing to changing attitudes and actions of citizenry and authorities to the requirements of sustainable urban development,

These many descriptors sharing some redundancies. They are complementary, serving to broaden the substantial developmental role for demonstration. This role appears to be still poorly understood and under-acknowledged in community planning in many countries. These functions, in combination with the potential for education and policy development, make demonstration an essential part of a sustainable development strategy. These functions suggest that demonstration projects will be a critical catalyst in developing an improved and restructured planning framework.

## 4. Adaptive policies and urban management

An adaptive and inductive approach to project management was employed in Ballerup. It did not aim for a fixed end point. The essential position was one of being resilient in situations of surprise and as the literature on planning and environmental policy clearly states, surprise and uncertainty are the norm in the complex urban system.

The adaptive approach to policy and development appears characteristic of Danish planning and urban design. It is an approach recommended for adoption elsewhere --that is, action oriented, innovation-led, and consciously oriented to discerning what is workable from practice as a way to inform policy development norms. In development, we do not have all the answers ahead of time; and in order to learn more, and to bring others involved and on side, engagement is needed. This, in general, differs from the norm in Canadian municipalities for policy and planning-design practices.

My emphasis in the study was on the 'sustainability transition'. The case study and analysis explained how a municipal planning department achieved setting and operationalizing goals for developing sustainability, something few municipalities have yet undertaken. The analysis showed not only a local government initiative but also the dynamic and mutually-supportive nature of planning policies at the state and regional level. Such a demonstration project can play a role in moving the system towards refreshed, renewed and/or novel practices. Successful demonstration can lay some of the groundwork to change the frame of government. Notably, the local experience in Egebjerggård and Ballerup tested and refined conditions on which to induce policy change at senior levels. In the process people (both planning and delivery system agents and citizens) will get used to the idea of working closely with each other for a common benefit. This can lead to better articulated political demands for change and more specific, evolving ways and means.

Because sustainable urban development has an inherent unknowability and unpredictability, potential solutions need to be and are being discovered through research and design probes rather than being commanded. We simply do not know enough to manage urban systems. There is a sense of urgency where it will be necessary to act without knowing enough and then learning in the process.

Adaptive management is likely worthwhile where experimental precision is infeasible but trial-and-error, just muddling through, seems too risky and uncertain. This seems it could/should be most of the time in urban management and development. Following the implications that can be identified in encountering surprising results appears to be needed, rather than steadfast pursuit of objectives the usual mark of a good city manager.

Importantly, an evolving community requires policies and actions that in addition to meeting social objectives (including technical performance goals) achieve a continually modified understanding of the evolving conditions and provide flexibility for adaptation to surprises. This is a process of active experimentation through management at the scales appropriate to the questions. Otherwise, exploitive development "development that impoverishes" (Daly and Cobb 1989), is inevitable where increasingly brittle ecosystems, rigid management and dependent societies lead to crises (Holling 1992).

Adaptability and flexibility are the building blocks of both individual and organization survival along with envisioning a preferred future. Adaptive urban policies should define experiments to probe the behaviours of the

urban system. An adaptive management approach deals with the unpredictable interactions between people, urban and ecological systems as they mutually evolve. The approach treats policies as hypotheses, that predict how important community components will respond. The approach sees design and management as a set of quasi-experiments from which planners and other responsible agents involved can learn. Where the policy succeeds the hypothesis is affirmed, should it fail, the adaptive approach will still permit learning so decisions can proceed from a better basis of understanding.

This adaptive approach differs from the conventional urban development practice in that it emphasises the importance of feedbacks from the urban environment (form, function, processes and community) in shaping policy, followed by further systematic (deliberate, non-random) experimentation to shape subsequent policy, action and so on. The process is iterative, based on social and institutional learning (Lee 1993). Urban development can proceed by this design approach that simultaneously allows for tests of different management policies and emphasizes learning by doing. This is an inductive approach, relying on comparative studies that combine urban ecological theories with observation, local knowledge, and with active human interventions (Gunderson et al 1995, p.10).

Because an experimental demonstration project is an operational model, planning should and can act as the lead agency in this process. (This positioning of planning in the lead role is one I recognize as a norm in a number of Danish municipalities.) Operational practice often leads formal policy rather than drawing up policy and political decisions to then initiate practice. Formalized policy adoption will then follow better informed by the attempts, the experiments, to set a policy based upon, learning from the experiences. While this approach may be relatively new in many contexts, it is common-sense that emphasizes learning by doing. In breaking down barriers between research, design and management, this adaptive approach resembles aspects of traditional (as in pre- formal planning) urban systems.

Because it proceeds in a step by step fashion, responding to changes and guided by feedback from the urban landscape, the community features and the residents, adaptive management allows for institutional learning (Gunderson et al, 1995, p.358). Like incremental practice this relies on feedback and learning, and on the progressive accumulation of knowledge, often over long periods, but the adaptive approach has the advantage of systematic experimentation and the incorporation of research into the overall process and scheme, while it also benefits from the considered experience through active study of precedents. As Milbrath (1989) explained in his work on "envisioning a sustainable society". It will not help to admonish people to improve their learning; instead

*"we will have to design social structures that nourish it. Developing a learning society will require many years of criticism, social experimentation, failed experiences, and a great deal of thinking and discussion." (Milbrath 1989, p.88)*

This process involves what Argyris (1978, 1993) termed 'double-loop learning', requiring an adjustment of the norms governing the action process - specifically change in the actor's theory of reality, values, and beliefs - as a major cognitive reframing with far-reaching practical consequences for self-image, human relations, formal authority, and the ultimate distribution of the costs and benefits of actions. I suggest that a neighbourhood scale demonstration, where action informs strategy to overcome resistance, should be conceived and implemented as a purposeful environment for such learning.

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<sup>1</sup> Clear acknowledgement includes collaborated statements regarding 'lineage' of the innovation to the Egebjerggård demonstration project and published statements in research proposals, project descriptions and accounts where the practice is explicitly linked to back to Egebjerggård.

<sup>2</sup> Functional elements can be misinterpreted. For example long grass meadows may appear unkept, swales and open water may be seen as unsafe, or messy during a storm event. The ecological landscape and resident stewardship was the subject of an informative exhibit at the Skotteparken commonhouse during the Exhibition period.